

# **Competency Based Revised MBBS**



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## 1. GENERAL CONSIDERATIONS AND TEACHING APPROACH

### 1. Introduction

### 2. Indian Medical Graduate Training Programme

The undergraduate medical education programme is designed with a goal to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training programme are hereby prescribed:-

#### **National Goals**

At the end of undergraduate program, the Indian Medical Graduate should be able to:

- (a) Recognize “health for all” as a national goal and health right of all citizens and by undergoing training for medical profession to fulfill his/her social obligations towards realization of this goal.
- (b) Learn every aspect of National policies on health and devote her/him to its practical implementation.
- (c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.
- (d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.
- (e) Become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

#### **Institutional Goals**

- (1) In consonance with the national goals each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:
  - (a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.
  - (b) be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine in respect to the commonly encountered health problems.
  - (c) appreciate rationale for different therapeutic modalities; be familiar with the administration of “essential medicines” and their common adverse effects.
  - (d) be able to appreciate the socio-psychological, cultural, economic and environmental factors

- affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.
- (e) possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.
  - (f) Be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:
    - 1) Family Welfare and Maternal and Child Health (MCH)
    - 2) Sanitation and water supply
    - 3) Prevention and control of communicable and non-communicable diseases
    - 4) Immunization
    - 5) Health Education
    - 6) Indian Public Health Standards (IPHS), at various levels of service delivery
    - 7) Bio-medical waste disposal
    - 8) Organizational and/or institutional arrangements.
  - (g) Acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, hospital management, inventory skills and counseling.
  - (h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.
  - (i) Be able to work as a leading partner in health care teams and acquire proficiency in communication skills.
  - (j) Be competent to work in a variety of health care settings.
  - (k) Have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.
- (2) All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.

## 2: Goals and Roles for the Learner

In order to fulfill the goal of the IMG training programme, the medical graduate must be able to function in the following roles appropriately and effectively:-

**Clinician** who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.

**Leader** and member of the health care team and system with capabilities to collect analyze, synthesize and communicate health data appropriately.

**Communicator** with patients, families, colleagues and community.

**Lifelong learner** committed to continuous improvement of skills and knowledge.

**Professional**, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

## 3. Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

3.1.1 Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioural and social perspective.

3.1.2. Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.

Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.

Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.

Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.

Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and

economic status, patient preferences, beliefs and values.

Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.

Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.

Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.

Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frame works.

Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.

Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:

- (i) Disease prevention,
- (ii) Health promotion and cure,
- (iii) Pain and distress alleviation, and
- (iv) Rehabilitation.

Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.

Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.

Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

### ***Leader and member of the health care team and system***

Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.

Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.

Educate and motivate other members of the team and work in a collaborative and collegial



fashion that will help maximize the health care delivery potential of the team.

Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.

Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.

Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

***Communicator with patients, families, colleagues and community***

Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.

Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.

Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.

Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

***Lifelong learner committed to continuous improvement of skills and knowledge***

Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.

Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.

Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.

Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.

Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

***Professional*** who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession

Practice selflessness, integrity, responsibility, accountability and respect.

Respect and maintain professional boundaries between patients, colleagues and society.

Demonstrate ability to recognize and manage ethical and professional conflicts.

Abide by prescribed ethical and legal codes of conduct and practice.

Demonstrate a commitment to the growth of the medical profession as a whole.

#### **4. Broad Outline on training format**

In order to ensure that training is in alignment with the goals and competencies listed in sub-clause 2 and 3 above:

There shall be a "Foundation Course" to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills.

The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible in order to enhance learner's interest and eliminate redundancy and overlap.

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case based learning.

Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/primary/secondary care-based learning experiences and emergencies.

Training shall primarily focus on preventive and community based approaches to health and disease, with specific emphasis on national health priorities such as family welfare, communicable and non- communicable diseases including cancer, epidemics and disaster management.

Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.

The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics and communication.

Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Appropriate Faculty Development Programmes shall be conducted regularly by institutions to facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.

### **3: CHAPTER II**

#### **ADMISSION TO INDIAN MEDICAL GRADUATE PROGRAMME: NATIONAL ELIGIBILITY-CUM- ENTRANCE TEST AND COMMON COUNSELLING**

##### **5. Admission to the Indian Medical Graduate Programme**

The provision as contained in Part I – Chapter II shall be the governing provisions.

( Annexure B)

### **4: CHAPTER III MIGRATION**

##### **6. Migration**

The provision as contained in Part I - Chapter II Clause 6 shall be the governing provisions.

(Annexure C)

## 6:CHAPTER IV

### PHASE WISE TRAINING AND TIME DISTRIBUTION FOR PROFESSIONAL DEVELOPMENT

The Competency based Undergraduate Curriculum and Attitude, Ethics and Communication (AETCOM) course, as published by the Medical Council of India and also made available on the Council's website, shall be the curriculum for the batches admitted in MBBS from the academic year 2019-20 onwards.

#### 7. Training period and time distribution:

Every learner shall undergo a period of certified study extending over 4 ½ academic years, divided into nine semesters from the date of commencement of course to the date of completion of examination which shall be followed by one year of compulsory rotating internship.

Each academic year will have **at least 240 teaching days** with a minimum of eight hours of working on each day including one hour as lunch break.

Teaching and learning shall be aligned and integrated across specialties both vertically and horizontally for better learner comprehension. Learner centered learning methods should include problem oriented learning, case studies, community oriented learning, self- directed and experiential learning.

The period of 4 ½ years is divided as follows:

**Pre-Clinical Phase [(Phase I) - First Professional phase of 13 months preceded by Foundation Course of one month]:** will consist of preclinical subjects – Human Anatomy, Physiology, Biochemistry, Introduction to Community Medicine, Humanities, Professional development including Attitude, Ethics & Communication (AETCOM) module and early clinical exposure, ensuring both horizontal and vertical integration.

**Para-clinical phase [(Phase II) - Second Professional (12 months)]:** will consist of Para-clinical subjects namely Pathology, Pharmacology, Microbiology, Community Medicine, Forensic Medicine and Toxicology, Professional development including Attitude, Ethics & Communication (AETCOM) module and introduction to clinical subjects ensuring both horizontal and vertical integration.

The clinical exposure to learners will be in the form of learner-doctor method of clinical training in all phases. The emphasis will be on primary, preventive and comprehensive health care. A part of training during clinical postings should take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible.

This will involve:

- (a) Experience in recognizing and managing common problems seen in outpatient, inpatient and emergency settings,
- (b) Involvement in patient care as a team member,
- (c) Involvement in patient management and performance of basic procedures.

**Clinical Phase – [(Phase III) Third Professional (28 months)]**

- (a) Part I (13 months) - The clinical subjects include General Medicine, General Surgery, Obstetrics & Gynaecology, Paediatrics, Orthopaedics, Dermatology, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Psychiatry, Respiratory Medicine, Radio diagnosis & Radiotherapy and Anaesthesiology & Professional development including AETCOM module.
- (b) Electives (2 months) - To provide learners with opportunity for diverse learning experiences, to do research/community projects that will stimulate enquiry, self directed experimental learning and lateral thinking [9.3].
- (c) Part II (13 months) - Clinical subjects include:
  - i. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis)
  - ii. Surgery and allied specialties (General Surgery, Orthopaedics [including trauma]), Dentistry, Physical Medicine and rehabilitation, Anaesthesiology and Radio diagnosis)
  - iii. Obstetrics and Gynaecology (including Family Welfare)
  - iv. Paediatrics
  - v. AETCOM module

Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, problem oriented approach, case studies and community health care activities.

The admission shall be made strictly in accordance with the statutory notified time schedule towards the same. Universities shall organize admission timing and admission process in such a way that teaching in the first Professional year commences with induction through the Foundation Course by the 1<sup>st</sup> of August of each year.

- (i) Supplementary examinations shall not be conducted later **than 90 days** from the date of declaration of the results of the main examination, so that the learners who pass can join the main batch for progression and the remainder would appear for the examination in the

subsequent year.

A learner shall not be entitled to graduate later than **ten (10) years** of her/his joining the first MBBS course. No more than **four attempts** shall be allowed for a candidate to pass the first Professional examination. The total period for successful completion of first Professional course shall not **exceed four (4) years**. Partial attendance of examination in any subject shall be counted as an attempt.

A learner, who fails in the second Professional examination, shall not be allowed to appear in third Professional Part I examination unless she/he passes all subjects of second Professional examination.

Passing in third Professional (Part I) examination is not compulsory before starting part II training; however, passing of third Professional (Part I) is compulsory for being eligible for third Professional (Part II) examination.

During para-clinical and clinical phases, including prescribed 2 months of electives, clinical postings of three hours duration daily as specified in Tables 5, 6, 7 and 8 would apply for various departments.

## **8. Phase distribution and timing of examination**

Time distribution of the MBBS programme is given in Table 1.

Distribution of subjects by Professional Phase-wise is given in Table 2.

Minimum teaching hours prescribed in various disciplines are as under Tables 3-7.

Distribution of clinical postings is given in Table 8.

Duration of clinical postings will be:

Second Professional : 36 weeks of clinical posting (Three hours per day - five days per week : Total 540 hours)

Third Professional part I: 42 weeks of clinical posting (Three hours per day - six days per week : Total 756 hours)

Third Professional part II: 44 weeks of clinical posting (Three hours per day - six days per week : Total 792 hours)

Time allotted excludes time reserved for internal / University examinations, and vacation.

**Second professional clinical postings shall commence before / after declaration of results of the first professional phase examinations, as decided by the institution/ University.**

Third Professional parts I and part II clinical postings shall start **no later than two weeks** after the completion of the previous professional examination.

25% of allotted time of third Professional shall be utilized for integrated learning with pre- and para- clinical subjects. This will be included in the assessment of clinical subjects.

**Table 1: Time distribution of MBBS Programme & Examination Schedule**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
							Foundation Course	I MBBS			
I MBBS								Exam I MBBS	II MBBS		
II MBBS								Exam II MBBS	III MBBS		
III MBBS Part I									Exam III MBBS Part I	Electives & Skills	
III MBBS Part II											
Exam III MBBS Part II	Internship										
Internship											

One month is provided at the end of every professional year for completion of examination and declaration of results.

**Table 2: Distribution of subjects by Professional Phase**

Phase & year of MBBS training	Subjects & New Teaching Elements	Duration#	University examination
First Professional MBBS	<ul style="list-style-type: none"> <li>Foundation Course (1 month)</li> <li>Human Anatomy, Physiology &amp; Biochemistry, introduction to Community Medicine, Humanities</li> <li>Early Clinical Exposure</li> <li>Attitude, Ethics, and Communication Module (AETCOM)</li> </ul>	1 + 13 months	I Professional
Second Professional MBBS	<ul style="list-style-type: none"> <li>Pathology, Microbiology, Pharmacology, Forensic Medicine and Toxicology,</li> <li>Introduction to clinical subjects including Community Medicine</li> <li>Clinical postings</li> <li>Attitude, Ethics &amp; Communication Module (AETCOM)</li> </ul>	12 months	II Professional

Third Professional MBBS Part I	<ul style="list-style-type: none"> <li>• General Medicine, General Surgery, Obstetrics &amp; Gynecology, Pediatrics, Orthopedics, Dermatology, Psychiatry, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Respiratory medicine, Radiodiagnosis &amp; Radiotherapy, Anesthesiology</li> <li>• Clinical subjects/postings</li> <li>• Attitude, Ethics &amp; Communication Module (AETCOM)</li> </ul>	13 months	III Professional (Part I)
Electives	<ul style="list-style-type: none"> <li>• Electives, Skills and assessment*</li> </ul>	2 months	
Third Professional MBBS Part II	<ul style="list-style-type: none"> <li>• General Medicine, Pediatrics, General Surgery, Orthopedics, Obstetrics and Gynecology including Family welfare and allied specialties</li> <li>• Clinical postings/subjects</li> <li>• Attitude, Ethics &amp; Communication Module (AETCOM)</li> </ul>	13 months	III Professional (Part II)

\*Assessment of electives shall be included in Internal Assessment

**Table 3: Foundation Course (one month)**

Subjects/ Contents	Teaching hours	Self Directed Learning (hours)	Total hours
Orientation <sup>1</sup>	30	0	30
Skills Module <sup>2</sup>	35	0	35
Field visit to Community Health Center	8	0	8
Introduction to Professional Development & AETCOM module	-	-	40
Sports and extracurricular activities	22	0	22
Enhancement of language/ computer skills <sup>3</sup>	40	0	40
	-	-	175

1. Orientation course will be completed as single block in the first week and will contain elements outlined in 9.1.
2. Skills modules will contain elements outlined in 9.1.
3. Based on perceived need of learners, one may choose language enhancement (English or local spoken or both) and computer skills. This should be provided longitudinally through the duration of the Foundation Course.

Teaching of Foundation Course will be organized by pre-clinical departments.



**Table 4: First Professional teaching hour**

Subjects	Lectures (hours)	Small Group Teaching/ Tutorials/ Integrated learning/ Practical (hours)	Self directed learning (hours)	Total (hours)
Human Anatomy	220	415	40	675
Physiology*	160	310	25	495
Biochemistry	80	150	20	250
Early Clinical Exposure**	90	-	0	90
Community Medicine	20	27	5	52
Attitude, Ethics & Communication Module (AETCOM) ***	-	26	8	34
Sports and extracurricular activities	-	-	-	60
Formative assessment and Term examinations	-	-	-	80
Total	-	-	-	1736

\* including Molecular Biology.

\*\* Early clinical exposure hours to be divided equally in all three subjects.

\*\*\* AETCOM module shall be a longitudinal programme.

**Table 5: Second Professional teaching hours**

Subjects	Lectures (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Clinical Postings (hours) *	Self - Directed Learning (hours)	Total (hours)
Pathology	80	138	-	12	230
Pharmacology	80	138	-	12	230
Microbiology	70	110	-	10	190
Community Medicine	20	30	-	10	60
Forensic Medicine and Toxicology	15	30	-	5	50
Clinical Subjects	75**	-	540***		615
Attitude, Ethics & Communication Module (AETCOM)		29	-	8	37
Sports and extracurricular activities	-	-	-	28	28
Total	-	-	-	-	1440

\* At least 3 hours of clinical instruction each week must be allotted to training in clinical and procedural skill laboratories. Hours may be distributed weekly or as a block in each posting based on institutional logistics.

\*\* 25 hours each for Medicine, Surgery and Gynecology & Obstetrics.

\*\*\*The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday).

**Table 6: Third Professional Part I teaching hours**

Subjects	Teaching Hours	Tutorials/ Seminars /Integrated Teaching (hours)	Self-Directed Learning (hours)	Total (hours)
General Medicine	25	35	5	65
General Surgery	25	35	5	65
Obstetrics and Gynecology	25	35	5	65
Pediatrics	20	30	5	55
Orthopaedics	15	20	5	40
Forensic Medicine and Toxicology	25	45	5	75
Community Medicine	40	60	5	105
Dermatology	20	5	5	30
Psychiatry	25	10	5	40
Respiratory Medicine	10	8	2	20
Otorhinolaryngology	25	40	5	70
Ophthalmology	30	60	10	100
Radiodiagnosis and Radiotherapy	10	8	2	20
Anesthesiology	8	10	2	20
Clinical Postings*	-	-	-	756
Attitude, Ethics & Communication Module (AETCOM)		19	06	25
<b>Total</b>	<b>303</b>	<b>401</b>	<b>66</b>	<b>1551</b>

\* The clinical postings in the third professional part I shall be 18 hours per week (3 hrs per day from Monday to Saturday).

**Table 7: Third Professional Part II teaching hours**

Subjects	Teaching Hours	Tutorials/Seminars / Integrated Teaching (hours)	Self - Directed Learning (hours)	Total* (hours)
General Medicine	70	125	15	210
General Surgery	70	125	15	210
Obstetrics and Gynecology	70	125	15	210
Pediatrics	20	35	10	65
Orthopaedics	20	25	5	50
Clinical Postings**				792
Attitude, Ethics & Communication Module (AETCOM)***	28		16	43
Electives				200
<b>Total</b>	<b>250</b>	<b>435</b>	<b>60</b>	<b>1780</b>

\* 25% of allotted time of third professional shall be utilized for integrated learning with pre- and para-clinical subjects and shall be assessed during the clinical subjects examination. This allotted time will be utilized as integrated teaching by para-clinical subjects with clinical subjects (as Clinical Pathology, Clinical Pharmacology and Clinical Microbiology).

**\*\* The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday).\*\*\* Hours from clinical postings can also be used for AETCOM modules.**

**Table 8: Clinical postings**

Subjects	Period of training in weeks			Total weeks
	II MBBS	III MBBS Part I	III MBBS Part II	
Electives	-	-	8* (4 regular clinical posting)	4
General Medicine <sup>1</sup>	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics & Gynaecology <sup>2</sup>	4	4	8 +4	20
Pediatrics	2	4	4	10
Community Medicine	4	6	-	10
Orthopedics - including Trauma <sup>3</sup>	2	4	2	8
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Respiratory Medicine	2	-	-	2
Psychiatry	2	2	-	4
Radiodiagnosis <sup>4</sup>	2	-	-	2
Dermatology, Venereology & Leprosy	2	2	2	6
Dentistry & Anesthesia	-	2	-	2
Casualty	-	2	-	2
	36	42	48	126

\* In four of the eight weeks of electives, regular clinical postings shall be accommodated. Clinical postings may be adjusted within the time framework.

<sup>1</sup> This posting includes Laboratory Medicine (Para-clinical) & Infectious Diseases (Phase III Part I).

<sup>2</sup> This includes maternity training and family welfare (including Family Planning).

<sup>3</sup> This posting includes Physical Medicine and Rehabilitation.

<sup>4</sup> This posting includes Radiotherapy, wherever available.

**New teaching / learning elements**

**Foundation Course**

**Goal:** The goal of the Foundation Course is to prepare a learner to study medicine effectively. It will be of one month duration after admission.

**Objectives:** The objectives are to orient the learner to:

- (i) The medical profession and the physician's role in society
- (ii) The MBBS programme
- (iii) Alternate health systems in the country and history of medicine
- (iv) Medical ethics, attitudes and professionalism
- (v) Health care system and its delivery
- (vi) National health programmes and policies
- (vii) Universal precautions and vaccinations
- (viii) Patient safety and biohazard safety
- (ix) Principles of primary care (general and community based care)
- (x) The academic ambience

**Enable the learner to acquire enhanced skills in:**

- (i) Language
- (ii) Interpersonal relationships
- (iii) Communication
- (iv) Learning including self-directed learning
- (v) Time management
- (vi) Stress management
- (vii) Use of information technology

**Train the learner to provide:**

- (i) First-aid
- (ii) Basic life support

In addition to the above, learners may be enrolled in one of the following programmes which will be run concurrently:

**Local language programme**

**English language programme**

**Computer skills**

These may be done in the last two hours of the day for the duration of the Foundation Course.

These sessions must be as interactive as possible.

Sports (to be used through the Foundation Course as protected 04 hours / week).Leisure and extracurricular activity (to be used through the Foundation Course as protected 02 hours per week).

Institutions shall develop learning modules and identify the appropriate resource persons for their delivery.The time committed for the Foundation Course may not be used for any other curricular activity.The Foundation Course will have **compulsory 75% attendance**. This will be certified by the Dean of the college.The Foundation Course will be organized by the Coordinator appointed by the Dean of the college and will be under supervision of the heads of the preclinical departments.

Every college must arrange for a meeting with parents.

**Early Clinical Exposure**

**Objectives:** The objectives of early clinical exposure of the first-year medical learners are to enable the learner to:

- Recognize the relevance of basic sciences in diagnosis, patient care and treatment,
- Provide a context that will enhance basic science learning,
- Relate to experience of patients as a motivation to learn,
- Recognize attitude, ethics and professionalism as integral to the doctor-patient relationship,
- Understand the socio-cultural context of disease through the study of humanities.

**Elements**

Basic science correlation: i.e. apply and correlate principles of basic sciences as they relate to the care of the patient (this will be part of integrated modules).

Clinical skills: to include basic skills in interviewing patients, doctor-patient communication, ethics and professionalism, critical thinking and analysis and self-learning (this training will be imparted in the time allotted for early clinical exposure).

Humanities: To introduce learners to a broader understanding of the socio-economic framework and cultural context within which health is delivered through the study of humanities and social sciences.

**Electives**

**Objectives:** To provide the learner with opportunities:

- For diverse learning experiences,
- To do research/community projects that will stimulate enquiry, self-directed, experiential learning

and lateral thinking.

Two months are designated for elective rotations after completion of the examination at end of the third MBBS Part I and before commencement of third MBBS Part II.

It is mandatory for learners to do an elective. The elective time should not be used to make up for missed clinical postings, shortage of attendance or other purposes.

### Structure

The learner shall rotate through two elective blocks of 04 weeks each.

Block 1 shall be done in a pre-selected preclinical or para-clinical or other basic sciences laboratory OR under a researcher in an ongoing research project. During the electives regular clinical postings shall continue. Block 2 shall be done in a clinical department (including specialties, super-specialties, ICUs, blood bank and casualty) from a list of electives developed and available in the institution OR as a supervised learning experience at a rural or urban community clinic. Institutions will pre-determine the number and nature of electives, names of the supervisors, and the number of learners in each elective based on the local conditions, available resources and faculty. Each institution will develop its own mechanism for allocation of electives. It is preferable that elective choices are made available to the learners in the beginning of the academic year. The learner must submit a learning log book based on both blocks of the elective. **75% attendance in the electives and submission of log book maintained during elective is required for eligibility to appear in the final MBBS examination.** Institutions may use part of this time for strengthening basic skill certification.

### Professional Development including Attitude, Ethics and Communication Module (AETCOM)

**Objectives** of the programme: At the end of the programme, the learner must demonstrate ability to: understand and apply principles of bioethics and law as they apply to medical practice and research, understand and apply the principles of clinical reasoning as they apply to the care of the patients,

understand and apply the principles of system based care as they relate to the care of the patient,

understand and apply empathy and other human values to the care of the patient,

communicate effectively with patients, families, colleagues and other health care professionals,

- (a) understand the strengths and limitations of alternative systems of medicine,
- (b) respond to events and issues in a professional, considerate and humane fashion,
- (c) Translate learning from the humanities in order to further his / her professional and personal growth.

### Learning experiences:

This will be a longitudinal programme spread across the continuum of the MBBS programme including internship,

Learning experiences may include – small group discussions, patient care scenarios, workshop, seminars, role plays, lectures etc.

Attitude, Ethics & Communication Module (AETCOM module) developed by Medical Council of India should be used longitudinally for purposes of instruction.

**75% attendance in Professional Development Programme (AETCOM Module) is required for eligibility to appear for final examination in each professional year.**

Internal Assessment will include:

Written tests comprising of short notes and creative writing experiences,

OSCE based clinical scenarios / viva voce.

At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme.

Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and viva voce.

## **Learner-doctor method of clinical training (Clinical Clerkship)**

**Goal:** To provide learners with experience in:

- Longitudinal patient care,
- Being part of the health care team,
- Hands-on care of patients in outpatient and inpatient setting.

### **Structure:**

The first clinical posting in second professional shall orient learners to the patient, their roles and the specialty. The learner-doctor programme will progress as outlined in Table 9.

The learner will function as a part of the health care team with the following responsibilities:

- (i) Be part of the unit's outpatient services on admission days,
- (ii) Remain with the admission unit until 6 PM except during designated class hours,
- (iii) Be assigned patients admitted during each admission day for whom he/she will undertake responsibility, under the supervision of a senior resident or faculty member,
- (iv) Participate in the unit rounds on its admission day and will present the assigned patients to the supervising physician,
- (v) Follow the patient's progress throughout the hospital stay until discharge,
- (vi) Participate, under supervision, in procedures, surgeries, deliveries etc. of assigned patients (according to responsibilities outlined in table 9),
- (vii) Participate in unit rounds on at least one other day of the week excluding the admission day,
- (viii) Discuss ethical and other humanitarian issues during unit rounds,
- (ix) Attend all scheduled classes and educational activities,
- (x) Document his/her observations in a prescribed log book / case record.

### **No learner will be given independent charge of the patient**

The supervising physician will be responsible for all patient care decisions

### **Assessment:**

- (a) A designated faculty member in each unit will coordinate and facilitate the activities of the learner, monitor progress, provide feedback and review the log book/ case record.
- (b) The log book/ case record must include the written case record prepared by the learner including relevant investigations, treatment and its rationale, hospital course, family and patient discussions, discharge summary etc.
- (c) The log book should also include records of outpatients assigned. **Submission of the log book/ case record to the department is required for eligibility to appear for the final examination of the subject.**

*Table 9: Learner - Doctor programme (Clinical Clerkship)*

<b>Year of Curriculum</b>	<b>Focus of Learner - Doctor programme</b>
Year 1	Introduction to hospital environment, early clinical exposure, understanding perspectives of illness
Year 2	History taking, physical examination, assessment of change in clinical status, communication and patient education
Year 3	All of the above and choice of investigations, basic procedures and continuity of care
Year 4	All of the above and decision making, management and outcomes

## 7:CHAPTER V

### COMPETENCY BASED CURRICULUM OF THE INDIAN MEDICAL GRADUATE PROGRAMME

#### Specific Competencies

**Preamble:** The salient feature of the revision of the medical curriculum in 2019 is the emphasis on learning which is competency-based, integrated and learner-centered acquisition of skills and ethical & humanistic values.

Each of the competencies described below must be read in conjunction with the goals of the medical education as listed in items 2 to 3.5.5

It is recommended that didactic teaching be restricted to less than one third of the total time allotted for that discipline. Greater emphasis is to be laid on hands-on training, symposia, seminars, small group discussions, problem-oriented and problem-based discussions and self-directed learning. Learners must be encouraged to take active part in and shared responsibility for their learning.

The global competencies to be achieved by the learner are outlined above in Chapter 1- section 3. Since the MBBS programme assessment will continue to be subject based, subject specific competencies have been outlined. These have to be acquired by the learner in the corresponding professional year. These competencies must be interpreted in the larger context outlined in section 3 and may be considered as “sub competencies” of the global competencies.

**Integration** must be horizontal (i.e. across disciplines in a given phase of the course) and vertical (across different phases of the course). As far as possible, it is desirable that teaching/learning occurs in each phase through study of organ systems or disease blocks in order to align the learning process. Clinical cases must be used to integrate and link learning across disciplines.

#### Third Professional (Part II)

**General Medicine – as per 10.5.1**

**General Surgery – as per 10.5.2**

**Obstetrics & Gynaecology – as per 10.5.3**

**Pediatrics – as per 10.5.4**

**Orthopaedics – as per 10.5.5**

### I: Foundation Course

At the beginning of the MBBS course, through a dedicated one month exclusive “Foundation Course”, students will be oriented and sensitized to the various identified areas. Many of these identified areas will need to be followed up by more focused outcome-based sessions at various stages in the MBBS course. This will be achieved through activities/small courses integrated throughout the course which will be like the thread running through a garland. At appropriate stages throughout the course, emphasis will be laid on the various essential roles of the “Indian Medical Graduate”.

**The purpose of the Foundation Course include:**

a) Orienting the students to all aspects of the medical college environment.

b) Equipping them with certain basic, but important, skills required for patient care and enhancing their communication, language, computer and learning skills.

c) Providing opportunity for peer and faculty interactions and an overall sensitisation to the various learning methodologies.

### **Major Components**

The major components of the Foundation Course include:

**Orientation Program:** This includes orienting students to all the components mentioned in GMER 9.1 and should be completed as one block in the first week.

**Skills Module (Basic):** This involves skill sessions such as Basic Life Support, First Aid, Universal precautions and biomedical waste and safety management that students need to be trained prior to entering the patient care areas.

**Field visit to Community and Primary Health Centre:** These visits provide orientation to the care delivery through community and primary health centres, and include interaction with health care workers, patients and their families.

**Professional development including Ethics:** This is an introduction to the concept of Professionalism and Ethics. This component will provide students with understanding that clinical competence, communication skills and sound ethical principles are the foundation of professionalism. It will also provide understanding of the consequences of unethical and unprofessional behaviour, value of honesty, integrity and respect in all interactions. Professional attributes such as accountability, altruism, pursuit of excellence, empathy, compassion and humanism will be addressed. It should inculcate respect and sensitivity for gender, background, culture, regional and language diversities. It should also include respect towards the differently abled persons. It introduces the students to the basic concept of compassionate care and functioning as a part of a health care team. It sensitises students to “learning” as a behaviour and to the appropriate methods of learning.

**Sports and Extracurricular activities:** These have been included, in order to demonstrate the importance of work-life balance in a demanding profession, and provide an opportunity for students to have compulsory physical activity and to showcase their talents. The Foundation Course should have compulsory 4 hours per week for sports and 2 hours per week for extracurricular activities, adding up to 22 hours.

**Enhancement of Language / Computer skills / Learning Skills:** These are sessions to provide opportunity for the students from diverse background and language competence to undergo training for speaking and writing English, fluency in local language and basic computer skills. The students should be sensitized to various learning methodologies such as small group discussions, skills lab, simulations, documentation and concept of Self-Directed learning.



**Table.1 Structure of the program for students**

Subjects/ Contents Total	Teaching hours
Orientation <sup>1</sup>	30
Skills Module <sup>2</sup>	35
Field visit to Community Health Centre	8
Professional Development including ethics	40
Sports and Extracurricular activities	22
Enhancement of language/ computer skills <sup>3</sup>	40
<b>Total teaching hours</b>	<b>175</b>

<sup>1</sup>. Orientation course will be completed as single block in first week and will contain elements outlined in the section 9.1.1 of the GMR

<sup>2</sup>. Skills modules will contain elements outlined in the section 9.1.1 of the GMR

<sup>3</sup>. Based on perceived needs the students may choose any or both of language enhancements (English or local spoken or both) and computer skills. This should be available longitudinally throughout the duration of the Foundation Course and Afterwards.

#### **Foundation Course Modules**

1. Orientation Module:	Total hours 30
1A. Orientation Module: Introduction to institution / campus / facilities 1B. Orientation Module: Role of doctors in the society 1C. Orientation Module: History of Medicine and alternate systems 1D. Orientation Module: IMG roles / overview MBBS curriculum various career pathways 1E. Orientation Module : Principles of family practice	
2. Skills Module:	Total hours: 35
2A. Skills Module: First Aid 2B. Skills Module: BLS 2C. Skills Module: Universal precautions 2D. Skills Module: Waste management 2E. Skills Module: Immunization 2F. Skills Module: Documentation	
3. Community orientation module	Total hours: 8
3A. Community Orientation Module: National Health goals and policies/ health Care systems/ community health  3B. Community Orientation Module: Interactions with patients and families, Communities.	
4. Professional Development and Ethics Module (P&E)	Total hours: 40
4A. (P&E): Concept of Professionalism and Ethics 4B. (P&E): White coat Ceremony 4C. (P&E): Professional behaviour and altruistic behaviour 4D. (P&E): Working in a health care team 4E. (P&E): Disability competencies 4F. (P&E): Cultural competence	

4G. (P&E): Stress management 4H. (P&E): Time management 4I. (P&E): Interpersonal relationship 4J. (P&E): Learning	
5. Enhancement of Language and Computer Skills Module	Total hours:40
5A.Enhancement of Language and Computer Skills Module: Communication 5B.Enhancement of Language and Computer Skills Module: Local Language training 5C. Enhancement of Language and Computer Skills Module: English Language training 5D.Enhancement of Language and Computer Skills Module: Computer Skills training	
6. Sports and extracurricular activities:	Total hours: 22
Sports should be for a mandatory 4 hours per week Extra-curricular activities 2 hours per week, subject to a total of 22 hours.	

Week 1					
Monday	Introduction by Dean College Rules, Roles of IMG		<b>L U N C H</b>	Expectation of students From Society	Orientation: College Campus
Tuesday	Role of Doctors in society	Film -in silence-MMR		Meet the doctor	Sports
Wednesday	History of Medicine followed by Group Work			Alternate system of Medicine	Sports
Thursday	GMR-2019	Panel discussion on career pathways		Introduction with Mentors	Sports
Friday	Family practice & holistic care			Gender Harassment	Sports
Saturday	Documentation	Extracurricular activities		////////////////////	
Week 2					
Monday	BLS (Group-A)		<b>L U N C H</b>	BLS (Group-B)	
Tuesday	First Aid (Group-B)			First Aid (Group-A)	
Wednesday	Universal Precaution(Lecturer)			Universal Precaution: Demonstration	Sports
Thursday	BMW			BMW	Sports
Friday	Immunization			Visit to ILR Centre	Sports
Saturday	Extracurricular activities			////////////////////	
Week 3					
Monday	National Health Goals & policies	National Health Scenario	<b>L U N C H  L U N C H</b>	Visit to Community Health Centre	Health Care System in India
Tuesday	Concept of Professionalism & Ethics			Concept of Professionalism & Ethics	Sports
Wednesday	Professional Behaviour & Altruistic behaviour			Consequences of unprofessional behaviour	Sports
Thursday	Visit to hospital to interact with diff health- care worker			Discussion on working in health care team	Sports
Friday	Stress management	Disability competencies		Disability competencies	Sports
Saturday	Components of Cultural Competence	Extracurricular activities		//////////////////// ////////	
Week 4					
Monday	Time management		<b>L U N C H</b>	Interpersonal relationship	Sports
Tuesday	Learning Style & Group Learning			Local language	Sports
Wednesday	Basics of Communication			English language/Local language	Sports
Thursday	Self directed Learning & Collaborative learning			English language	Sports
Friday	Basic Computer skill & ability to access online resources			English language	Sports
Saturday	Role of Yoga	Extracurricular activities		//////////////////// ////////	
Week 5					
Monday	Basic Computer skill & ability to access online resources		<b>L U N C H</b>	Local language/English Language	
Tuesday	English language/Local language			English language	
Wednesday	Feedback of students on Foundation Course			<b>White Coat Ceremony</b>	

## II: Attitude, Ethics and Communication (AETCOM) Competencies for the Indian Medical Graduate

The overall goal of undergraduate medical education program as envisaged in the revised Graduate Medical Education Regulations - 2017 is to create an “Indian Medical Graduate” (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. In order to fulfill this goal, the IMG must be able to function appropriately, ethically and effectively in her/his roles as clinician, leader and member of the health care team and system, communicator, lifelong learner and as a professional.

In order to effectively fulfill the above mentioned roles, the IMG must obtain a set of competencies at the time of graduation. In order to ensure that training is in alignment with the goals and competencies, Medical Council of India has proposed new teaching learning approaches including a structured longitudinal programme on attitude, ethics and communication(AETCOM) . AETCOM module prepared by MCI will guide to facilitate institutions and faculty in implementing a longitudinal program that will help students acquire necessary competence in the attitudinal, ethical and communication domains. It offers framework of competencies that students must achieve

<b>Learning modules for Professional year I</b> <b>Number of modules: 5</b>	<b>Number of hours: 34</b>
<b>Module 1.1: What does it mean to be a doctor?</b> 1. Enumerate and describe professional qualities and roles of a physician 2. Describe and discuss the commitment to lifelong learning as an important part of physician growth 3. Describe and discuss the role of a physician in health care system 4. Identify and discuss physician’s role and responsibility to society and the community that she/ he serves	<b>8 hours</b>
<b>Module 1.2: What does it mean to be a patient?</b> 1. Enumerate and describe professional qualities and roles of a physician 2. Describe and discuss the commitment to lifelong learning as an important part of physician growth 3. Describe and discuss the role of a physician in health care system 4. Identify and discuss physician’s role and responsibility to society and the community that she/ he serves	<b>8 hours</b>
<b>Module 1.3: The doctor-patient relationship</b> 1.Enumerate and describe professional qualities and roles of a physician 2. Demonstrate empathy in patient encounters	<b>7hours</b>
<b>Module 1.4: The foundations of communication – 1</b> Demonstrate ability to communicate to patients in a patient, respectful, nonthreatening, non- judgmental and empathetic manner	<b>7hours</b>
<b>Module 1.5: The cadaver as our first teacher</b> Demonstrate respect and follows the correct procedure when handling cadavers and other biologic tissues	<b>4hours</b>
<b>Learning modules for Professional Year II</b> <b>Number of modules: 8</b>	<b>Number of hours: 37</b>
<b>Module 2.1: The foundations of communication – 2</b> Demonstrate ability to communicate to patients in a patient, respectful, non-threatening, non- judgmental and empathetic manner	<b>5hours</b>
<b>Module 2.2 The foundations of bioethics</b> 1. Describe and discuss the role of non-maleficence as a guiding principle in patient care	<b>2hours</b>

2. Describe and discuss the role of autonomy and shared responsibility as a guiding principle in patient care 3. Describe and discuss the role of beneficence of a guiding principle in patient care 4. Describe and discuss the role of a physician in health care system 5. Describe and discuss the role of justice as a guiding principle in patient care	
<b>Module 2.3: Health care as a right</b> Describe and discuss the role of justice as a guiding principle in patient care	<b>2hours</b>
<b>Module 2.4: Working in a health care team</b> 1. Demonstrate ability to work in a team of peers and superiors <b>2. Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers</b>	<b>6hours</b>
<b>Module 2.5: Bioethics continued – Case studies on patient autonomy and decision making</b> Identify, discuss and defend medico-legal, socio-cultural and ethical issues as it pertains to patient autonomy, patient rights and shared responsibility in health care	<b>6hours</b>
<b>Module 2.6: Bioethics continued: Case studies on autonomy and decision making</b> Identify, discuss and defend medico-legal, socio-cultural and ethical issues as they pertain to refusal of care including do not resuscitate and withdrawal of life support	<b>5hours</b>
<b>Module 2.7: Bioethics continued: Case studies on autonomy and decision making</b> Identify, discuss and defend, medico-legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures	<b>5hours</b>
<b>Module 2.8: What does it mean to be family member of a sick patient?</b> Demonstrate empathy in patient encounters	<b>6hours</b>
<b>Learning modules for Professional Year III</b> <b>Number of modules: 5</b>	<b>Number of hours: 25</b>
<b>Module 3.1: The foundations of communication - 3</b> Demonstrate ability to communicate to patients in a patient, respectful, nonthreatening, non-judgmental and empathetic manner	<b>5hours</b>
<b>Module 3.2: Case studies in bioethics - Disclosure of medical errors</b> Demonstrate an understanding of the implications and the appropriate procedure and response to be followed in the event of medical errors	<b>5hours</b>
<b>Module 3.3: The foundations of communication – 4</b> 1. Demonstrate ability to communicate to patients in a patient, respectful, nonthreatening, non-judgmental and empathetic manner 2. Identify, discuss and defend, medico-legal, socio-cultural and ethical issues as they pertain to consent for surgical procedures 3. Administer informed consent and appropriately address patient queries to a patient undergoing a surgical procedure in a simulated environment	<b>5hours</b>
<b>Module 3.4: Case studies in bioethics – Confidentiality</b> Identify, discuss and defend medico-legal, socio-cultural and ethical issues as it pertains to confidentiality in patient care	<b>5hours</b>
<b>Module 3.5: Case studies in bioethics - Fiduciary duty</b> 1. Identify, discuss and defend medico-legal, socio-cultural, professional and ethical issues as it pertains to the physician - patient relationship (including fiduciary duty) 2. Identify and discuss physician's role and responsibility to society and the community that she/ he serves	<b>5hours</b>
<b>Learning modules for Professional Year IV</b> <b>Number of modules: 9</b>	<b>Number of hours: 44</b>
<b>Module 4.1: The foundations of communication – 5</b> 1. Demonstrate ability to communicate to patients in a patient, respectful, nonthreatening, non-judgmental and empathetic manner 2. Communicate diagnostic and therapeutic options to patient and family in a simulated	<b>5hours</b>

environment	
<b>Module 4.2: Case studies in medico-legal and ethical situations</b> Identify, discuss and defend medico-legal, socioeconomic and ethical issues as it pertains to abortion / Medical Termination of Pregnancy and reproductive rights	<b>5hours</b>
<b>Module 4.3: Case studies in medico-legal and ethical situations</b> Identify and discuss medico-legal, socio-economic and ethical issues as it pertains to organ donation	<b>5hours</b>
<b>Module 4.4: Case studies in ethics empathy and the doctor-patient relationship</b> 1. Demonstrate empathy in patient encounters 2. Communicate care options to patient and family with a terminal illness in a simulated environment1.	<b>5hours</b>
<b>Module 4.5: Case studies in ethics: the doctor-industry relationship</b> Identify and discuss and defend medico-legal, socio-cultural, professional and ethical issues in physician - industry relationships	<b>5hours</b>
<b>Module 4.6: Case studies in ethics and the doctor - industry relationship</b> Identify conflicts of interest in patient care and professional relationships and describe the correct response to these conflicts	<b>5hours</b>
<b>Module 4.7: Case studies in ethics and patient autonomy</b> Identify conflicts of interest in patient care and professional relationships and describe the correct response to these conflicts	<b>5hours</b>
<b>Module 4.8: Dealing with death</b> 1. Identify conflicts of interest in patient care and professional relationships and describe the correct response to these conflicts. 2. Demonstrate empathy to patient and family with a terminal illness in a simulated environment.	<b>5hours</b>
<b>Module 4.9: Medical Negligence</b> Identify, discuss and defend medico-legal, socio-cultural, professional and ethical issues pertaining to medical negligence 2. Identify, discuss and defend medico-legal, socio-cultural, professional and ethical issues pertaining to malpractice	<b>4hours</b>
	<b>5hours</b>

### Assessment

Assessment on AETCOM competencies can be conducted during

1. Log book
2. Formative Assessment
3. Summative assessment

(As per the instruction given in the module at the end of each chapter)

## III:ANATOMY

### Human Anatomy

- (a) **Competencies:** The undergraduate must demonstrate:
1. Understanding of the gross and microscopic structure and development of human body,
  2. Comprehension of the normal regulation and integration of the functions of the organs and systems on basis of the structure and genetic pattern,
  3. Understanding of the clinical correlation of the organs and structures involved and interpret the anatomical basis of the disease presentations.
- (b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in organ systems with clinical correlation that will provide a context for the learner to understand the relationship between structure and function and interpret the anatomical basis of various clinical conditions and procedures.

### Duration

<b>13 months</b>	<b>LGT</b>	<b>Dissection/Tutorial /Practical</b>	<b>Museum Specimen</b>	<b>Integration AITO</b>	<b>SDL</b>	<b>ECE</b>	<b>AETCOM</b>
	<b>SGT</b>						
	220hrs	415hrs			40hrs	30 hrs	10 hrs

### ASSESSMENT

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical/Dissection/Spotting	Viva	Theory	Practical + Viva
Theory=200 Practical =100	Paper 1=100 Paper 2=100	Dissection+Spotter+ Surface anatomy=60 Record+ LogBook=10	30(15+15) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

### Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
1 <sup>st</sup> Professional Year	December	100	100
	April	100	100
	July	100	100

### Course Content

Paper I	Paper II
Upper limb, Thorax, Head& Neck, Brain, (General Embryology, Relevant Histology, Applied anatomy)	General Anatomy, Genetics, Lower limb, Abdomen& Pelvis including diaphragm, Perinium (General Embryology, Relevant Histology, Applied anatomy)

# THEORY

Sl. No.	Topic Code	GENERAL ANATOMY	Method of Teaching	No of hours
		Topic		
1	AN 1.1	Demonstrate normal anatomical position, various planes, relation, comparison, laterality & movement in our body	LGT	1
2	AN 2.1 to 2.3	Describe parts, blood and nerve supply of a long bone, Enumerate laws of ossification, Enumerate special features of a sesamoid bone	LGT	1
3	AN. 2.4 to 2.6	Describe various types of cartilage with its structure & distribution in body, Describe various joints with subtypes and examples, Explain the concept of nerve supply of joints & Hilton's law	LGT	1
4	AN.3.1	Classify muscle tissue according to structure & action	LGT	1
5	AN 3.2,3.3	Enumerate parts of skeletal muscle and differentiate between tendons and aponeuroses with examples, Explain Shunt and spurt muscles	LGT	1
6	AN 4.1,4.2	Describe different types of skin & dermatomes in body, Describe structure & function of skin with its appendages	LGT	1
7	AN 4.3,4.4,4.5	Describe superficial fascia along with fat distribution in body, Describe modifications of deep fascia with its functions, Explain principles of skin incisions	LGT	1
8	A.N 5.1 to 5.4	Differentiate between blood vascular and lymphatic system, Differentiate between pulmonary and systemic circulation, List general differences between arteries & veins, Explain functional difference between elastic, muscular arteries and arterioles	LGT	1
9	AN 5.5 to 5.8	Describe portal system giving examples, Describe the concept of anastomoses and collateral circulation with significance of end-arteries, Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses, Define thrombosis, infarction & aneurysm	LGT	1
10	AN 6.1 to 6.3	List the components and functions of the lymphatic system, Describe structure of lymph capillaries & mechanism of lymph circulation, Explain the concept of lymphoedema and spread of tumors via lymphatics and venous system	LGT	1
11	AN 7.1, 7.2,7.3	Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems, List components of nervous tissue and their functions, Describe parts of a neuron and classify them based on number of neurites, size & function	LGT	1
12	AN 7.4 to 7.6	Describe structure of a typical spinal nerve, Describe principles of sensory and motor innervation of muscles, Describe concept of loss of innervation of a muscle with its applied anatomy	LGT	1
13	AN 7.7 , 7.8	Describe various type of synapse, Describe differences between sympathetic and spinal ganglia	LGT	1
		<b>SUPERIOR</b>		
		<b>EXTREMITIES</b>		



14	AN 9.1, 9.2	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor, Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	LGT	1
15	AN 9.3	Describe development of breast	LGT	1
16	AN 10.1	Identify & describe boundaries and contents of axilla	LGT	1
17	AN 10.5, 10.6	Explain variations in formation of brachial plexus, Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis	LGT	1
18	AN 10.7	Explain anatomical basis of enlarged axillary lymph nodes	LGT	1
19	AN 10.9, 10.13	Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation, Explain anatomical basis of Injury to axillary nerve during intramuscular injections	LGT	1
20	AN 11.3, 11.4, 11.6	Describe the anatomical basis of Venepuncture of cubital veins, Describe the anatomical basis of Saturday night paralysis, Describe the anastomosis around the elbow joint	LGT	1
21	AN 12.4, 12.8	Explain anatomical basis of carpal tunnel syndrome, Describe anatomical basis of Claw hand	LGT	1
22	AN 12.10, 12.13	Explain infection of fascial spaces of palm, Describe the anatomical basis of Wrist drop	LGT	1
23	AN 13.1, 13.2	Describe and explain Fascia of upper limb and compartments, veins of upper limb and its lymphatic drainage, Describe dermatomes of upper limb	LGT	1
24	AN 13.4	Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal joint	LGT	1
25	AN 13.8	Describe development of upper limb	LGT	1
		<b>INFERIOR EXTREMITIES</b>		
26	AN 14.2, 14.3	Identify & describe joints formed by the given bone, Describe the importance of ossification of lower end of femur & upper end of tibia	LGT	1
27	AN 15.4, 15.5	Explain anatomical basis of Psoas abscess & Femoral hernia, Describe and demonstrate adductor canal with its content	LGT	1
28	AN 16.2, 16.3	Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections, Explain the anatomical basis of Trendelenburg sign	LGT	1
29	AN 17.1, 17.3	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint, Describe dislocation of hip joint and surgical hip replacement	LGT	1
30	AN 17.2	Describe anatomical basis of complications of fracture neck of femur	LGT	1
31	AN 18.3, 18.5	Explain the anatomical basis of foot drop, Explain the anatomical basis of locking and unlocking of the knee joint	LGT	1
32	AN 18.6, 18.7	Describe knee joint injuries with its applied anatomy, Explain anatomical basis of Osteoarthritis	LGT	1
33	AN 19.3, 19.4	Explain the concept of "Peripheral heart", Explain the anatomical basis of rupture of calcaneal tendon	LGT	1

34	AN 19.5	Describe factors maintaining importance arches of the foot with its importance	LGT	1
35	AN 19.6, 19.7	Explain the anatomical basis of Flat foot & Club foot, Explain the anatomical basis of Metatarsalgia & Plantar fasciitis	LGT	1
36	AN 20.2, 20.4	Describe the subtalar and transverse tarsal joints, Explain anatomical basis of enlarged inguinal lymph nodes	LGT	1
37	AN 20.5	Explain anatomical basis of varicose veins and deep vein thrombosis	LGT	1
38	AN 20.10	Describe basic concept of development of lower limb	LGT	1
		<b>THORAX</b>		
39	AN 21.6,21.7	Mention origin, course and branches/ tributaries of: 1) anterior & posterior intercostal vessels 2) internal thoracic vessels, Mention the origin, course, relations and branches of 1) atypical intercostal nerve 2) superior intercostal artery, subcostal artery	LGT	1
40	AN 21.10	Describe costochondral and interchondral joints	LGT	1
41	AN 21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	LGT	1
42	AN 22.1,22.2	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium, Describe & demonstrate external and internal features of each chamber of heart	LGT	1
43	AN 22.3,22.4, 22.5	Describe & demonstrate origin, course and branches of coronary arteries, Describe anatomical basis of ischaemic heart disease, Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	LGT	1
44	AN 22.6, 22.7	Describe the fibrous skeleton of heart, Mention the parts, position and arterial supply of the conducting system of heart	LGT	1
45	AN 23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply, lymphatic drainage and applied anatomy of oesophagus	LGT	1
46	AN 23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	LGT	1
47	AN 23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins	LGT	1
48	AN 23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	LGT	1
49	AN 23.6, 23.7	Describe the splanchnic nerves, Mention the extent, relations and applied anatomy of lymphatic duct	LGT	1
50	AN 24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	LGT	1
51	AN 24.3	Describe a bronchopulmonary segment	LGT	1
52	AN 24.5, 24.6	Mention the blood supply, lymphatic drainage and nerve supply of lungs, Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	LGT	1
53	AN 25.2	Describe development of pleura, lung & heart	LGT	3
54	AN 25.3	Describe fetal circulation and changes occurring at birth	LGT	1
55	AN 25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	LGT	1

56	AN 25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	LGT	1
57	AN 25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	LGT	1
		<b>HEAD &amp; NECK</b>		
58	AN 26.6	Explain the concept of bones that ossify in membrane	LGT	1
59	AN 26.4, 26.5	Describe morphological features of mandible, Describe features of typical and atypical cervical vertebrae (atlas and axis)	LGT	1
60	AN 27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	LGT	1
61	AN 27.2	Describe emissary veins with its role in spread of infection from extracranial route to intracranial venous sinuses	LGT	1
62	AN 28.2	Describe sensory innervation of face	LGT	1
63	AN 28.4, 28.5	Describe & demonstrate branches of facial nerve with distribution, Describe cervical lymph nodes and lymphatic drainage of head, face and neck	LGT	1
64	AN 28.7	Explain the anatomical basis of facial nerve palsy	LGT	1
65	AN 28.8	Explain surgical importance of deep facial vein	LGT	1
66	AN 28.9, 28.10	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance, Explain the anatomical basis of Frey's syndrome	LGT	1
67	AN 29.2	Explain anatomical basis of Erb's & Klumpke's palsy	LGT	1
68	AN 29.3	Explain anatomical basis of wry neck	LGT	1
69	AN 30.3, 30.4	Describe & identify dural folds & dural venous sinuses, Describe clinical importance of dural venous sinuses	LGT	1
70	AN 30.5	Explain effect of pituitary tumours on visual pathway	LGT	1
71	AN 31.1, 31.2	Describe & identify extra ocular muscles of eyeball, Describe & demonstrate nerves and vessels in the orbit	LGT	1
72	AN 31.3, 31.4, 31.5	Describe anatomical basis of Horner's syndrome, Enumerate components of lacrimal apparatus, Explain the anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus	LGT	1
73	AN 32.1, 32.2	Describe boundaries and subdivisions of anterior triangle, Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	LGT	1
74	AN 33.2, 33.3, 33.5	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication, Describe & demonstrate articulating surface, type & movements of temporomandibular joint, Describe the features of dislocation of temporomandibular joint	LGT	1
75	AN 33.4	Explain the clinical significance of pterygoid venous plexus	LGT	1
76	AN 34.2	Describe the basis of formation of submandibular stones	LGT	1
77	AN 35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	LGT	1
78	AN 35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	LGT	1

79	AN 35.3,35.4	Demonstrate & describe the origin, parts, course & branches subclavian artery, Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins	LGT	1
80	AN 35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes	LGT	1
81	AN 35.7	Describe the course and branches of IX, X, XI & XII nerve in the neck	LGT	1
82	AN 35.8	Describe the anatomically relevant clinical features of Thyroid swellings	LGT	1
83	AN 35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib	LGT	1
84	AN 35.10	Describe the fascial spaces of neck	LGT	1
85	AN 36.1	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate	LGT	1
86	AN 36.2,36.3, 36.5	Describe the components and functions of Waldeyer's lymphatic ring, Describe the boundaries and clinical significance of pyriform fossa, Describe the clinical significance of Killian's dehiscence	LGT	1
87	AN 36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	LGT	1
88	AN 37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	LGT	1
89	AN 37.2,37.3	Describe location and functional anatomy of paranasal sinuses, Describe anatomical basis of sinusitis & maxillary sinus tumours	LGT	1
90	AN 38.1,38.2, 38.3	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx, Describe the anatomical aspects of laryngitis, Describe anatomical basis of recurrent laryngeal nerve injury	LGT	1
91	AN 39.1,39.2	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue, Explain the anatomical basis of hypoglossal nerve palsy	LGT	1
92	AN 40.1	Describe & identify the parts, blood supply and nerve supply of external ear	LGT	1
93	AN 40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	LGT	1
94	AN 40.3,40.4, 40.5	Describe the features of internal ear, Explain anatomical basis of otitis externa and otitis media, Explain anatomical basis of myringotomy	LGT	1
95	AN 41.1	Describe & demonstrate parts and layers of eyeball	LGT	1
96	AN 41.2,41.3	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion, Describe the position, nerve supply and actions of intraocular muscles	LGT	1
97	AN 42.1	Describe the contents of the vertebral canal	LGT	1
98	AN 42.3	Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis	LGT	1
99	AN 43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	LGT	1

		<b>ABDOMEN &amp; PELVIS</b>		
100	AN 44.1,44.2	Describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen, Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall	LGT	1
101	AN 44.3	Describe the formation of rectus sheath and its contents	LGT	1
102	AN 44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	LGT	1
103	AN 44.5	Explain the anatomical basis of inguinal hernia.	LGT	1
104	AN 44.6,44.7	Describe & demonstrate attachments of muscles of anterior abdominal wall, Enumerate common Abdominal incisions	LGT	1
105	AN 45.1,45.2, 45.3	Describe Thoracolumbar fascia, Describe & demonstrate Lumbar plexus for its root value, formation & branches, Mention the major subgroups of back muscles, nerve supply and action	LGT	1
106	AN 46.1	Describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage & descent of testis with its applied anatomy	LGT	1
107	AN 46.2,46.3	Describe parts of Epididymis, Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)	LGT	1
108	AN 46.4,46.5	Explain the anatomical basis of Varicocoele, Explain the anatomical basis of Phimosi s & Circumcision	LGT	1
109	AN 47.1	Describe & identify boundaries and recesses of Lesser & Greater sac	LGT	1
110	AN 47.2	Name & identify various peritoneal folds & pouches with its explanation	LGT	1
111	AN 47.3,47.4	Explain anatomical basis of Ascites & Peritonitis, Explain anatomical basis of Subphrenic abscess	LGT	1
112	AN 47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	LGT	1
113	AN 47.6	Explain the anatomical basis of Splenic notch, Accessory spleens, Kehr's sign, Different types of vagotomy, Liver biopsy (site of needle puncture), Referred pain in cholecystitis, Obstructive jaundice, Referred pain around umbilicus, Radiating pain of kidney to groin & Lymphatic spread in carcinoma stomach	LGT	1
114	AN 47.7,47.8, 47.9	Mention the clinical importance of Calot's triangle, Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein, Describe & identify the origin, course, important relations and branches of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric & Common iliac artery	LGT	1
115	AN 47.10,47. 11	Enumerate the sites of portosystemic anastomosis, Explain the anatomic basis of hematemesis & caput medusae in portal hypertension	LGT	1
116	AN 47.12,47. 14	Describe important nerve plexuses of posterior abdominal wall, Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	LGT	1

117	AN 48.1	Describe & identify the muscles of Pelvic diaphragm	LGT	1
118	AN 48.2	Describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of) important male & female pelvic viscera	LGT	1
119	AN 48.3,48.4	Describe & demonstrate the origin, course, important relations and branches of internal iliac artery, Describe the branches of sacral plexus	LGT	1
120	AN 48.5	Explain the anatomical basis of suprapubic cystostomy, Urinary obstruction in benign prostatic hypertrophy, Retroverted uterus, Prolapse uterus, Internal and external haemorrhoids, Anal fistula, Vasectomy, Tubal pregnancy & Tubal ligation	LGT	3
121	AN 48.6,48.7	Describe the neurological basis of Automatic bladder ,Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	LGT	1
122	AN 48.8	Mention the structures palpable during vaginal & rectal examination	LGT	1
123	AN 49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	LGT	1
124	AN 49.2,49.3	Describe & identify Perineal body, Describe & demonstrate Perineal membrane in male & female	LGT	1
125	AN 49.4,49.5	Describe & demonstrate boundaries, content & applied anatomy of Ischioanal fossa, Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	LGT	1
126	AN 50.1	Describe the curvatures of the vertebral column	LGT	1
127	AN 50.2	Describe & demonstrate the type, articular ends, ligaments and movements of Intervertebral joints, Sacroiliac joints & Pubic symphysis	LGT	1
128	AN 50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	LGT	1
129	AN 50.4	Explain the anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	LGT	1
130	AN 55.1,55.2	Demonstrate the surface marking of; Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring , McBurney's point, Renal Angle & Murphy's point, Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery	LGT	1
131	AN 53.2,53.3, 53.4	Demonstrate the anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet, Define true pelvis and false pelvis and demonstrate sex determination in male & female bony pelvis, Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx)	LGT	1
132	AN 54.1,54.2	Describe & identify features of plain X ray abdomen, Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography)	LGT	1
133	AN 54.3	Describe role of ERCP, CT abdomen, MRI, Arteriography in radiodiagnosis of abdomen	LGT	1

<b>BRAIN &amp; SPINAL</b>				
<b>CORD</b>				
134	AN 56.1,56.2	Describe & identify various layers of meninges with its extent & modifications, Describe circulation of CSF with its applied anatomy	LGT	1
135	AN 57.2, 57.3,57.4, 57.5	Describe extent of spinal cord in child & adult with its clinical implication , Draw & label transverse section of spinal cord at mid-cervical & midthoracic level, Enumerate ascending & descending tracts at mid thoracic level of spinal cord, Describe anatomical basis of syringomyelia	LGT	2
136	AN 58.1, 58.2,58.3, 58.4	Identify external features of medulla oblongata , Describe transverse section of medulla oblongata at the level of 1) pyramidal decussation, 2) sensory decussation 3) ION, Enumerate cranial nerve nuclei in medulla oblongata with their functional group, Describe anatomical basis & effects of medial & lateral medullary syndrome	LGT	1
137	AN 59.1,59.2, 59.3	Identify external features of pons , Draw & label transverse section of pons at the upper and lower level , Enumerate cranial nerve nuclei in pons with their functional group	LGT	1
138	AN 60.1,60.2	Describe & demonstrate external & internal features of cerebellum, Describe connections of cerebellar cortex and intracerebellar nuclei	LGT	1
139	AN 60.3	Describe anatomical basis of cerebellar dysfunction	LGT	1
140	AN 61.1,61.2, 61.3	Identify external & internal features of midbrain , Describe internal features of midbrain at the level of superior & inferior colliculus, Describe anatomical basis & effects of Benedikt's and Weber's syndrome	LGT	1
141	AN 62.1	Enumerate cranial nerve nuclei with its functional component	LGT	1
142	AN 62.2,62.3, 62.4	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere, Describe the white matter of cerebrum, Enumerate parts & major connections of basal ganglia & limbic lobe,	LGT	1
143	AN 62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus	LGT	1
144	AN 62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	LGT	1
145	AN 63.1,63.2	Describe & demonstrate parts, boundaries & features of IIIrd, IVth & lateral ventricle, Describe anatomical basis of congenital hydrocephalus	LGT	1
<b>HISTOLOGY</b>				
146	AN 65.1,65.2	Identify epithelium under the microscope & describe the various types that correlate to its function, Describe the ultrastructure of epithelium	LGT	1
147	AN 66.1,66.2	Describe & identify various types of connective tissue with functional correlation, Describe the ultrastructure of connective tissue	LGT	1
148	AN 67.1,67.2, 67.3	Describe & identify various types of muscle under the microscope , Classify muscle and describe the structure-function correlation of the same, Describe the ultrastructure of muscular tissue	LGT	1
149	AN 68.1,68.2, 68.3	Describe & Identify multipolar & unipolar neuron, ganglia, peripheral nerve, Describe the structure-function correlation of neuron , Describe the ultrastructure of nervous tissue	LGT	1

150	AN 69.1,69.2, 69.3	Identify elastic & muscular blood vessels, capillaries under the microscope, Describe the various types and structure-function correlation of blood vessel, Describe the ultrastructure of blood vessels	LGT	1
151	AN 70.1,70.2	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini, Identify the lymphoid tissue under the microscope & describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the structure with function	LGT	1
152	AN 71.1,71.2	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same, Identify cartilage under the microscope & describe various types and structure-function correlation of the same	LGT	1
153	AN 72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	LGT	1
154	AN 64.1,64.2, 64.3	Describe & identify the microanatomical features of Spinal cord, Cerebellum & Cerebrum, Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum, Describe various types of open neural tube defects with its embryological basis	LGT	1
155	AN 52.1	Describe & identify the microanatomical features of Gastro-intestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	LGT	3
156	AN 52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis, Vas deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	LGT	3
157	AN 52.3	Describe & identify the microanatomical features of Cardiooesophageal junction, Corpus luteum	LGT	1
158	AN 43.2	Identify, describe and draw the microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina	LGT	1
159	AN 43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland	LGT	1
<b>GENETICS</b>				
160	AN 73.1	Describe the structure of chromosomes with classification	LGT	1
161	AN 73.2,73.3	Describe technique of karyotyping with its applications, Describe the Lyon's hypothesis	LGT	1
162	AN 74.1,74.2	Describe the various modes of inheritance with examples, Draw pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance	LGT	1
163	AN 74.3,74.4	Describe multifactorial inheritance with examples, Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia	LGT	1
164	AN 75.1,75.2	Describe the structural and numerical chromosomal aberrations, Explain the terms mosaics and chimeras with example	LGT	1
165	AN 75.3,75.4	Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome, Describe genetic basis of variation: polymorphism and mutation	LGT	1



166	AN 75.5	Describe the principles of genetic counselling	LGT	1
		<b>EMBRYOLOGY</b>		
167	AN 76.1,76.2	Describe the stages of human life, Explain the terms- phylogeny, ontogeny, trimester, viability	LGT	1
168	AN 77.1,77.2, 77.3	Describe the uterine changes occurring during the menstrual cycle, Describe the synchrony between the ovarian and menstrual cycles, Describe spermatogenesis and oogenesis along with diagrams	LGT	2
169	AN 77.4,77.5, 77.6	Describe the stages and consequences of fertilisation ,Enumerate and describe the anatomical principles underlying contraception, Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”.	LGT	1
170	AN 78.1,78.2, 78.3,78.4, 78.5	Describe cleavage and formation of blastocyst ,Describe the development of trophoblast ,Describe the process of implantation & common abnormal sites of implantation, Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate, Describe in brief abortion; decidual reaction, pregnancy test	LGT	2
171	AN 79.1,79.2, 79.3	Describe the formation & fate of the primitive streak ,Describe formation & fate of notochord, Describe the process of neurulation	LGT	1
172	AN 79.4,79.5	Describe the development of somites and intra-embryonic coelom , Explain embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects	LGT	1
173	AN 79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein	LGT	1
174	AN 80.1,80.2	Describe formation, functions & fate of-chorion: amnion; yolk sac; allantois & decidua, Describe formation & structure of umbilical cord	LGT	1
175	AN 80.3,80.4	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier, Describe embryological basis of twinning in monozygotic & dizygotic twins	LGT	1
176	AN 80.5,80.6, 80.7	Describe role of placental hormones in uterine growth & parturition, Explain embryological basis of estimation of fetal age, Describe various types of umbilical cord attachments	LGT	1
177	AN 81.1,81.2, 81.3	Describe various methods of prenatal diagnosis , Describe indications, process and disadvantages of amniocentesis, Describe indications, process and disadvantages of chorion villus biopsy	LGT	1
178	AN 64.2,64.3	Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum, Describe various types of open neural tube defects with its embryological basis	LGT	1
179	AN 52.4	Describe the development of anterior abdominal wall	LGT	1
180	AN 52.5	Describe the development and congenital anomalies of Diaphragm	LGT	1
181	AN 52.6	Describe the development and congenital anomalies of: Foregut, Midgut & Hindgut	LGT	3
182	AN 52.7	Describe the development of Urinary system	LGT	1
183	AN 52.8	Describe the development of male & female reproductive	LGT	1

		system		
184	AN 43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland & eye	LGT	5
185	AN 39.1	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	LGT	1
186	AN 25.2	Describe development of pleura, lung & heart	LGT	6
187	AN 25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	LGT	1
188	AN 25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	LGT	1
189	AN 25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	LGT	2
190	AN 20.10	Describe basic concept of development of lower limb	LGT	1
191	AN 13.8	Describe development of upper limb	LGT	1
192	AN 62.1	Enumerate cranial nerve nuclei with its functional component	LGT	6
		total		220

### Dissection & Practical

PRACTICAL					
Sl. No.	Topic Code	Topic	Method of Teaching	No of hours	Integration
		UPPER LIMB			
		FOREARM AND HAND			
1	AN 82.1	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue	group activity	2	AETCOM
2	AN 12.5	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	SGT	2	
3	AN 12.6,12.7	Describe & demonstrate movements of thumb and muscles involved, Identify & describe course and branches of important blood vessels and nerves in hand	SGT	2	
4	AN 12.9	Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	SGT	2	
5	AN 12.11,12.12	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions, Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	PRACTICAL,SGT	2	
6	AN 12.14,12.15	Identify & describe compartments deep to extensor retinaculum, Identify & describe extensor expansion formation	PRACTICAL,SGT	2	

7	AN 12.1,12.2	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions, Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm	PRACTICAL,SGT	2	
8	AN 12.3	Identify & describe flexor retinaculum with its attachments	PRACTICAL,SGT	2	
9	AN 29.1	Describe & demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	PRACTICAL	2	
10	AN 29.4	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2) scalenus anterior, 3) scalenus medius & 4) levator scapulae	PRACTICAL	2	
11	AN 9.1	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor	PRACTICAL	2	
12	AN 9.2	Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	PRACTICAL	2	
13	AN 10.1	Identify & describe boundaries and contents of axilla	PRACTICAL,SGT	2	
14	AN 10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein	PRACTICAL,SGT	1	
15	AN 10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus	PRACTICAL,SGT	2	
16	AN 10.4,10.5	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage, Explain variations in formation of brachial plexus	PRACTICAL	2	
17	AN 10.8,10.10, 10.11	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi, Describe and identify the deltoid and rotator cuff muscles, Describe & demonstrate attachment of serratus anterior with its action	PRACTICAL,SGT	2	
18	AN 10.12	Describe and demonstrate shoulder joint for- type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	PRACTICAL,SGT	2	ORTHOPEDICS
19	AN 11.1,11.2,1 1.3,11.4,11. 5	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii, Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm, Describe the anatomical basis of Venepuncture of cubital veins, Describe the anatomical basis of Saturday night	PRACTICAL,SGT	2	

		paralysis, Identify & describe boundaries and contents of cubital fossa			
20	AN 8.4	Demonstrate important muscle attachment on the given bone	PRACTICAL,SGT	2	
21	AN 8.5	Identify and name various bones in articulated hand, Specify the parts of metacarpals and phalanges and enumerate the peculiarities of pisiform	PRACTICAL,SGT	2	
22	AN 13.3	Identify & describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radio-ulnar joints, wrist joint & first carpometacarpal joint	PRACTICAL,SGT	2	
23	AN 13.5,13.6	Identify the bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand, Identify & demonstrate important bony landmarks of upper limb: Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, Inferior angle of the scapula	PRACTICAL,SGT	2	
24	AN 13.7	Identify & demonstrate surface projection of: Cephalic and basilic vein, Palpation of Brachial artery, Radial artery, Testing of muscles: Trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis	PRACTICAL,SGT	2	
		LOWER LIMB			
25	AN 19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	PRACTICAL,SGT	2	
26	AN 19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	PRACTICAL,SGT	2	
27	AN 15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	PRACTICAL,SGT	2	
28	AN 15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions	PRACTICAL,SGT	2	
29	AN 15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	PRACTICAL,SGT	2	
30	AN 15.5	Describe and demonstrate adductor canal with its content	PRACTICAL	2	
31	AN 16.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels	PRACTICAL	2	

		of gluteal region			
32	AN 16.4,16.5	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions, Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh	PRACTIC AL,SGT	2	
33	AN 16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa	PRACTIC AL,SGT	2	
34	AN 17.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint	PRACTIC AL,SGT	2	
35	AN 19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	PRACTIC AL,SGT	2	
36	AN 19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	PRACTIC AL,SGT	2	
37	AN 18.1	Describe and demonstrate major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions	PRACTIC AL,SGT	2	
38	AN 18.2	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior compartment of leg	PRACTIC AL,SGT	2	
39	AN 18.4	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint	PRACTIC AL,SGT	2	
40	AN 20.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of tibiofibular and ankle joint	PRACTIC AL,SGT	2	
41	AN 20.3	Describe and demonstrate Fascia lata, Venous drainage, Lymphatic drainage, Retinacula & Dermatomes of lower limb	PRACTIC AL,SGT	2	
42	AN 20.7	Identify & demonstrate important bony landmarks of lower limb: -Vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, -Tibial tuberosity, head of fibula, -Medial and lateral malleoli, Condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal, tuberosity of the navicular	PRACTIC AL,SGT	2	
43	AN 20.8	Identify & demonstrate palpation of femoral, popliteal, post tibial, anti tibial & dorsalis pedis blood vessels in a simulated environment	PRACTIC AL,SGT	2	

44	AN 20.9	Identify & demonstrate Palpation of vessels (femoral, popliteal,dorsalis pedis,post tibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins	PRACTIC AL,SGT	2	
45	AN 14.4	Identify and name various bones in the articulated foot with individual muscle attachment	PRACTIC AL,SGT	4	
		THORAX			
46	AN 21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet	PRACTIC AL,SGT	2	
47	AN 21.4	Describe & demonstrate extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles	PRACTIC AL,SGT	2	
48	AN 21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve	PRACTIC AL,SGT	2	
49	AN 21.6	Mention origin, course and branches/ tributaries of: 1) anterior & posterior intercostal vessels 2) internal thoracic vessels	PRACTIC AL	2	
50	AN 21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	PRACTIC AL,SGT	2	
51	AN 21.9	Describe & demonstrate mechanics and types of respiration	PRACTIC AL,SGT	2	PHYSIOLO GY
52	AN 21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	PRACTIC AL,SGT	4	
53	AN 23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply,lymphatic drainage and applied anatomy of oesophagus	PRACTIC AL,SGT	2	
54	AN 23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	PRACTIC AL	2	
55	AN 23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins	PRACTIC AL,SGT	2	
56	AN 23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	PRACTIC AL	2	
57	AN 23.5	Identify & Mention the location and extent of thoracic sympathetic chain	PRACTIC AL,SGT	2	
58	AN 24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	PRACTIC AL	2	
59	AN 24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	PRACTIC AL,SGT	2	
60	AN 24.4	Identify phrenic nerve & describe its formation & distribution	PRACTIC AL,SGT	2	

61	AN 22.1	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium	PRACTICAL,SGT	2	
62	AN 22.2	Describe & demonstrate external and internal features of each chamber of heart	PRACTICAL,SGT	2	PHYSIOLOGY
63	AN 22.3	Describe & demonstrate origin, course and branches of coronary arteries	PRACTICAL,SGT	2	PHYSIOLOGY
64	AN 22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	PRACTICAL,SGT	2	
65	AN 25.1	Identify, draw and label a slide of trachea and lung	PRACTICAL	2	
66	AN 25.7	Identify structures seen on a plain x-ray chest (PA view)	PRACTICAL	2	
67	AN 25.8	Identify and describe in brief a barium swallow	PRACTICAL	2	
68	AN 25.9	Demonstrate surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart borders, apex beat & surface projection of valves of heart	PRACTICAL	2	PHYSIOLOGY
		HEAD & NECK			
69	AN 27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	PRACTICAL	4	
70	AN 28.1	Describe & demonstrate muscles of facial expression and their nerve supply	PRACTICAL,SGT	2	
71	AN 28.2	Describe sensory innervation of face	PRACTICAL	2	
72	AN 28.3,28.4	Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels,Describe & demonstrate branches of facial nerve with distribution	PRACTICAL,SGT	2	
73	AN 28.6	Identify superficial muscles of face, their nerve supply and actions	PRACTICAL,SGT	2	
74	AN 28.9	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance	PRACTICAL,SGT	2	
75	AN 42.2	Describe & demonstrate the boundaries and contents of Suboccipital triangle	PRACTICAL,SGT	2	
76	AN 30.1	Describe the cranial fossae & identify related structures	PRACTICAL,SGT	2	
77	AN 30.2	Describe & identify major foramina with structures passing through them	PRACTICAL,SGT	2	
78	AN 30.3	Describe & identify dural folds & dural venous sinuses	PRACTICAL,SGT	2	
79	AN 31.1	Describe & identify extra ocular muscles of eyeball	PRACTICAL,SGT	2	
80	AN 31.2	Describe & demonstrate nerves and vessels in the orbit	PRACTICAL,SGT	2	

81	AN 32.1	Describe boundaries and subdivisions of anterior triangle	PRACTIC AL,SGT	2	
82	AN 32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	PRACTIC AL,SGT	2	
83	AN 33.1	Describe & demonstrate extent, boundaries and contents of temporal and infratemporal fossae	PRACTIC AL,SGT	2	
84	AN 33.2	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication	PRACTIC AL,SGT	2	
85	AN 33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint	PRACTIC AL,SGT	2	
86	AN 34.1	Describe & demonstrate the morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion	PRACTIC AL,SGT	4	
87	AN 35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	PRACTIC AL,SGT	2	
88	AN 35.3	Demonstrate & describe the origin, parts, course & branches subclavian artery	PRACTIC AL,SGT	2	
89	AN 35.4	Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins	PRACTIC AL,SGT	2	
90	AN 35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes	PRACTIC AL,SGT	2	
91	AN 35.6	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain	PRACTIC AL,SGT	2	
92	AN 36.1	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate	PRACTIC AL,SGT	2	
93	AN 36.2,36.3,36.5	Describe the components and functions of Waldeyer's lymphatic ring, Describe the boundaries and clinical significance of pyriform fossa, Describe the clinical significance of Killian's dehiscence	PRACTIC AL,SGT	2	
94	AN 36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	PRACTIC AL,SGT	2	
95	AN 37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	PRACTIC AL,SGT	4	
96	AN 38.1	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	PRACTIC AL,SGT	2	
97	AN 39.1	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	PRACTIC AL,SGT	2	



98	AN 40.1	Describe & identify the parts, blood supply and nerve supply of external ear	PRACTIC AL,SGT	2	
99	AN 40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	PRACTIC AL,SGT	2	
100	AN 41.1	Describe & demonstrate parts and layers of eyeball	PRACTIC AL,SGT	2	
101	AN 26.1,26.2,2 6.3	Demonstrate anatomical position of skull, Identify and locate individual skull bones in skull, Describe the features of norma frontalis, verticalis, occipitalis, lateralis and basalis, Describe cranial cavity, its subdivisions, foramina and structures passing through them	PRACTIC AL,SGT	4	
102	AN 26.4	Describe morphological features of mandible	PRACTIC AL,SGT	2	
103	AN 26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)	PRACTIC AL,SGT	2	
104	AN 26.7	Describe the features of the 7th cervical vertebra	PRACTIC AL,SGT	2	
105	AN 43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	PRACTIC AL,SGT	2	
106	AN 43.5	Demonstrate- 1) Testing of muscles of facial expression, extraocular muscles, muscles of mastication, 2) Palpation of carotid arteries, facial artery, superficial temporal artery, 3) Location of internal and external jugular veins, 4) Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	PRACTIC AL,SGT	2	
107	AN 43.7	Identify the anatomical structures in 1) Plain x-ray skull, 2) AP view and lateral view 3) Plain x-ray cervical spine-AP and lateral view 4) Plain x-ray of paranasal sinuses	PRACTIC AL,SGT	2	
108	AN 43.8,43.9	Describe the anatomical route used for carotid angiogram and vertebral angiogram, Identify anatomical structures in carotid angiogram and vertebral angiogram	PRACTIC AL,SGT	2	
ABDOMEN & PELVIS					
109	AN 44.1	Describe & demonstrate the Planes (transpyloric, transtuberular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen	PRACTIC AL,SGT	4	
110	AN 44.2	Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall	PRACTIC AL,SGT	2	
111	AN 44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle	PRACTIC AL,SGT	4	
112	AN 44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall	PRACTIC AL,SGT	4	

113	AN 49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	PRACTIC AL,SGT	4	
114	AN 49.2	Describe & identify Perineal body	PRACTIC AL,SGT	2	
115	AN 49.3	Describe & demonstrate Perineal membrane in male & female	PRACTIC AL,SGT	2	
116	AN 49.4	Describe & demonstrate boundaries, content & applied anatomy of Ischiorectal fossa	PRACTIC AL,SGT	4	
117	AN 46.1	Describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage & descent of testis with its applied anatomy	PRACTIC AL,SGT	2	
118	AN 46.2,46.3	Describe parts of Epididymis ,Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)	PRACTIC AL,SGT	4	
119	AN 47.1	Describe & identify boundaries and recesses of Lesser & Greater sac	PRACTIC AL,SGT	4	
120	AN 47.2	Name & identify various peritoneal folds & pouches with its explanation	PRACTIC AL,SGT	4	
121	AN 47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	PRACTIC AL,SGT	4	
122	AN 47.8	Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein	PRACTIC AL,SGT	2	
123	AN 47.9	Describe & identify the origin, course, important relations and branches of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric & Common iliac artery	PRACTIC AL,SGT	4	
124	AN 47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	PRACTIC AL,SGT	4	
125	AN 48.1	Describe & identify the muscles of Pelvic diaphragm	PRACTIC AL,SGT	4	
126	AN 48.2	Describe & demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of) important male & female pelvic viscera	PRACTIC AL,SGT	4	
127	AN 48.3	Describe & demonstrate the origin, course, important relations and branches of internal iliac artery	PRACTIC AL,SGT	4	
128	AN 50.2	Describe & demonstrate the type, articular ends, ligaments and movements of Intervertebral joints, Sacroiliac joints & Pubic symphysis	PRACTIC AL,SGT	4	

129	AN 51.1	Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)	PRACTIC AL,SGT	4	
130	AN 51.2	Describe & identify the midsagittal section of male and female pelvis	PRACTIC AL,SGT	6	
131	AN 52.1	Describe & identify the microanatomical features of Gastro-intestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	PRACTIC AL	4	
132	AN 52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis, Vas deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	PRACTIC AL	4	
133	AN 52.7	Describe the development of Urinary system	PRACTIC AL	4	
134	AN 52.8	Describe the development of male & female reproductive system	PRACTIC AL	4	
135	AN 53.2	Demonstrate the anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet	PRACTIC AL	4	
136	AN 53.1,53.4	Identify & hold the bone in the anatomical position, Describe the salient features, articulations & demonstrate the attachments of muscle groups, Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx)	PRACTIC AL	4	
137	AN 54.2	Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography)	PRACTIC AL	2	
138	AN 55.1	Demonstrate the surface marking of; Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring, McBurney's point, Renal Angle & Murphy's point	PRACTIC AL	2	
139	AN 55.2	Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery	PRACTIC AL,SGT	2	
140	AN 45.2	Describe & demonstrate Lumbar plexus for its root value, formation & branches	PRACTIC AL,SGT	4	
		BRAIN & SPINAL CORD			
141	AN 56.1	Describe & identify various layers of meninges with its extent & modifications	PRACTIC AL,SGT	4	
142	AN 57.1	Identify external features of spinal cord	PRACTIC AL,SGT	2	

143	AN 58.1	Identify external features of medulla oblongata	PRACTICAL,SGT	2	
144	AN 59.1	Identify external features of pons	PRACTICAL,SGT	2	
145	AN 60.1	Describe & demonstrate external & internal features of cerebellum	PRACTICAL,SGT	4	
146	AN 61.1	Identify external & internal features of midbrain	PRACTICAL,SGT	2	
147	AN 62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	PRACTICAL,SGT	4	
148	AN 62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	PRACTICAL,SGT	4	
149	AN 62.3,63.4,63.5	Describe the white matter of cerebrum,Enumerate parts & major connections of basal ganglia & limbic lobe,Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus	PRACTICAL,SGT	4	
150	AN 63.1	Describe & demonstrate parts, boundaries & features of IIIrd, IVth & lateral ventricle	PRACTICAL,SGT	2	
		HISTOLOGY			
151	AN 65.1	Identify epithelium under the microscope & describe the various types that correlate to its function	PRACTICAL,SGT	4	
152	AN 65.2	Describe the ultrastructure of epithelium	PRACTICAL	4	
153	AN 66.1	Describe & identify various types of connective tissue with functional correlation	PRACTICAL	2	PHYSIOLOGY
154	AN 66.2	Describe the ultrastructure of connective tissue	PRACTICAL	2	
155	AN 67.1	Describe & identify various types of muscle under the microscope	PRACTICAL	2	
156	AN 67.2,67.3	Classify muscle and describe the structure-function correlation of the same,Describe the ultrastructure of muscular tissue	PRACTICAL	2	PHYSIOLOGY
157	AN 68.1,68.2,68.3	Describe & Identify multipolar & unipolar neuron, ganglia, peripheral nerve,Describe the structure-function correlation of neuron,Describe the ultrastructure of nervous tissue	PRACTICAL	4	PHYSIOLOGY
158	AN 69.1,69.2,69.3	Identify elastic & muscular blood vessels, capillaries under the microscope,Describe the various types and structure-function correlation of blood vessel,Describe the ultrastructure of blood vessels	PRACTICAL	4	
159	AN 70.1,70.2	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini,Identify the lymphoid tissue under the microscope & describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the	PRACTICAL	2	

		structure with function			
160	AN 71.1,71.2	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same, Identify cartilage under the microscope & describe various types and structure- function correlation of the same	PRACTIC AL	2	
161	AN 72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	PRACTIC AL	2	
162	AN 64.1	Describe & identify the microanatomical features of Spinal cord, Cerebellum & Cerebrum	PRACTIC AL	2	
163	AN 52.1	Describe & identify the microanatomical features of Gastro-intestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	PRACTIC AL	4	
164	AN 52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis, Vas deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	PRACTIC AL	4	
165	AN 52.3	Describe & identify the microanatomical features of Cardiooesophageal junction, Corpus luteum	PRACTIC AL	2	
166	AN 43.2,43.3	Identify, describe and draw the microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina, Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland	PRACTIC AL	2	

### **ECE(EARLY CLINICALEXPOSURE)**

<b>Sl. No.</b>	<b>Topic Code</b>	<b>TOPIC</b>	<b>Method of Teaching</b>	<b>No of hours</b>	<b>Correl ation</b>
1	AN 10.2,10.5, 10.6,9.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein, Explain variations in formation of brachial plexus , Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis, Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage,	LGT,DOAP SESSION	3	Surgery

		microanatomy and applied anatomy of breast			
2	AN 10.12,13.3	Describe and demonstrate shoulder joint for– type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy, Identify & describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radio-ulnar joints, wrist joint & first carpometacarpal joint	LGT,DOAP SESSION	3	Orthopaedics
3	AN 24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	LGT,DOAP SESSION	3	Pulmonary medicine
4	AN 35.2,35.8	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland, Describe the anatomically relevant clinical features of Thyroid swellings	LGT,DOAP SESSION, SGT	3	Surgery
5	AN 37.2,37.3	Describe location and functional anatomy of paranasal sinuses, Describe anatomical basis of sinusitis & maxillary sinus tumours	LGT	3	ENT
6	AN 15.4	Explain anatomical basis of Psoas abscess & Femoral hernia	LGT,DOAP SESSION	3	Surgery
7	AN 17.1,17.2, 17.3	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint , Describe anatomical basis of complications of fracture neck of femur , Describe dislocation of hip joint and surgical hip replacement	LGT,DOAP SESSION, SGT	3	Orthopaedics
8	AN 49.5	Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	LGT	3	O & G
9	AN 25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	LGT	3	Paediatric
10	AN 44.4,44.5	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle, Explain the anatomical basis of inguinal hernia	LGT	3	Surgery

### SDL (SELF DIRECTED LEARNING)

To be assessed by seminars, tutorial, projects, quizzes

Sl. No.	Topic Code	TOPIC	Mode of Learning (Project/ Quiz/Seminar)	No of Hours
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1	AN 11.1,11.2,11.4	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii, Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm, Describe the anatomical basis of Saturday night paralysis	SDL/ SEMINAR	2
2	AN 13.5,13.8	Identify the bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand, Describe development of upper limb	SDL/ SEMINAR/QUIZ	2
3	AN 25.4,25.6	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula ,Mention development of aortic arch arteries, SVC, IVC and coronary sinus	SDL/ SEMINAR	2
4	AN 42.1	Describe the contents of the vertebral canal	SDL/ SEMINAR/QUIZ	2
5	AN 47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	SDL/SGT/DOAP SESSION/QUIZ	2
6	AN 49.1,49.3	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents), Describe & demonstrate Perineal membrane in male & female	SDL/SEMINAR/Q UIZ	2
7	AN 52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis, Vas deferens, Prostate & penis Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	SEMINAR/QUIZ	2
8	AN 52.7	Describe the development of Urinary system	SDL/SEMINAR/Q UIZ	2
9	AN 59.1,59.3	Identify external features of pons ,Enumerate cranial nerve nuclei in pons with their functional group	SDL/ DOAP/QUIZ	2
10	AN 28.2,28.3	Describe sensory innervation of face , Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels	SDL/ DOAP/QUIZ	2
11	AN 62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	SDL	2
12	AN 53.1,53.4	Identify & hold the bone in the anatomical position, Describe the salient features, articulations & demonstrate the attachments of muscle groups, Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx)	SDL/ DOAP/QUIZ	2
13	AN 57.4,57.5	Enumerate ascending & descending tracts at mid thoracic level of spinal cord, Describe anatomical basis of syringomyelia	SDL/SEMINAR/Q UIZ	2

14	AN 65.1,65.2	Identify epithelium under the microscope & describe the various types that correlate to its function,Describe the ultrastructure of epithelium	SEMINAR/QUIZ	2
15	AN 3.2,3.3	Enumerate parts of skeletal muscle and differentiate between tendons and aponeuroses with examples,Explain Shunt and spurt muscles	SDL/QUIZ	2
16	AN 12.5,12.10	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved,Explain infection of fascial spaces of palm	SDL/QUIZ	2
17	AN 19.5	Describe factors maintaining importance arches of the foot with its importance	SEMINAR/QUIZ	2
18	AN 22.3	Describe & demonstrate origin, course and branches of coronary arteries	SEMINAR/QUIZ	2
19	AN 21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	SEMINAR/QUIZ	2
20	AN 80.2,80.3,80.4	Describe formation & structure of umbilical cord, Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier,Describe embryological basis of twinning in monozygotic & dizygotic twins	SDL/SEMINAR/QUIZ	2

### (Museum Session)

Sl. No	Name of Competency	Method of teaching	Hour
1	AN 22.2Heart	Small group teaching	1hr
2	AN 24.2Lungs		1hr
3	AN 51.1Cross section at the level of T8,T10 & L1		1hr
4	AN 51.2Midsagittal section of male & female pelvis,Midsagittal section of head & neck		1hr
5	AN 75.1Genetics charts of Turner's, klinefelter's & Down syndrome		1hr
6	AN 78.1,79.1,80.1,80.2General embryology models		1hr
7	AN 43.4,52.1,52.2,52.6Systemic embryology models		1hr



**MODEL QUESTION PAPER**  
**1<sup>ST</sup> PROFESSIONAL M.B.B.S UNIVERSITY EXAMINATION 2020 ON WARDS**

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**ANATOMY: Paper I**

**FULL MARKS- 100**

**TIME- 3 HRS**

**(Draw diagrams wherever necessary)**

**SECTION – A [50 marks]**

**1) Describe the shoulder joint under the following headings. (2+2+2+4=10)**

- a) Articulating ends.
- b) Ligaments.
- c) Blood supply and nerve supply.
- d) Movements and muscle producing the movements. Add a note on the applied anatomy.

**2. Answer the questions after reading the clinical scenario. (2\*5=10)**

- a) A baby boy was delivered in the hospital by an Obstetrician by forceps, on examination, the pediatrician found that baby's right arm was medially rotated and adducted while his fore arm was extended and pronated.
  - (i) the position of the limb is characteristic of which clinical condition
  - (ii) Name the site at the lesion and causes that produce this condition
  
- b) A 30 year old female attended the hospital with complain of savior pain on right side of her chest for last 2 weeks and has difficulty in breathing. She also complained the pain was radiating to the anterior abdominal wall.
  - (i) What is pleural cavity and pleura effusion?
  - (ii) What is anatomical basis of radiation of pain to the anterior abdominal wall?

**2. Write notes on. (4\*5=20)**

- a) Chorion
- b) Axiliary groups of lymph node.
- c) Histology of the spleen.
- d) Coronary sinus.

**4. Answer briefly (5\*2=10)**

- a) Name the openings in the right atrium of heart.
- b) What are the structures passing through quadrangular space?
- c) Structure passing superficial to flexor retina culum?
- d) What are the sources of development of the inter atria septum?
- e) Name the nerves supplying the diaphragmatic pleura.

**SECTION – B [FULL MARKS – 50]**

- 5. Describe the lateral wall of the nose under the following headings.** **(4+3+3=10)**
- a) External features.
  - b) Blood supply and nerve supply.
  - c) Applied anatomy.
- 6). Describe the internal capsule under the following headings.** **(2.5+2.5+2.5+2.5=10)**
- a) Parts.
  - b) Fibers passing.
  - c) Blood supply.
  - d) Applied anatomy.
- 7. Write short note on.** **(4\*5=20)**
- a) Histology of thyroid gland.
  - b) Posterior horn of lateral ventricle.
  - c) Auditory tube.
  - d) Inferior cerebellar peduncle.
- 8. Give anatomical reasons.** **(5\*2=10)**
- a) Inflammation of parotid gland is painful.
  - b) Horner's syndrome leads to ptosis and constriction of pupil.
  - c) Syringing of ear may lead to cardiac arrest.
  - d) Black eye.
  - e) Maxillary sinus is the most commonly infected paranasal air sinus.

**MODEL QUESTION PAPER**  
**1<sup>ST</sup> PROFESSIONAL M.B.B.S. UNIVERSITY EXAMINATION 2020 ON WARDS**

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**ANATOMY: Paper II**

**FULLMARKS -100**

**TIME – 3HRS**

**(Draw diagrams wherever necessary)**

**SECTION –A [50 marks]**

**1. Describe adductor canal under the following headings. (4+3+3=10)**

- a) Extent and boundries.
- b) Contents.
- c) Applied anatomy.

**2. Give anatomical reasons: (2\*5=10)**

- a) Club foot.
- b) Medial meniscus is commonly injured than lateral meniscus.
- c) Metaphysis is the common site for osteomyelitis in children.
- d) Upper and outer quadrant of the gluteal region is suitable for intramuscular injection.
- e) In leprosy neck of fibula is palpable.

**3. Write short notes on (4\*5=20)**

- a) Sensory innervations of dorsum of foot.
- b) Femoral sheath.
- c) Downs syndrome.
- d) Epiphysis.

**4. Answer briefly: (5\*2=10)**

- a) Give two example of saddle type of synovial joint.
- b) Name the small lateral rotators of hip joint.
- c) Enumerate of superficial branches of femoral artery.
- d) Evertors of foot.
- e) Sites of attachment of anterior cruciate ligament.

**SECTION –B [50 MARKS]**

**5. Describe uterus under the following headings. (1+2+4+3=10)**

- a) Parts of uterus.
- b) Arterial supply.
- c) Supports of the uterus. Add a note on the applied anatomy.
- d) Development.

**6. Describe second part of the duodenum under following headings. (2+3+5+5=10)**

- a) Parts & relations.
- b) Blood supply.
- c) Development.
- d) Histology.

**6. Write short notes on.**

**(4\*5=20)**

- a) Portocaval anastomosis.
- b) Ischiorectal fossa.
- c) Epiploic foramen.
- d) Meckel's diverticulum.

**8. Answer the question after reading the clinical scenario.**

**(2\*5=10)**

- a) A twelve year old boy was brought to the casualty for pain in abdomen, fever and vomiting. The boy told the surgeon that initially the pain was in umbilical region and now he is having pain in right iliac fossa.
  - (i) Which region/ organ is involved?
  - (ii) Why was the pain initially in umbilical region and then the pain was felt in right iliac fossa?
  
- b) A 30 year old female during her pregnancy noted blue tubular structures over her calf and thigh. These get prominent after standing for a long time.
  - (i) What are these blue tubular structures?
  - (ii) Why do these develop in lower limbs only?

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**REFERENCES BOOK:**

- 1. Gray's Anatomy 41<sup>st</sup> ed
- 2. Grant's dissector 16<sup>th</sup> ed
- 3. G.J Romanes Vol-1,2,3( Head ,Neck & brain, Upper limb, Lower limb, Thorax & Abdomen 16<sup>th</sup> ed)
- 4. Keith L. Moore & Others – Essential of clinical Anatomy 5<sup>th</sup> ed
- 5. Inderbir Singh- Text book of Anatomy with colour atlas 4<sup>th</sup> ed
- 6. Anne M. R. Agur & other- Grant's atlas of Anatomy 14<sup>th</sup> ed
- 7. T.W. Sadler- Langman's medical embryology 13<sup>th</sup> ed
- 8. SD Gangane- Human genetics 5<sup>th</sup> ed
- 9. Victor P. Eroschenko- Difiore's atlas of histology 13<sup>th</sup> ed
- 10. Vishram Singh 3<sup>rd</sup> ed- Vol.1,2,3
- 11. Inderbir Singh- Text book of human osteology
- 12. Anne M.R. Agur – Grant's atlas of Anatomy
- 13. Neelam Vasudeva- Inderbir Singh's textbook of human histology
- 14. A. K. Dutta- Essentials of human Anatomy Vol-1,2,3,4
- 15. A.K. Datta- Human embryology
- 16. BD Chaurasia- Vol 1,2,3,4

## IV:Physiology

(c) **Competencies:** The undergraduates must demonstrate:

1. Understanding of the normal functioning of the organs and organ systems of the body,
2. Comprehension of the normal structure and organization of the organs and systems on basis of the functions,
3. Understanding of age-related physiological changes in the organ functions that reflect normal growth and development.
4. Understand the physiological basis of diseases.

(d) **Integration:** The teaching should be aligned and integrated horizontally and vertically in organ systems in order to provide a context in which normal function can be correlated both with structure and with the biological basis, its clinical features, diagnosis and therapy.

### Duration

<b>Duration 13 months</b>	<b>LGT</b>				<b>SDL</b>	<b>ECE</b>	<b>AETCOM</b>
		<b>SGT</b>					
	160hrs	310hrs			25hrs	30 hrs	10 hrs

### ASSESSMENT

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical/Spotting	Viva	Theory	Practical + Viva
Theory=200 Practical =100	Paper 1=100 Paper 2=100	Practical Long experimentX2=30 Practical short experimentX2=10 Spotter=10 Record+ LogBook=10	30(15+15) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

### Scheme of Internal assessment

Timing	Month	Theory	Practical &Viva
1 <sup>st</sup> Professional Year	December	100	100
	April	100	100
	July	100	100

### Course Content

Paper I	Paper II
General OPhysiology, Haematology, ANS& Nerve Muscle Physiology, Gastrointestinal Physiology, Cardiovascular Ohysiology, Respiratory Physiology	Renal Physiuiology, Endocronilogy, Reproductive Physiology, Neurophysiology, Speical Sense, Skin & Temperature regulation

Department of Physiology, BBMCH, Balangir

Large Group Teaching (LGT) including Early Clinical Exposure (ECE), Self-directed learning (SDL), and Linkers

Theory: 160, ECE: 10, SDL: 12, LINKER: 3

Com. No.	Type of teaching	Topics
<b>GENERAL PHYSIOLOGY (15)</b>		
PY0.0	LGT	Interaction and introduction with students
PY1.0	LGT	Introduction to physiology
PY1.1	LGT	Describe the structure and functions of a mammalian cell
PY1.2	LGT	Describe and discuss the principles of homeostasis
PY1.3	LGT	Describe intercellular communication
PY1.4	LGT	Describe apoptosis – programmed cell death
PY1.5.1	LGT	Describe and discuss transport mechanisms across cell membranes -1
PY1.5.2	LGT	Describe and discuss transport mechanisms across cell membranes -2
PY1.6	LGT	Describe the fluid compartments of the body, its ionic composition & measurements
PY1.7.1	LGT	Describe the concept of pH & Buffer systems in the body
PY1.7.2	LGT	Buffer systems in the body and acid base disorders
PY1.8.1	LGT	Describe and discuss the molecular basis of resting membrane potential and action potential in excitable tissue
PY1.8.2	LGT	Physiological basis of Edema
PY1.8.3	LGT	Edema in different diseases
PY1.9	LGT	Demonstrate the ability to describe and discuss the methods used to demonstrate the functions of the cells and its products, its communications and their applications in Clinical care and research
PY1.4	SDL	Apoptosis in health and disease
<b>HEMATOLOGY (14)</b>		
PY2.1	LGT	Describe the composition and functions of blood components
PY2.2	LGT	Discuss the origin, forms, variations and functions of plasma proteins
PY2.3.1	LGT	Describe and discuss the synthesis and functions of Haemoglobin and explain its breakdown.
PY2.3.2	LGT	Describe physiological and pathological variants of haemoglobin.
PY2.4	LGT	Describe RBC formation (erythropoiesis & its regulation) and its functions
PY2.5	LGT	Describe different types of anaemias and Blood indices
PY2.6	LGT	Describe WBC formation (granulopoiesis) and its regulation
PY2.7	LGT	Describe the formation of platelets, functions and variations
PY2.8.1	LGT	Describe the physiological basis of hemostasis and, anticoagulants.
PY2.8.2	LGT	Describe bleeding & clotting disorders (Hemophilia, purpura)
PY2.9	LGT	Describe different blood groups and discuss the clinical importance of blood grouping, blood banking and transfusion
PY2.10.1	LGT	Define and classify different types of immunity. Describe the development of immunity and its regulation
PY2.10.2	LGT	B-cell mediated immunity
PY2.10.3	LGT	T-cell mediated immunity
PY2.4 & 2.5	ECE	Anaemia
PY2.5	SDL	Nutritional anemia
<b>NERVE MUSCLE (16)</b>		
PY3.1	LGT	Describe the structure and functions of a neuron and neuroglia; Discuss Nerve Growth Factor & other growth factors/cytokines
PY3.2.1	LGT	Describe the types, functions & properties of nerve fibers

PY3.2.2	LGT	Properties of nerve fibers and action potential
PY3.3	LGT	Describe the degeneration and regeneration in peripheral nerves
PY3.4	LGT	Describe the structure of neuro-muscular junction and transmission of impulses
PY3.5	LGT	Discuss the action of neuro-muscular blocking agents
PY3.6	LGT	Describe the pathophysiology of Myasthenia gravis
PY3.7	LGT	Describe the different types of muscle fibres and their structure
PY3.8	LGT	Describe action potential and its properties in different muscle types (skeletal & smooth)
PY3.9	LGT	Describe the molecular basis of muscle contraction in skeletal and in smooth muscles
PY3.10.1	LGT	Describe the mode of muscle contraction (isometric and isotonic) -1
PY3.10.2	LGT	Describe the mode of muscle contraction (isometric and isotonic) - 2
PY3.11	LGT	Explain energy source and muscle metabolism
PY3.12	LGT	Explain the gradation of muscular activity
PY3.13	LGT	Describe muscular dystrophy: myopathies
PY3.17	LGT	Describe Strength-duration curve
PY3.4,P Y3.5 PY3.6	<b>ECE</b>	Myasthenia gravis, Neuromuscular blockers, Muscular dystrophy, Myopathies
PY3.7	<b>SDL</b>	Muscle fibres and their structure
<b>GASTROINTESTINAL SYSTEM (12)</b>		
PY4.1	LGT	Describe the structure and functions of digestive system
PY4.2	LGT	Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal juices and bile secretion
PY4.3	LGT	Describe GIT movements, regulation and functions. Describe defecation reflex. Explain role of dietary fibre.
PY4.4.1	LGT	Describe the physiology of digestion and absorption of protein
PY4.4.2	LGT	Describe the physiology of digestion and absorption of carbohydrate
PY4.4.3	LGT	Describe the physiology of digestion and absorption of fat
PY4.5	LGT	Describe the source of GIT hormones, their regulation and functions
PY4.6	LGT	Describe the Gut-Brain Axis
PY4.7.1	LGT	Describe & discuss the structure and functions of liver and gall bladder
PY4.7.2	LGT	Liver function tests, Bile formation, Jaundice
PY4.8	LGT	Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests
PY4.9	LGT	Discuss the physiology aspects of: peptic ulcer, gastroesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease
PY4.2 PY4.8 PY4.9	<b>ECE</b>	GI function tests including ulcer, CA, X-ray, Endoscopy
PY4.9	<b>SDL</b>	Acid peptic disorders
<b>CARDIOVASCULAR PHYSIOLOGY (18)</b>		
PY5.1	LGT	Describe the functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.
PY5.2	LGT	Describe the properties of cardiac muscle including its morphology, electrical, mechanical and metabolic functions
PY5.3.1	LGT	Discuss the events occurring during the cardiac cycle -1
PY5.3.2	LGT	Discuss the events occurring during the cardiac cycle – 2
PY5.4.1	LGT	Describe generation, conduction of cardiac impulse – 1
PY5.4.2	LGT	Describe generation, conduction of cardiac impulse – 2
PY5.4.3	LGT	Cardiac output -1
PY5.4.4	LGT	Cardiac output - 2
PY5.4.5	LGT	Description and interpretation of Amphibian cardiac graphs

PY5.5	LGT	Describe the physiology of electrocardiogram (E.C.G), its applications and the cardiac axis
PY5.6.1	LGT	Describe abnormal ECG, arrhythmias, heart block and myocardial infarction -1
PY5.6.2	LGT	Describe abnormal ECG, arrhythmias, heart block and myocardial infarction -2
PY5.6.3	LGT	Describe abnormal ECG, arrhythmias, heart block and myocardial infarction -3
PY5.7	LGT	Describe and discuss haemodynamics of circulatory system
PY5.8	LGT	Describe and discuss local and systemic cardiovascular regulatory mechanisms
PY5.9	LGT	Describe the factors affecting heart rate, regulation of cardiac output & blood pressure
PY5.10	LGT	Describe & discuss regional circulation including microcirculation, lymphatic circulation, coronary, cerebral, capillary, skin, foetal, pulmonary and splanchnic circulation
PY5.11	LGT	Describe the pathophysiology of shock, syncope and heart failure
PY5.5 PY5.6	<b>ECE</b>	Interpretation of normal and abnormal ECG in different cardiac abnormality
PY 5.6 and 5.9	<b>SDL</b>	Myocardial ischemia
<b>RESPIRATORY SYSTEM (10)</b>		
PY6.1	LGT	Introduction and functional anatomy of respiratory tract
PY6.2.1	LGT	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs -1
PY6.2.2	LGT	Describe the mechanics of normal respiration, pressure changes during ventilation, lung volume and capacities, alveolar surface tension, compliance, airway resistance, ventilation, V/P ratio, diffusion capacity of lungs -2
PY6.2.3	LGT	Pulmonary Circulation
PY6.3	LGT	Describe and discuss the transport of respiratory gases: Oxygen and Carbon dioxide
PY6.4	LGT	Describe and discuss the physiology of high altitude and deep sea diving
PY6.5	LGT	Describe and discuss the principles of artificial respiration, oxygen therapy, acclimatization and decompression sickness.
PY6.6	LGT	Describe and discuss the pathophysiology of dyspnoea, hypoxia, cyanosis asphyxia; drowning, periodic breathing
PY6.7.1	LGT	Describe and discuss lung function tests & their clinical significance -1
PY6.7.2	LGT	Describe and discuss lung function tests & their clinical significance -2
PY6.7 PY6.8	<b>ECE</b>	Pulmonary function tests and its interpretation in normal and disease condition
PY6.4 and 6.5	<b>SDL</b>	Respiratory changes in high altitude, deep sea diving
<b>RENAL PHYSIOLOGY (11)</b>		
PY7.1	LGT	Describe structure and function of kidney
PY7.2	LGT	Describe the structure and functions of juxta-glomerular apparatus and role of renin-angiotensin system
PY7.3.1	LGT	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism -1
PY7.3.2	LGT	Describe the mechanism of urine formation involving processes of filtration, tubular reabsorption & secretion; concentration and diluting mechanism -2



PY7.4	LGT	Describe & discuss the significance & implication of Renal clearance
PY7.5.1	LGT	Describe the renal regulation of fluid and electrolytes & acid-base balance - 1
PY7.5.2	LGT	Describe the renal regulation of fluid and electrolytes & acid-base balance - 2
PY7.6	LGT	Describe the innervations of urinary bladder, physiology of micturition and its abnormalities
PY7.7	LGT	Describe artificial kidney, dialysis and renal transplantation
PY7.8	LGT	Describe & discuss Renal Function Tests
PY7.9	LGT	Describe cystometry and discuss the normal cystometrogram
PY7.5 PY7.8 PY7.9	<b>ECE</b>	Renal diseases, tests, and basis of management
PY7.5 and 7.8	<b>SDL</b>	Acid-base abnormalities
<b>ENDOCRINE PHYSIOLOGY (11)</b>		
PY8.1	LGT	Describe the physiology of bone and calcium metabolism
PY8.2.1	LGT	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pituitary gland, thyroid gland
PY8.2.1	LGT	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of parathyroid gland and adrenal gland
PY8.2.1	LGT	Describe the synthesis, secretion, transport, physiological actions, regulation and effect of altered (hypo and hyper) secretion of pancreas and hypothalamus
PY8.3	LGT	Describe the physiology of Thymus & Pineal Gland
PY8.4.1	LGT	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas -1
PY8.4.2	LGT	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas -2
PY8.4.3	LGT	Describe function tests: Thyroid gland; Adrenal cortex, Adrenal medulla and pancreas -3
PY8.5.1	LGT	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome -1
PY8.5.2	LGT	Describe the metabolic and endocrine consequences of obesity & metabolic syndrome, Stress response. Outline the psychiatry component pertaining to metabolic syndrome - 2
PY8.6	LGT	Describe & differentiate the mechanism of action of steroid, protein and amine hormones
PY8.4 PY8.5	<b>ECE</b>	Endocrine diseases and basis of diagnosis and treatment
PY8.5	<b>SDL</b>	Obesity and its pathophysiology
<b>REPRODUCTIVE PHYSIOLOGY (13)</b>		
PY9.1	LGT	Describe and discuss sex determination; sex differentiation and their abnormalities and outline psychiatry and practical implication of sex determination.
PY9.2	LGT	Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.
PY9.3	LGT	Describe male reproductive system: functions of testis and control of spermatogenesis & factors modifying it and outline its association with psychiatric illness

PY9.4.1	LGT	Describe female reproductive system: functions of ovary and its control
PY9.4.2	LGT	Menstrual cycle - hormonal, uterine and ovarian changes
PY9.5	LGT	Describe and discuss the physiological effects of sex hormones
PY9.6	LGT	Enumerate the contraceptive methods for male and female. Discuss their advantages & disadvantages
PY9.7	LGT	Describe and discuss the effects of removal of gonads on physiological functions
PY9.8	LGT	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatry-disorders associated with it.
PY9.9	LGT	Interpret a normal semen analysis report including (a) sperm count, (b) sperm morphology and (c) sperm motility, as per WHO guidelines and discuss the results
PY9.10	LGT	Discuss the physiological basis of various pregnancy tests
PY9.11	LGT	Discuss the hormonal changes and their effects during perimenopause and menopause
PY9.12	LGT	Discuss the common causes of infertility in a couple and role of IVF in managing a case of infertility.
PY9.8 PY9.10	<b>ECE</b>	Pregnancy – normal, abnormal, basis of management
PY9.6	<b>SDL</b>	Contraceptives
<b>NERVOUS SYSTEM (26)</b>		
PY10.1.1	LGT	Describe and discuss the organization of nervous system- 1
PY10.1.2	LGT	Describe and discuss the organization of nervous system- 2
PY10.2.1	LGT	Describe and discuss the functions and properties of synapse, reflex, receptors -1
PY10.2.2	LGT	Describe and discuss the functions and properties of synapse, reflex, receptors -2
PY10.3	LGT	Describe and discuss somatic sensations & sensory tracts
PY10.4.1	LGT	Describe and discuss motor tracts
PY10.4.2	LGT	Mechanism of maintenance of tone, control of body movements, posture and equilibrium & vestibular apparatus
PY10.5.1	LGT	Describe and discuss structure and functions of reticular activating system
PY10.5.2	LGT	Autonomic nervous system (ANS) -1
PY10.5.3	LGT	Autonomic nervous system (ANS) -2
PY10.6	LGT	Describe and discuss Spinal cord, its functions, lesion & sensory disturbances
PY10.7.1	LGT	Describe and discuss functions of cerebral cortex, basal ganglia
PY10.7.2	LGT	Describe and discuss functions thalamus and hypothalamus
PY10.7.3	LGT	Describe and discuss functions of cerebellum and limbic system and their abnormalities
PY10.8	LGT	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its production
PY10.9.1	LGT	Describe and discuss the physiological basis of memory, learning and speech-1
PY10.9.2	LGT	Describe and discuss the physiological basis of memory, learning and speech-2
PY10.10	LGT	Describe and discuss chemical transmission in the nervous system. (Outline the psychiatry element).
PY10.13	LGT	Describe and discuss perception of smell and taste sensation
PY10.14	LGT	Describe and discuss patho-physiology of altered smell and taste sensation
PY10.15	LGT	Describe and discuss functional anatomy of ear and auditory pathways & physiology of hearing
PY10.16	LGT	Describe and discuss pathophysiology of deafness. Describe hearing tests
PY10.17.	LGT	Describe and discuss functional anatomy of eye, physiology of image

1		formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex -1
PY10.17.2	LGT	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, refractive errors, colour blindness, physiology of pupil and light reflex -2
PY10.18	LGT	Describe and discuss the physiological basis of lesion in visual pathway
PY10.19	LGT	Describe and discuss auditory & visual evoke potentials
PY10.4,P Y10.6 PY10.7, PY10.14- 17	ECE	Neurological disorder, pathophysiology, basis of diagnosis and treatment
PY10.8	SDL	Upper Motor Neuron & Lower Motor Neuron disease
PY10.17 and PY10.20	SDL	Color vision and its application
<b>INTEGRATED PHYSIOLOGY (14)</b>		
PY11.1	LGT	Describe and discuss mechanism of temperature regulation
PY11.2	LGT	Describe and discuss adaptation to altered temperature (heat and cold)
PY11.3	LGT	Describe and discuss mechanism of fever, cold injuries and heat stroke
PY11.4.1	LGT	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects -1
PY11.4.2	LGT	Describe and discuss cardio-respiratory and metabolic adjustments during exercise; physical training effects -2
PY11.5	LGT	Describe and discuss physiological consequences of sedentary lifestyle
PY11.6	LGT	Describe physiology of Infancy
PY11.7.1	LGT	Describe and discuss physiology of aging; free radicals and antioxidants -1
PY11.7.2	LGT	Describe and discuss physiology of aging; free radicals and antioxidants -2
PY11.8	LGT	Discuss & compare cardio-respiratory changes in exercise (isometric and isotonic) with that in the resting state and under different environmental conditions (heat and cold)
PY11.9	LGT	Interpret growth charts
PY11.10	LGT	Interpret anthropometric assessment of infants
PY11.11	LGT	Discuss the concept, criteria for diagnosis of Brain death and its implications
PY11.12	LGT	Discuss the physiological effects of meditation
PY11.14 PY11.18	ECE	Exercise in obesity and cardiovascular disease prevention, exercise prescription
PY11.1, PY11.2, PY11.3	SDL	Temperature regulations
PY2.3.1, PY2.5.1, PY2.11.1 , PY2.12.1	LINKER	Anemia
PY2.5.2, PY4.7.1, PY4.7.2, PY4.8.1	LINKER	Jaundice
PY8.2	LINKER	Thyroid

**Department of Physiology, BBMCH, Balangir.  
Small Group Teaching (Practical) 35**

Comp. No.	Topic
<b>HEMATOLOGY</b>	
PY2.12.1	Demonstration of estimation of ESR
PY2.12.3	Demonstration of Hematocrit/PCV
PY2.12.2	Demonstration of osmotic fragility test
PY2.11.2	Total Red Cell Count
PY 2.11.3	Total WBC count
PY 2.11.5	Differential count of leucocytes
PY2.11.1	Estimation of haemoglobin
PY 2.11.7	Determination of bleeding time
PY 2.11.7	Determination of clotting time
PY 2.11.4	Calculation of RBC indices
PY 2.11.6	Blood grouping
<b>HUMAN PHYSIOLOGY</b>	
PY3.14	Mosso's Ergography
PY5.12.1	Record of pulse at rest
PY5.12.2	Record blood pressure at rest
PY5.12	Record blood pressure & pulse at rest and in different grades of exercise and postures
PY3.16	Demonstrate Harvard Step test.
PY11.13	Obtain history and perform general examination
PY4.10	Clinical examination of the abdomen
PY5.13	Record and interpret normal ECG
PY5.14	Cardiovascular autonomic function tests
PY5.15	Clinical examination of the cardiovascular system
PY5.16	Arterial pulse tracing using finger plethysmography
PY6.8.1	Measurement of vital capacity and effect of posture on VC
PY6.8.2	Perform & interpret Spirometry
PY6.10	Measurement of peak expiratory flow rate
PY6.9	Clinical examination of the respiratory system
PY10.11	Clinical examination of the nervous system
PY10.12	Identify normal EEG forms.
PY10.20.1	Testing of visual acuity
PY10.20.2	Color and field of vision
PY10.20.3	Hearing test
PY10.20.4	Test for smell and taste
<b>AMPHIBIAN</b>	
PY3.18	Amphibian nerve - muscle experiments – simple muscle twitch, effect of temperature
PY3.18	Amphibian nerve - muscle experiments - Genesis of tetanus, fatigue
PY3.18	Amphibian cardiac muscle – normal tracing and vagal stimulation, effects of drugs and other agents

### Small Group Teaching (Tutorial) 35

Comp. No.	Topics
PY2.11	Different types of anticoagulant for haematology
PY2.11	Collection of blood samples
PY1.7	Buffer system, membrane potential, Edema
PY2.1	Composition and function of blood components
PY2.7	Discussion on Reticulocyte and platelet count
PY2.4	Red blood cell count and its clinical utility
PY2.5	RBC morphology and count in different types of Anemia
PY2.6	Physiological and pathological variation of total WBC count
PY2.11	Different types of stains used in hematology
PY2.10	Development of immunity and its regulation
PY3.7.2	Different types of muscle fibers and their function
PY2.12	Bleeding disorders
PY2.9	Blood transfusion – principle and hazards
PY2.9	Discussion on Blood banking and separation components
PY2.8	Thrombocytopenia and thrombocytosis
PY5.2	Cardiac muscle
PY5.3	Cardiac cycle
PY5.4	Cardiac impulse
PY5.5	Physiology of ECG
PY5.5	ECG changes in different disease
PY6.4	High altitude physiology and deep sea diving
PY6.5	Pathophysiology of respiratory diseases
PY6.8	Spirometric changes in respiratory diseases
PY5.9	Cardiovascular regulation
PY5.9	Regulation of blood pressure
PY5.15	Heart sounds
PY6.2	Gas exchange
PY6.7	Pulmonary function tests
PY5.13	ECG changes in different in diseases
PY10.3	Ascending tract
PY10.3	Descending tract
PY10.17	Visual pathway
PY10.17	Refractory errors
PY10.15	Auditory pathway
PY10.14	Taste pathway

# Mark distribution of Ist Professional MBBS University Exam

## Department of physiology

**Theory** – 2 papers Each **100** marks

Each paper – 2 sections A (**50** marks)  
B ( **50** marks)

Theory question pattern for each section

### Section A

Structured Essay type - (Two)	<b>20 marks</b>
Short notes – (four) (4X5)	<b>20 marks</b>
Applied question- (one) (5X2)	<b>10 marks</b>
	50marks

### Section B

Structured Essay type - (Two)	<b>20 marks</b>
Short notes – (four) (4X5)	<b>20 marks</b>
Applied question- (one) (5X2)	<b>10 marks</b>
	50marks

Total - **100** Marks

**Practical** - (**60** marks)

Spotting -	<b>10 marks</b>
Practical long experiment (Hematology/ human) (15+15)	<b>30 marks</b>
Practical short experiment (Hematology/ human)(5+5)	<b>10 marks</b>
Practical record <u><b>5 marks</b></u>	
Log book	<u><b>5 marks</b></u>

Total – **60** marks

**Oral** – (**40** marks)

Paper I-	<b>15 marks</b>
Paper II -	<b>15 marks</b>
Charts & graphs	<u><b>10 marks</b></u>

Total – **40** marks

**Model Questions for 1<sup>st</sup> Professional MBBS, University Exam**  
**Physiology Paper-I**

*Full marks -100*

*Time- 3 hrs*

*Answer all questions from both the sections.*

*The figures in the right hand margin show marks, Draw neat labelled diagram wherever necessary.*

**Section- A**

1. Describe briefly the digestion and absorption of carbohydrates. What is Lactose intolerance? (4+3+3)
  
2. Describe in detail the intrinsic mechanism of coagulation of blood. How it differs from extrinsic mechanism? Discuss briefly the plasminogen fibrinogen system. (4+3+3)
  
3. Write short notes on (4x5)
  - a) Erythroblastosis fetalis
  - b) Primary active transport
  - c) Sarcotubular system
  - d) Acetylcholine receptors
  
4. Give physiological reason for- (2x5)
  - a) Venous RBCs are fragile
  - b) Rigor mortis occurs after death
  - c) Joint pain occurs in sickle cell anemia
  - d) Adrenaline increases heart rate
  - e) RMP is also known as potassium equilibrium potential

**Section B**

5. Enumerate the respiratory centre with a neat labeled diagram. Discuss briefly the chemical regulation of respiration. Write in short about the cause of apnea after voluntary hyperventilation. (3+4+3)
  
6. Enumerate the muscle proteins. Describe with suitable diagram the mechanism of muscle contraction. Write briefly about myasthenia gravis. (2+5+3)
  
- 7. Write Short notes on (4X5)**
  - a) Electrotonic Potential
  - b) ECG leads
  - c) Neuromuscular junction
  - d) Portal circulation
  
- 8. Give reasoning (2x5)**

- a) Pregnancy ceases menstruation
- b) Spinal lesion produces loss of muscle tone
- c) Muscle rigidity found in decerebration
- d) Substantia nigra helps in increasing motor output
- e) Visceral pain often referred to somatic structure

**Model Questions for 1<sup>st</sup> Professional MBBS, University Exam**  
**Physiology Paper-II**

*Full marks -100*

*Time- 3 hrs Answer all questions from both the sections*

*The figures in the right hand margin show marks. Draw neat labelled diagram wherever necessary.*

**Section- A**

1. Enumerate the hormones of Thyroid gland. Write the steps of their biosynthesis. Discuss briefly about cretinism. (2+5+3)
2. Draw a neat labeled diagram of nephron. Describe the mechanism of formation of urine. What are the disorders of micturation? (2+5+3)
3. **Write short notes on** **(4x5)**
  - a) GFR
  - b) Myopia
  - c) Burger waves
  - d) Spermatogenesis
4. **Give physiological reason for** **(2x5)**
  - a) Lactational amenorrhoea.
  - b) Tetany following Thyroidectomy.
  - c) Diabetics are thirsty.
  - d) Touch ameliorates pain.
  - e) Slow pain is troublesome.

**Section B**

5. Enumerate the layers of retina with suitable diagram. Write briefly the photochemistry of vision. Discuss about dark adaptation. (3+4+3)
6. Enumerate the nuclei of thalamus with suitable diagram. What are the connections and functions of thalamus? Discuss about thalamic syndrome. (3+5+2)
7. **Compare and contrast.** **( 4 x 5)**
  - a) Neural deafness and conductive deafness.
  - b) Pituitary dwarf & Thyroid dwarf.
  - c) Decorticate & decerebrate rigidity.



d) Slow and fast pain.

**8. Give physiological reasons:-**

**(2x5)**

a).Mention about tone in cerebellar lesion .

b).Name two diuretics.

c)Functions of Cortical nephron

d).Type of lense prescribed in Myopia

e).Function of oestrogen hormone is present in male blood.

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**TEXT BOOKS:**

1. Text Book Of Medical Physiology By Hall And Guyton
2. Text Book Of Medical Physiology By A.K Jain
3. Review Of Medical Physiology By W.F.Ganong
4. Text Book Of Medical Physiology By R.L.Bijlani
5. Text Book Of Medical Physiology By Beerne And Levy
6. Text Book Of Medical Physiology By Best And Taylor
7. Practical Physiology By C.L Ghai
8. Practical Physiology By A.K.Jain
9. Practical Physiology By Srivastav

# V:Biochemistry

The course will comprise **Molecular and Cellular Biochemistry**.

- (a) **Competencies:** The learner must demonstrate an understanding of:
1. Biochemical and molecular processes involved in health and disease,
  2. Importance of nutrition in health and disease,
  3. Biochemical basis and rationale of clinical laboratory tests, and demonstrate ability to interpret these in the clinical context.
- (b) **Integration:** The teaching/learning programme should be integrated horizontally and vertically, as much as possible, to enable learners to make clinical correlations and to acquire an understanding of the cellular and molecular basis of health and disease.

## Duration

13 months	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	ECE	AETCOM	Total
1 <sup>st</sup> Year	80	150	20	30	10	290
Total	80	150	20	30	10	290

## Marks Distribution

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical	Viva	Theory	Practical + Viva
Theory=200 Practical =100	Paper 1=100 Paper 2=100	1.Spotting= 20 marks 2.Practical experiment = 30 3. Case studies = 10 Marks 4.OSPE = 10 Marks 5.Log Book & Record=10	20(10+10) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in Theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

## Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
1 <sup>st</sup> Professional Year	December	100	100
	April	100	100
	July	100	100

## Course Content

Paper I	Paper II
1. Basic Biochemistry Describe the molecular and functional organization of a cell and its sub-cellular components. 2. Enzyme Classification, Factors affecting	1. Metabolism of Carbohydrates 2. Metabolism of Protein 3. Metabolism of lipids 4. Metabolism of Nucleic acid and gout 5. Water and electrolyte metabolism 6. Liver function test

<p>enzyme activity, basic principle of enzyme activity, enzyme inhibition, clinical utility of various serum enzymes.</p> <ol style="list-style-type: none"> <li>3. Chemistry of carbohydrate</li> <li>4. Chemistry of Protein</li> <li>5. Chemistry of lipid</li> <li>6. Chemistry of nucleic acid</li> <li>7. Regulation of pH and acid-base balance and imbalance</li> <li>8. Water soluble and fat soluble vitamins</li> <li>9. Electron transport chain and biochemical process involved in generation of energy in the cell and its inhibitors.</li> <li>10. Minerals and trace elements</li> <li>11. Extracellular matrix and body proteins</li> <li>12. Oncogenesis and tumor markers</li> <li>13. Immunoglobulins and Immunity</li> <li>14. Molecular biology and Molecular techniques</li> </ol>	<ol style="list-style-type: none"> <li>7. Kidney Function test</li> <li>8. Thyroid Function test</li> <li>9. Adrenal Function test</li> <li>10. Free radicals, oxidative stress and anti Oxidants</li> <li>11. Role of Xenobiotics in disease</li> <li>12. Haemoglobin and Haem and porphyrin metabolism</li> <li>13. Nutrition and Nutritional disorder</li> </ol>
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### **1st professional MBBS AITO routine 2019-20 for the Dept. of Bio Chemistry**

<b>Sl. No.</b>	<b>Topic Code</b>	<b>Topic</b>	<b>Method of Teaching</b>	<b>Integration</b>
1	BI5.2,  BI6.11	Describe and discuss functions of proteins and structure-function relationships in relevant areas eg, hemoglobin and selected hemoglobinopathies.  Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.	LGT SGT Demonstration Assessment	Physiology
2	BI6.13,  BI6.14, BI11.17  BI6.15,	Describe the functions of the liver.  Describe the tests that are commonly done in clinical practice to assess the functions of liver.  Describe the abnormalities of liver.	LGT SGT Demonstration/Practical Assessment	Anatomy Physiology
3	BI6.13,  BI6.14, BI11.17  BI6.15,	Describe the functions of the thyroid.  Describe the tests that are commonly done in clinical practice to assess the functions of thyroid.	LGT SGT Demonstration Assessment	Anatomy Physiology

	Describe the abnormalities of thyroid.	
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### **1st professional MBBS Routine ( Theory) 2019-20 for the Dept. of Bio Chemistry**

Sl. No.	Topic Code	Topic	No of Hours (80)	Method of Teaching
		<b>BASIC BIOCHEMISTRY (CELL)</b>	<b>4Hrs</b>	
1	BI1.1.1	Basic introduction on Biochemistry	1	LGT
2	BI1.1.2	Define and describe the molecular and functional organization of cell.	1	LGT
3	BI1.1.3	Describe sub-cellular components	1	LGT
4	BI1.1.4	Describe the cellular transport	1	LGT
		<b>ENZYME</b>	<b>6Hrs</b>	
5	BI2.1.1	Explain fundamental concepts of enzyme, isoenzyme, alloenzyme, coenzyme & co-factors. Enumerate the main classes of IUBMB nomenclature.	1	LGT
	BI2.1.2	Factors affecting enzyme action.	1	LGT
6	BI2.3	Describe and explain the basic principles of enzyme activity	1	LGT
7	BI2.4	Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes	1	LGT
8	BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.	1	LGT
9	BI2.7	Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.	1	LGT
		<b>CHEMISTRY AND METABOLISM OF CARBOHYDRATES</b>	<b>12Hrs</b>	
10	BI3.1.1	Discuss and differentiate monosaccharides	1	LGT
11	BI3.1.2	Properties of carbohydrates.	1	LGT
12	BI3.1.3	Discuss and differentiate disaccharides	1	LGT
13	BI3.1.4	Discuss and differentiate polysaccharides	1	LGT
14	BI3.2	Describe the processes involved in digestion and assimilation of carbohydrates and storage.	1	LGT
15	BI3.4.1	Define and differentiate the pathways of carbohydrate metabolism (glycolysis)	1	LGT
16	BI3.4.2	Define and differentiate the pathways of carbohydrate metabolism (gluconeogenesis)	1	LGT
17	BI3.4.3	Define and differentiate the pathways of carbohydrate metabolism (glycogen metabolism).	1	LGT
18	BI3.4.4	Define and differentiate the pathways of carbohydrate metabolism (HMP shunt).	1	LGT
19	BI3.4.5	Uronic acid pathway and its clinical significance	1	LGT
20	BI3.4.6	Metabolism of Fructose and Galactose with its clinical significance	1	LGT
21	BI3.6, BI3.7	Define and differentiate the pathways of carbohydrate metabolism, (TCA Cycle).	1	LGT
		<b>CHEMISTRY AND METABOLISM OF LIPIDS</b>	<b>11Hrs</b>	
22	BI4.1.1	Describe and discuss main classes of lipids (Essential/non-essential fatty acids, cholesterol and hormonal steroids, triglycerides, major phospholipids and sphingolipids) relevant to human system and their major functions.	1	LGT
23	BI4.1.2	Classification and function of fatty acids	1	LGT
24	BI4.1.3	Classification and function of Phospholipids	1	LGT
25	BI4.2	Describe the processes involved in digestion and absorption of dietary lipids and also the key features of their metabolism	1	LGT

26	BI4.3	Explain the regulation of lipoprotein metabolism & associated disorders.	1	LGT
27	BI4.5.1	Fatty acid synthesis	1	LGT
28	BI4.5.2	Beta oxidation of fatty acids and clinical significance	1	LGT
29	BI4.5.3	Biosynthesis of cholesterol with its clinical significance	1	LGT
30	BI4.6.1	Describe the therapeutic uses of prostaglandins and inhibitors of eicosanoid synthesis.	1	LGT
31	BI4.6.2	Ketone body and its significance	1	LGT
32	BI4.7	Interpret laboratory results of analytes associated with metabolism of lipids.	1	LGT
		<b>CHEMISTRY AND METABOLISM OF PROTEINS</b>	<b>11Hrs</b>	
33	BI5.1	Describe and discuss structural organization of proteins.	1	LGT
34	BI5.2.1	Describe and discuss classification and functions of proteins and structure-function relationships in relevant areas eg, hemoglobin and selected hemoglobinopathies	1	LGT
35	BI5.2.2	Describe and discuss classification and functions of amino acids.	1	LGT
36	BI5.3	Describe the digestion and absorption of dietary proteins.	1	LGT
37	BI5.4.1	Describe common disorders associated with protein metabolism. (Neutral amino acid)	1	LGT
38	BI5.4.2	Describe common disorders associated with protein metabolism. (Aromatic amino acid)	1	LGT
39	BI5.4.3	Describe common disorders associated with protein metabolism. (Branch in amino acid)	1	LGT
40	BI5.4.4	Describe common disorders associated with protein metabolism. (Acidic amino acid)	1	LGT
41	BI5.4.4	Describe common disorders associated with protein metabolism. (Basic amino acid)	1	LGT
42	BI5.5.1	Interpret laboratory results of analytes associated with metabolism of proteins. (Urea cycle and its disorder)	1	LGT
43	BI5.5.2	Interpret laboratory results of analytes associated with metabolism of proteins. (Urea cycle and its disorder)	1	LGT
		<b>METABOLISM AND HOMEOSTASIS</b>	<b>4Hrs</b>	
44	BI6.1	Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.	1	LGT
45	BI6.2	Describe and discuss the metabolic processes in which nucleotides are involved.	1	LGT
46	BI6.3	Describe the common disorders associated with nucleotide metabolism.	1	LGT
47	BI6.4	Discuss the laboratory results of analytes associated with gout & Lesch Nyhan syndrome.	1	LGT
		<b>VITAMINS AND MINERALS METABOLISM</b>	<b>5Hrs</b>	
48	BI6.5.1	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.(Vitamin A)	1	LGT
49	BI6.5.2	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.(Vitamin D)	1	LGT
50	BI6.5.3	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.(Vitamin C)	1	LGT
51	BI6.9, BI6.10	Describe the functions of various minerals in the body, their metabolism and homeostasis and disorders. (Calcium)	1	LGT
52	BI6.9, BI6.10	Describe the functions of various minerals in the body, their metabolism and homeostasis and disorders. (Iron)	1	LGT
		<b>ELECTRON TRASPOT CHAIN (ETC)</b>	<b>3Hrs</b>	
53	BI6.6.1	Describe the biochemical processes involved in generation of energy in cells.	1	LGT
54	BI6.6.2	Describe the Electron transport chain and its inhibitors.	1	LGT
55	BI6.6.3	Describe the oxidative phosphorylation and uncouplers	1	LGT

		<b>pH, WATER AND ELECTROLYTE</b>	<b>2Hrs</b>	
56	BI6.7.1	Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.	1	LGT
57	BI6.7.2	Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.	1	LGT
		<b>HAEM METABOLISM AND ORGAN FUNTION TEST</b>	<b>7Hrs</b>	
58	BI6.11.1	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.	1	LGT
59	BI6.11.2	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.	1	LGT
60	BI6.12.1	Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance.	1	LGT
61	BI6.12.2	Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance.	1	LGT
62	BI6.13	Kidney Function Test	1	LGT
63	BI6.14	Liver Function test	1	LGT
64	BI6.15	Thyroid Function Test	1	LGT
		<b>MOLECULAR BIOLOGY AND OXIDATIVE STRESS AND DISEASE</b>	<b>8Hrs</b>	
65	BI7.2.1	Describe the processes involved in replication.	1	LGT
66	BI7.2.2	Describe the processes involved in repair of DNA.	1	LGT
67	BI7.2.3	Describe the processes involved transcription.	1	LGT
68	BI7.2.4	Describe the processes involved in translation mechanisms.	1	LGT
69	BI7.3	Describe gene mutations and basic mechanism of regulation of gene expression.	1	LGT
70	BI7.5	Describe the role of xenobiotics in disease	1	LGT
71	BI7.6	Describe the anti-oxidant defense systems in the body.	1	LGT
72	BI7.7	Describe the role of oxidative stress in the pathogenesis of conditions such as cancer, complications of diabetes mellitus and atherosclerosis.	1	LGT
		<b>NUTRITION</b>	<b>4Hrs</b>	
73	BI8.1	Discuss the importance of various dietary components and explain importance of dietary fiber.	1	LGT
74	BI8.3	Provide dietary advice for optimal health in childhood and adult, in disease conditions like diabetes mellitus, coronary artery disease and in pregnancy.	1	LGT
75	BI8.4	Describe the causes (including dietary habits), effects and health risks associated with being overweight/ obesity.	1	LGT
76	BI8.5	Summarize the nutritional importance of commonly used items of food including fruits and vegetables.(macro-molecules & its importance)	1	LGT
		<b>EXTRA CELLULAR MATRIX</b>	<b>1Hrs</b>	
77	BI9.3	Describe protein targeting & sorting along with its associated disorders.	1	LGT
		<b>ONCOGENESIS AND IMMUNITY</b>	<b>5Hrs</b>	
78	BI10.1	Describe the cancer initiation, promotion oncogenes & oncogene activation.	1	LGT
79	BI10.2	Describe various biochemical tumor markers and the biochemical basis of cancer therapy.	1	LGT
80	BI10.3	Describe the cellular and humoral components of the immune system & describe the types and structure of antibody	1	LGT
81	BI10.4	Describe & discuss innate and adaptive immune responses, self/non-self recognition and the central role of T-helper cells in immune responses.	1	LGT
82	BI10.5	Describe antigens and concepts involved in vaccine development.	1	LGT
		<b>Total Hours</b>	<b>82Hrs</b>	
		<b>EARLY CLINICAL EXPOSURE (ECE)</b>	<b>30Hrs</b>	

<b>1</b>		<b>ECE-1 (Acid Base balance and imbalance)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI6.7	What are Blood buffers? Describe the processes involved in maintenance of normal pH and the derangements associated with these.		
	BI6.8	Discuss and interpret results of Arterial Blood Gas (ABG) analysis in various disorders.		
	BI11.2	Describe the preparation of buffers and estimation of pH.		
	BI11.16	Demonstration of: •pH meter •Electrolyte analysis by ISE •ABG analyzer		
	BI11.17	Explain the basis and rationale of biochemical tests done in the disorders of acid- base balance.		
<b>2</b>		<b>ECE-2 ( Blood glucose regulation and Diabetes Mellitus)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI3.5	Describe and discuss the regulation, functions and integration of carbohydrate along with associated diseases/disorders.		
	BI3.8	Discuss and interpret laboratory results of analytes associated with metabolism of carbohydrates.		
	BI3.9	Discuss the mechanism and significance of blood glucose regulation in health and disease.		
	BI3.10	Interpret the results of blood glucose levels and other laboratory investigations related to disorders of carbohydrate metabolism.		
	BI6.1	Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.		
	BI11.17	Explain the basis and rationale of biochemical tests done in the following conditions: - diabetes mellitus, - dyslipidemia		
<b>3</b>		<b>ECE-3 (Fat soluble vitamins)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.		
<b>4</b>		<b>ECE-4 (Water Soluble Vitamins)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.		
<b>5</b>		<b>ECE-5 Acute Myocardial Infraction</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI4.4	Describe the structure and functions of lipoproteins, their functions, interrelations & relations with atherosclerosis		
	BI4.5	Interpret laboratory results of analytes associated with metabolism of lipids.		
	BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.		
	BI11.17	Explain the basis and rationale of biochemical tests done in the following conditions: - dyslipidemia, - myocardial infarction,		
<b>6</b>		<b>ECE-6 (Jaundice)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of liver.		
	BI6.15	Describe the abnormalities of liver.		
	BI11.17	Explain the basis and rationale of biochemical tests done in different types of jaundice, liver diseases.		

7		<b>ECE-7 (Inborn error of metabolism)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI5.4	Describe common disorders associated with protein metabolism.		
	BI5.5	Interpret laboratory results of analytes associated with metabolism of Amino acids.		
	BI11.17	Explain the basis and rationale of biochemical tests done in the following conditions: -Amino acid chromatography -Phenyl ketonurea, -alkaptonurea -Albinism -Branched chain acidurea		
8		<b>ECE-8 (Protein Energy Malnutrition)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI8.2	Describe the types and causes of protein energy malnutrition and its effects.		
	BI8.3	Provide dietary advice for optimal health in childhood and adult, in disease conditions like Marasmus and Kwashiorkor.		
9		<b>ECE-9 (Cerebrospinal Fluid)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI11.15	Describe & discuss the composition of CSF		
		Interpret laboratory results of analytes associated with CSF.		
		CSF findings in various types of meningitis.		
10		<b>ECE-10 (Gout &amp; Minerals)</b>	<b>3Hrs</b>	<b>LGT &amp; Quiz</b>
	BI6.4	Discuss the laboratory results of analytes associated with gout & Lesch Nyhan syndrome.		
	BI11.17	Explain the basis and rationale of biochemical tests done in gout		
	BI6.10	Enumerate and describe the disorders associated with mineral metabolism.		
		<b>Total Hours</b>	<b>30Hrs</b>	

### **1st professional MBBS Routine (Practical)2019-20 for the Dept. of Bio Chemistry**

<u>Sl. No.</u>	<u>Topic Code</u>	<u>Topic</u>		<u>No. of Hours</u> <u>150+20(SDL)=</u> <u>170 Hrs</u>	<u>Method of Teaching</u>
		<u>Demonstration/Practical</u>	<u>Tutorial</u>		
		<b>BIOCHEMICAL LABORATORY TEST</b>			
1	BI11.1		Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal.	2	SGT
2	BI11.2	Describe the preparation of buffers and estimation of Ph.		2	SGT
3	BI11.3		Describe the chemical components of normal urine.	2	SGT
4	BI11.4	Perform urine analysis to estimate and determine normal constituents		2	SGT
5	BI11.4	Perform urine analysis to estimate and determine normal constituents		2	SGT
6	BI11.4	Perform urine analysis to estimate and determine abnormal constituents (Sugar, Protein)		2	SGT
7	BI11.4	Perform urine analysis to estimate		2	SGT



		and determine abnormal constituents (Blood, Bile and Ketone)			
8	BI11.4	Perform urine analysis to estimate and determine abnormal constituents (Sugar, Protein)		2	SGT
9	BI11.4	Perform urine analysis to estimate and determine abnormal constituents (Blood, Bile and Ketone)		2	SGT
10	BI11.3, BI11.4	Record checking and assessment on urine		2	SGT DOAP
11	BI7.1		Seminar- Describe the structure and function of tRNA, mDNA and rRNA	2	<b>SDL Seminar</b>
12	BI11.21	Demonstrate & perform estimation of glucose and GTT		2	SGT
13	BI11.21	Record checking and on Glucose and GTT		2	SGT DOAP
14	BI7.1		Seminar- Describe the structure and function of SnRNA, MiRNA and Cell cycle	2	<b>SDL Seminar</b>
15	BI11.16		Seminar- Application of molecular technologies like recombinant DNA and ELISA	2	<b>SDL Seminar</b>
16	BI11.21	Demonstrate & perform estimation of urea		2	SGT
17	BI11.21	Demonstrate & perform estimation of creatinine		2	SGT
18	BI11.21, BI11.21		Record checking and Assessment on Renal Function Test	2	SGT DOAP
19	BI3.1	Demonstration of test on Carbohydrate and Osazones with record correction		2	SGT
20	BI7.4		Seminar- Describe the application of molecular technology (Hybridoma, blotting)	2	<b>SDL Seminar</b>
21	BI11.9	Demonstrate & perform the estimation of serum total cholesterol and HDL- cholesterol		2	SGT
22	BI11.10	Demonstrate & perform the estimation of triglycerides and calculation of LDL and VLDL		2	SGT
23	BI11.9, BI11.10		Record checking and on Lipid Profile	2	SGT Viva
24	BI7.4		Seminar- Describe the application of molecular technology (PCR) and apoptosis	2	<b>SDL Seminar</b>
25	BI7.3		Seminar- Gene therapy and RFLP	2	<b>SDL Seminar</b>
		<b>1<sup>st</sup> Internal practical exam</b>			

26	BI11.8	Demonstrate & perform estimation of serum proteins.		2	SGT
27	BI11.8	Demonstrate & perform estimation of serum albumin and AG ratio		2	SGT
28	BI11.8		Record checking and Assessment on Protein & Albumin	2	SGT Viva
29	BI6.5		Describe the biochemical role of vitamin B1 and B2	2	SGT Chart Project
30	BI11.5	Describe screening of urine for inborn errors & describe the use of paper Chromatography.		2	SGT
31	BI11.6		Describe the principles of colorimetry	2	SGT
32	BI11.11	Demonstrate estimation of calcium and phosphorous		2	SGT
33	BI11.12	Demonstrate the estimation of serum Total bilirubin		2	SGT
34	BI11.12	Demonstrate the estimation of serum Direct & Indirect bilirubin		2	SGT
35	BI11.13	Demonstrate & perform the estimation of SGPT		2	SGT
36	BI11.13	Demonstrate & perform the estimation of SGOT		2	SGT
37	BI11.14	Demonstrate & perform the estimation of alkaline phosphatase		2	SGT
38	BI11.12 to BI11.14		Record checking and Assessment on Liver Function Test	2	SGT DOAP
39	BI11.16	Observe use of commonly used equipments/techniques in biochemistry laboratory including: •Protein electrophoresis & Haemoglobin electrophoresis •PAGE		2	SGT
40	BI11.16		Observe use of commonly used equipments/techniques in biochemistry laboratory including: •Autoanalyser •Quality control	2	SGT
41	BI11.16	Observe use of commonly used equipments/techniques in biochemistry laboratory including: •DNA isolation from blood/ tissue		2	SGT
42	BI11.17		Explain the basis and rationale of biochemical tests done in the following conditions: - proteinuria, - nephrotic syndrome, - edema,	2	<b>SDL</b>

43	BI11.17		Explain the basis and rationale of biochemical tests done in the following Conditions: thyroid disorders.	2	SGT/Quiz
44	BI11.18	Discuss the principles of spectrophotometry.		2	SGT
45	BI11.19		Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications.	2	SGT
46	BI11.20	Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states.		2	SGT DOAP
47	BI11.22	Calculate creatinine clearance		2	SGT
48	BI11.23		Calculate energy content of different food Items, identify food items with high and low glycemic index and explain the importance of these in the diet	2	<b>SDL</b>
49	BI11.24, BI4.1	Demonstration of Test on Lipid	Enumerate advantages and/or disadvantages of use of unsaturated, saturated and trans fats in food.	2	<b>SDL</b>
50	BI6.5		Describe the biochemical role of vitamin B6	2	SGT Chart Project
51		Record correction and assessment		2	
52	BI6.5		Describe the biochemical role of vitamin B7	2	SGT Chart Project
53	BI6.14		Describe the tests of thyroid gland	2	SGT
54	BI6.5		Describe the biochemical role of vitamin C	2	SGT Chart Project
55	BI11.12	Demonstrate & perform the estimation of serum Total bilirubin		2	SGT
56	BI6.5		Describe the biochemical role of vitamin E & K	2	SGT Chart Project
57	BI11.12	Demonstrate & perform the estimation of serum Direct bilirubin and calculation of indirect bilirubin.		2	SGT
58			Viva- Vitamins	2	SGT
59	BI6.9		Describe the functions of various minerals in the body, their metabolism and homeostasis.	2	SGT
60		Record correction & assessment on Bilirubin		2	SGT
61	BI6.9		Describe the functions of various minerals in the body,	2	SGT

			their metabolism and homeostasis.		
62	BI8.1		Discuss the importance of various dietary components and explain importance of dietary fibre.	2	SGT
63	BI8.4	Describe the causes (including dietary habits), effects and health risks associated with being overweight/ obesity.		2	SGT
64	BI8.5		Summarize the nutritional importance of commonly used items of food including fruits and vegetables.(macro-molecules & its importance)	2	SGT
65			Viva- Minerals	2	SGT
		<b>2<sup>nd</sup> internal</b>			
66	BI11.2	Revision-Describe preparation of buffer & pH	Viva on clinical co-relation	2	SGT Written/Viva voce
67	BI11.4	Revision- Perform urine analysis to estimate and determine abnormal constituents	Viva on clinical co-relation	2	SGT Written/Viva voce
68	BI11.13 & BI2.2	Revision-Demonstrate & perform the estimation of SGPT	Viva on clinical co-relation	2	SGT Written/Viva voce
69	BI11.13 & BI2.2	Revision-Demonstrate & perform the estimation of SGOT	Viva on clinical co-relation	2	SGT Written/Viva voce
70	BI11.21	Revision-Demonstrate & perform estimation of glucose and GTT	Viva on clinical co-relation	2	SGT Written/Viva voce
71	BI11.21	Revision-Demonstrate & perform estimation of urea	Viva on clinical co-relation	2	SGT Written/Viva voce
72	BI11.21	Revision-Demonstrate & perform estimation of creatinine	Viva on clinical co-relation	2	SGT Written/Viva voce
73	BI11.9	Revision-Demonstrate & perform the estimation of serum total cholesterol and HDL- cholesterol	Viva on clinical co-relation	2	SGT Written/Viva voce
74	BI11.10	Revision-Demonstrate & perform the estimation of triglycerides and calculation of LDL and VLDL	Viva on clinical co-relation	2	SGT Written/Viva voce
75	BI11.8	Revision-Demonstrate & perform estimation of serum proteins.	Viva on clinical co-relation	2	SGT Written/Viva voce
76	BI11.8	Revision-Demonstrate & perform estimation of serum albumin and AG ratio	Viva on clinical co-relation	2	SGT Written/Viva voce
78	BI11.14	Revision-Demonstrate & perform the estimation of alkaline phosphatase	Viva on clinical co-relation	2	SGT Written/Viva voce
79	BI11.12	Revision-Demonstrate & perform the estimation of serum total	Viva on clinical co-relation	2	SGT Written/Viva

		bilirubin			voce
80	BI11.12	Revision-Demonstrate & perform the estimation of serum direct bilirubin	Viva on clinical co-relation	2	SGT Written/Viva voce
81	BI11.11	Revision-Demonstrate & perform estimation of calcium and phosphorous	Viva on clinical co-relation	2	SGT Written/Viva voce
82	BI11.1	Revision-Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal.	Viva on clinical co-relation	2	SGT Written/Viva voce
83	BI11.17	Revision-Explain the basis and rationale of biochemical tests done in the following conditions: Diabetes Millitus, Dyslipidemia, MI	Viva on clinical co-relation	2	<b>SDL</b> <b>Written/Viva</b> <b>voce</b>
84	BI11.17	Revision-Explain the basis and rationale of biochemical tests done in the following conditions: Renal failure, Gout, Proteinuria, nephrotic syndrome	Viva on clinical co-relation	2	SGT Written/Viva voce
85		Revision- Demonstration of Osazones under Microscope.		2	SGT Written/Viva voce
		<b>3<sup>rd</sup> Internal</b>	<b>Total Hours</b>	<b>150+20(SDL)</b> <b>= 170 Hrs</b>	

# 1<sup>st</sup> PROFESSIONAL BIOCHEMISTRY EXAMINATION

## MODEL QUESTION PAPER 1

Total marks = 100

Time = 3 hours

Answer all questions

### PART A

Q1: Classify enzyme with an example on each class. Mention the factors affecting the enzyme action. (5+5)

Q2: Describe the components of electron transport chain with proper diagramme and mention its inhibitors. (5+5)

**Q3. Write short notes on:** 5X 4 = 20

3a) Deficiency manifestations of vitamin A

3b) Metabolic acidosis

3c) Substrate level phosphorylation with example

3d) Structure and function of mitochondria

**Q4. Answers with proper reason** 2 X 5 = 10

4a) Mention the role of uncouplers?

4b) Why sucrose is called invert sugar?

4c) Why triglyceride is called a storage lipid?

4d) Which phospholipid is act as a lung surfactant and how?

4e) Why tRNA is called an adapter molecule?

### PART B

Q5: Describe the process of replication in eukaryotes and name two inhibitors of replication. (5+5)

Q6: Discuss about fluid mosaic model of cell membrane with diagramme. (5+5)

**Q7: write short notes on** 5 X 4 = 20

7a) Active transport with examples

7b) Function of lysosome

7c) Post translational modification with example

7d) Structure and function of mRNA

**Q8. Answer with proper explanation:** 2 X 5 = 10

8a) Why allopurinol inhibition is called a succidal inhibition?

8b) why new born babies have lot of brown adipose tissue?

8c) Why calcitriol is called a hormone?

8d) Why acidosis associated with hypokalemia?

8e) Why iron deficiency occurs in vitamin C deficiency?

**1<sup>st</sup> PROFESSIONAL BIOCHEMISTRY EXAMINATION  
MODEL QUESTION PAPER**

**Total Mark: 100**

**Time: 3 Hours**

**Paper II  
Answer all the questions**

**(Part A)**

- Q.1. Describe why TCA cycle is called amphibolic pathway with labelled diagram. 5+5
- Q.2. Write a note denovo synthesis of purine and enumerate different causes of gout. 5+5
- Q.3 Write short notes on:** **5x4=20**
- 3a) Application of uronic acid pathway.
  - 3b) HDL and its importance.
  - 3c) Role of cyclic AMP.
  - 3d) Enumerate thyroid function tests.
- Q.4 Explain the following questions:** **2x5=10**
- 4a) Importance of HMP shunt pathway with reason.
  - 4b) Importance of glutathione with reason.
  - 4c) Importance of carnitine in metabolism.
  - 4d) Importance of arginin in the body.
  - 4e) Causes of hypokalemia and its measurement.

**(Part B)**

- Q5. Discuss glycogen metabolism and enumerate glycogen storage disorders. 5+5
- Q.6 Write in brief about metabolism of tyrosine in the body and its deficiency manifestation. 5+5
- Q.7 Write short notes on:** **5x4=20**
- 7a) Discuss the tests under lipid profile and mention the antilipid drugs.
  - 7b) Discuss the tests done for thyroid disorders.
  - 7c) Discuss the inborn error of metabolism of phenyl alanine.
  - 7d) Characinoid syndrome
- Q8: Give reason for:** **2x5=10**
- 8a) Why tryptophan deficiency leads to pallegra?
  - 8b) Why carbohydrate diet induces sleep?
  - 8c) Why statins are given as anti lipid drugs?
  - 8d) Why MAO inhibitors used as antidepressant?
  - 8e) What is the significance of HMP pathway?

Department of Biochemistry  
Book list for 1<sup>st</sup> professional MBBS 2019-20

**Theory book**

<b>S.N. Book Title</b>	<b>Author</b>	<b>Edition</b>
1. Harper's Illustrated Biochemistry David A. Bender, Kathleen M. Botham	Victor W. Rodwell,	31 <sup>st</sup> international
2. Lehninger Principle of Biochemistry	David L. Nelson Michael M. Cox	7 <sup>th</sup> International
3. Textbook of Biochemistry for Medical Students	DM Vasudevan, Shreekumari S. Kannan Vaidyanathan	9 <sup>th</sup>
4. Lippincott Illustrated Reviews of Biochemistry	Denise R. Ferrier	7 <sup>th</sup>
5. Textbook of Medical Biochemistry	MN Chatterjea Rana Shinde	8 <sup>th</sup>
6. Textbook of Biochemistry for Undergraduates	Rafi MD	3 <sup>rd</sup>

**Practical Book**

<b>S.N. Book Title</b>	<b>Author</b>	<b>Edition</b>
1. Practical clinical Biochemistry Methods & Interpretation	Ranjana Chawla	4 <sup>th</sup>
2. Varley's Practical Clinical Biochemistry	Alan H Gowenlock	6 <sup>th</sup>
3. Tietz fundamentals of clinical chemistry & Molecular Diagnosis	Carl A. Burtis David E. Bruns	7 <sup>th</sup>
4. Mannual of Practical Biochemistry For Medical Students	Rafi MD	2 <sup>nd</sup>



# VI:Pathology

**Competencies:** The undergraduate must demonstrate:

1. Comprehension of the causes, evolution and mechanisms of diseases,
2. Knowledge of alterations in gross and cellular morphology of organs in disease states,
3. Ability to correlate the natural history, structural and functional changes with the clinical manifestations of diseases, their diagnosis and therapy,

**Integration:** The teaching should be aligned and integrated horizontally and vertically in organsystems recognizing deviations from normal structure and function and clinically correlated so as to provide an overall understanding of the etiology, mechanisms, laboratory diagnosis, and management of diseases.

## TEACHING METHODS & HOURS

Duration	LGT	SGT (Tutorials/Seminars/ Practical) /Integrated learning	SDL	Total	AETCOM
12 months	80hrs	Practical - 92 hrs 46 hrs – Tutorial/ Seminar + integrated teaching Total = <b>138 hrs</b>	12hrs	230 hrs	9 hrs

## ASSESSMENT

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical//Spotting/ Log Book &Record	Viva	Theory	Practical + Viva
Theory=200 Practical =100	Paper 1=100 Paper 2=100	Spotting / OSPE: 20 marks. Histology [2 slides]: 20 marks. Hematology: 10 marks. Urine: 10 marks. Blood grouping: 10 marks. Record / Logbook: 10 marks.	20 One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

**Scheme of Internal assessment**

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	100	100

### Course Content

Paper I	Paper II
General Pathology, Hematology	Systemic Pathology, Clinical Pathology & Special Pathology [Endocrine, CNS & PNS, Eye]

### COURSE CONTENT:

Number	COMPETENCY The student should be able to	Hours	Method	Vertical integration	Horizontal Integration
<b>INTRODUCTION TO PATHOLOGY</b>					
• PA1.1	• Describe the role of a pathologist in diagnosis and management of disease	1	LGT		
• PA1.2	• Enumerate common definitions and terms used in Pathology: Etiology, Pathogenesis, Pathology including Molecular pathology, Clinical Manifestations, Complications, Sequelae, Prognosis. [Class 1]	2	SGT, Tutorial / GD		
• PA1.3	• Describe the history and evolution of Pathology[Class 2]				
<b>CELL INJURY AND ADAPTATION</b>					
• PA2.1	• Demonstrate knowledge of the causes, mechanisms, types and effects of cell injury and their clinical significance: Relationship between the type of stimulus /injury and the 4 types of response.	1	LGT		
• PA2.2	• Describe the etiology of cell injury. Distinguish between reversible-irreversible injury: mechanisms; morphology of cell injury: [a] causes of Reversible & Irreversible cell injury, [b] pathogenesis of each, [c] morphology of each				
• PA2.3	• Intracellular accumulation of fats, proteins, carbohydrates, pigments[Class 1]	2	SGT, Tutorial / GD		
• PA2.5	• Describe and discuss pathologic calcifications, gangrene[Class 2]				
• PA2.4	• Describe and discuss Cell death- types, mechanisms, necrosis, apoptosis (basic as contrasted with necrosis), autolysis: Class 1: Necrosis, Class 2: Apoptosis and Autolysis	2	LGT		
• PA2.6	• Describe and discuss cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia: Causes, Mechanism, Types with example, Clinical significance	1	LGT		

• PA2.7	• Describe and discuss the mechanisms of cellular aging and apoptosis	2	SDL		
• PA2.8	• Identify and describe various forms of cell injuries, their manifestations and consequences in gross and microscopic specimens: Class 1: Gross specimens: Brown atrophy heart, Hypoplastic kidney, Granular contracted kidney; Histopathology slides: Testicular atrophy. Class 2: Gross specimens: Pregnant Uterus, Cardiac hypertrophy, BPH, Endometrial hyperplasia, Melanoma; Histopathology slides: BPH, Endometrial hyperplasia, Melanoma. Class 3: Gross specimens: Anthracosis, Fatty liver, Gangrene foot, Gangrene intestine; Histopathology slides: Dystrophic calcification, Fatty liver, Caseous necrosis–LN, Myocardial infarct.	6	SGT Practical		
<b>AMYLOIDOSIS</b>					
• PA3.1	• Describe the pathogenesis and pathology of amyloidosis: Definition, General features, Physical & Chemical nature of amyloid, Pathogenesis, Classification, Morphology, Lab Diagnosis, Clinical significance.	1	SGT Tutorial		
• PA3.2	• Identify and describe amyloidosis in a pathology specimen: • Gross specimen: Kidney, Spleen. • Histopathology slides: Kidney	2	SGT Practical		
<b>INFLAMMATION</b>					
• PA4.1	• Define and describe the general features of acute and chronic inflammation including stimuli, vascular and cellular events: [a] What is inflammation, [b] Types, [c] Acute Vs. Chronic, [d] Cardinal Signs, [e] Acute inflammation: Causes, Sequences, Vascular changes, Cellular events –Leukocyte recruitment and extravasation, Chemotaxis, Leukocyte activation, Phagocytosis & killing, Morphological patterns	1	LGT	Gen Surg	
• PA4.2	• Enumerate and describe the mediators of acute inflammation: [a] Classification – Cell derived /Plasma derived, Preformed / Newly formed, [b] role	1	SGT Tutorial	Gen Surg	
• PA4.3	• Define and describe chronic inflammation including causes, types, non-specific and granulomatous; and enumerate examples of each	1	SGT Tutorial		
• PA4.4	• Identify and describe acute and chronic inflammation in gross and microscopic specimens: Class 1: Gross specimens: Lobar pneumonia, Acute appendicitis; Histopathology slides: Lobar pneumonia, Acute appendicitis. Class 2: Gross specimens: Chronic cholecystitis, Chronic pyelonephritis; Histopathology slides: Chronic cholecystitis, FBgranuloma. Class 3: Gross specimens: TB lung & LN; Histopathology slides: TBgranuloma. Class 4: Gross specimens: Peptic ulcer & Trophic ulcer leg; Histopathology slides: Ulcer with granulation tissue. Class 5: Revision	10	SGT Practical		

<b>HEALING AND REPAIR</b>					
• PA5.1	<ul style="list-style-type: none"> <li>Define and describe the process of repair and regeneration including wound healing and its types: [a] Definition of healing, [b] Types: Regeneration, Repair, [c] Factors influencing, [d] Healing by 1<sup>st</sup> intention, [e] Healing by 2<sup>nd</sup> intention, [f] Complications.</li> </ul>	1	LGT	Gen Surg	
<b>HEMODYNAMIC DISORDER</b>					
• PA6.1	<ul style="list-style-type: none"> <li>Define and describe edema, its types, pathogenesis and clinical correlations.</li> </ul>	1	LGT	Gen Med	
• PA6.2	<ul style="list-style-type: none"> <li>Define and describe hyperemia, congestion, hemorrhage</li> </ul>	1	SGT		
• PA6.3	<ul style="list-style-type: none"> <li>Define and describe shock, its pathogenesis and its stages</li> </ul>	1	LGT	Gen Surg	
• PA6.4	<ul style="list-style-type: none"> <li>Define and describe normal hemostasis and the etiopathogenesis and consequences of thrombosis</li> </ul>	1	SGT GD		
• PA6.5	<ul style="list-style-type: none"> <li>Define and describe embolism and its causes and common types</li> </ul>	1	SGT GD		
• PA6.6	<ul style="list-style-type: none"> <li>Define and describe Ischemia/infarction its types, etiology, morphologic changes and clinical effects</li> </ul>	1	SGT GD		
• PA6.7	<ul style="list-style-type: none"> <li>Identify and describe the gross and microscopic features of infarction in a pathologic specimen: Class 1: Gross specimens:CVC liver, Infarctionspleen,heart, Thrombus. Class 2: Histopathology Slides:CVC liver, Infarctionspleen.</li> </ul>	4	SGT Practical		
<b>NEOPLASTIC DISORDERS</b>					
• PA7.1	<ul style="list-style-type: none"> <li>Define and classify neoplasia. Describe the characteristics of neoplasia including gross, microscopy, biologic behavior and spread. Differentiate between benign from malignant neoplasms</li> </ul>	2	LGT		

• PA7.1.1	<p>Class 1: Gross specimens: Benign &amp; Malignant stomach ulcers; Histopathology slides: Benign &amp; Malignant stomach ulcers.</p> <p>Class 2: Gross specimens: Fibroadenoma, Ca Breast; Histopathology slides: Fibroadenoma, Duct carcinoma of breast.</p> <p>Class 3: Gross specimens: Benign – Lipoma, Leiomyoma, Dermoid cyst; Histopathology slides: Benign – Lipoma, Leiomyoma, Neurilemmoma, Teratoma.</p> <p>Class 4: Gross specimens: Malignant – SCC Cervix, Penis; Histopathology slides: Malignant – SCC, BCC.</p> <p>Class 5: Gross specimens: Malignant – Melanoma, Rodent ulcer; Histopathology slides: Malignant – Melanoma, BCC.</p> <p>Class 6: Gross specimens: Malignant – Adenoca stomach, endometrium, colon; Histopathology slides: Malignant – Adenoca stomach, endometrium, colon.</p> <p>Class 7: Gross specimens: Invasion in Chorioca, Osteosarcoma, Metastases – Krukenberg’s tumor, Melanoma in LN; Histopathology slides: Metastases to LN.</p>	14	SGT Practical		
• PA7.2	<ul style="list-style-type: none"> <li>Describe the molecular basis of cancer: [a] Fundamental principles, [b] Genetics – Karyotypic [Structural, Numeric], Subtle changes, Epigenetic modifications, Genes with regulatory functions [mRNAs, siRNAs], [c] 7 hallmarks – Oncogenes, TSGs, Evasion of apoptosis, Telomerase, Angiogenesis, Defect in DNA repair genes, Invasion &amp; metastasis.</li> </ul>	2	LGT		
• PA7.3	<ul style="list-style-type: none"> <li>Enumerate carcinogens and describe the process of carcinogenesis: Chemical, Microbial, Physical &amp; Hormones</li> </ul>	1	SGT GD		
• PA7.4	<ul style="list-style-type: none"> <li>Describe the effects of tumor on the host including paraneoplastic syndrome</li> </ul>	1	SGT GD		
• PA7.5	<ul style="list-style-type: none"> <li>Describe immunology and the immune response to cancer</li> </ul>	2	SDL		Micro
<b>BASIC DIAGNOSTIC CYTOLOGY</b>					
• PA8.1	<ul style="list-style-type: none"> <li>Describe the diagnostic role of cytology and its application in clinical care</li> </ul>	1	LGT	Gen Surg	
• PA8.2	<ul style="list-style-type: none"> <li>Describe the basis of exfoliative cytology including the technique &amp; stains used</li> </ul>				
• PA8.3	<ul style="list-style-type: none"> <li>Observe a diagnostic cytology and its staining and interpret the specimen:</li> <li>Cytosmears of CA Cervix, Fibroadenoma breast, CA Breast, Trichomonas vaginalis</li> </ul>	2	SGT Practical		
<b>IMMUNOPATHOLOGY AND AIDS</b>					
• PA9.1	<ul style="list-style-type: none"> <li>Describe the principles and mechanisms involved in immunity</li> </ul>	1	SGT Tutorial	Pedia	Micro

• PA9.2	• Describe the mechanism of hypersensitivity reactions	2	SGT Tutorial		Micro
• PA9.3	• Describe the HLA system and the immune principles involved in transplant and mechanism of transplant rejection	1	SGT Tutorial		Micro
• PA9.4	• Define autoimmunity. Enumerate autoimmune disorders: [a] Immunological tolerance, [b] Definition, [c] Pathogenesis – Genetic & Environmental factors	1	SGT Tutorial	Gen Med	
• PA9.5	• Define and describe the pathogenesis of systemic Lupus Erythematosus: [a] Etiology – Genetic factors, Environmental factors, Immunological abnormalities, [b] Pathogenesis, [c] AutoAbs, [d] Pathology, [e] Clinical features, [f] Lab diagnosis	1	LGT	Gen Med	
• PA9.6	• Define and describe the pathogenesis and pathology of HIV and AIDS	1	LGT	Gen Med	Micro
• PA9.7	• Define and describe the pathogenesis of other common autoimmune diseases	1	SGT Tutorial	Gen Med	
<b>INFECTIONS AND INFESTATIONS</b>					
• PA10.1	• Define and describe the pathogenesis and pathology of malaria	1	SGT Tutorial	Gen Med	Micro
• PA10.2	• Define and describe the pathogenesis and pathology of cysticercosis	1	SGT Tutorial	Gen Med	Micro
• PA10.3	• Define and describe the pathogenesis and pathology of leprosy	1	SGT Tutorial	Gen Med	Micro
• PA10.4	• Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases	1	SGT Tutorial	Gen Med	Micro
<b>GENETIC AND PEDIATRIC DISEASES</b>					
• PA11.1	• Describe the pathogenesis and features of common cytogenetic abnormalities and mutations in childhood: [a] Classification – Single-gene, Chromosomal disorders, Complex disorder, [b] Single-gene: Mutations – types, AD, AR, X-linked, Karyotyping, [c] Chromosomal: Classification, Numerical, Structural with examples, [d] Down's, [e] Klinefelter's, [f] Turner's	2	SGT GD, Problem based Charts	Pedia	

• PA11.2	<ul style="list-style-type: none"> <li>Describe the pathogenesis and pathology of tumor and tumor-like conditions in infancy and childhood: [a] Heterotopia, Hamartoma, [b] Benign tumors &amp; Tumor-like lesions, [c] Malignant – Age-group based classification, RB, NB, WT.</li> </ul>	1	LGT	Pedia	
• PA11.3	<ul style="list-style-type: none"> <li>Describe the pathogenesis of common storage disorders in infancy and childhood: [A] LSD: Gaucher, Niemann-Pick, Tay-Sachs</li> </ul>	1	SGT Tutorial	Pedia	
<b>ENVIRONMENTAL AND NUTRITIONAL DISEASES</b>					
• PA12.1	<ul style="list-style-type: none"> <li>Enumerate and describe the pathogenesis of disorders caused by air pollution, tobacco and alcohol</li> </ul>	2	SDL		ComMed
• PA12.2	<ul style="list-style-type: none"> <li>Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation: Marasmus &amp; Kwashiorkor</li> </ul>	2	SDL	Biochem, Pedia	
• PA12.3	<ul style="list-style-type: none"> <li>Describe the pathogenesis of obesity and its consequences</li> </ul>	2	SDL	Gen Med	
<b>INTRODUCTION TO HEMATOLOGY</b>					
• PA13.1	<ul style="list-style-type: none"> <li>Describe hematopoiesis and extramedullary hematopoiesis</li> </ul>	1	SGT Tutorial	Gen Med	
• PA13.2	<ul style="list-style-type: none"> <li>Describe the role of anticoagulants in hematology</li> </ul>	2	SGT Tutorial/ Practical	Gen Med	
• PA13.3 • PA13.4	<ul style="list-style-type: none"> <li>Define and classify anemia</li> <li>Enumerate and describe the investigation of anemia</li> </ul>	1	LGT	Gen Med	
• PA13.5	<ul style="list-style-type: none"> <li>Perform, Identify and describe the peripheral blood picture in anemia: Class 1: Hb estimation, Class 2: TWBC count, Class 3: TRBC count and RBC indices, Class 4: TPC count, Class 5: Reticount, Class 6 &amp; 7: Peripheral smear preparation, staining and interpretation.</li> </ul>	14	SGT Practical	Gen Med	
<b>MICROCYTIC ANEMIA</b>					
• PA14.1 • PA14.2	<ul style="list-style-type: none"> <li>Describe iron metabolism</li> <li>Describe the etiology, investigations and differential diagnosis of microcytic hypochromic anemia</li> </ul>	1	LGT	Biochem	

• PA14.3	<ul style="list-style-type: none"> <li>Identify and describe the peripheral smear in microcytic anemia: CBC &amp; Peripheral smear interpretation in a case of MHA</li> </ul>	2	SGT Practical	Gen Med	
<b>MACROCYTIC ANEMIA</b>					
<ul style="list-style-type: none"> <li>PA15.1</li> <li>PA15.2</li> <li>PA15.4</li> </ul>	<ul style="list-style-type: none"> <li>Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency</li> <li>Describe laboratory investigations of macrocytic anemia</li> <li>Enumerate the differences and describe the etiology and distinguishing features of megaloblastic and non-megaloblastic macrocytic anemia</li> </ul>	1	LGT	Biochem, Gen Med	
• PA15.3	<ul style="list-style-type: none"> <li>Identify and describe the peripheral blood picture of macrocytic anemia: CBC &amp; Peripheral smear interpretation in a case of Megaloblastic anemia</li> </ul>	2	SGT Practical		
<b>HEMOLYTIC ANEMIA</b>					
<ul style="list-style-type: none"> <li>PA16.1</li> <li>PA16.2</li> </ul>	<ul style="list-style-type: none"> <li>Define and classify hemolytic anemia</li> <li>Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia</li> </ul>	1	LGT	Biochem, Gen Med	
• PA16.3	<ul style="list-style-type: none"> <li>Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anemia and thalassemia</li> </ul>	2	LGT	Biochem, Gen Med	
• PA16.4	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, hematologic indices and peripheral blood picture of Acquired hemolytic anemia</li> </ul>	1	LGT	Biochem, Gen Med	
• PA16.5	<ul style="list-style-type: none"> <li>Describe the peripheral blood picture in different hemolytic anemias</li> </ul>	1	SGT, GD, Problem based	Gen Med	
• PA16.6	<ul style="list-style-type: none"> <li>Prepare a peripheral blood smear and identify hemolytic anemia from it: CBC &amp; Peripheral smear interpretation in a case of Megaloblastic anemia</li> </ul>	2	SGT Practical		
• PA16.7	<ul style="list-style-type: none"> <li>Describe the correct technique to perform a cross match</li> </ul>	1	SGT GD		
<b>APLASTIC ANEMIA</b>					
<ul style="list-style-type: none"> <li>PA 17.1</li> <li>PA17.2</li> </ul>	<ul style="list-style-type: none"> <li>Enumerate the etiology, pathogenesis and findings in aplastic anemia</li> <li>Enumerate the indications and describe the findings in bone marrow aspiration and biopsy</li> </ul>	1	LGT	Gen Med	
<b>LEUKOCYTIC DISORDERS</b>					



• PA18.1	• Enumerate and describe the causes of leukocytosis, leukopenia, lymphocytosis and leukemoid reactions	1	SGT GD		
• PA18.2	• Describe the etiology, genetics, pathogenesis, classification, features, hematologic features of acute and chronic leukemia	2	LGT		
• PA18.2.1	• Class 1: AML & ALL, Class 2: CML	4	SGT Practical		
<b>LYMPH NODE AND SPLEEN</b>					
• PA19.1 • PA19.2	• Enumerate the causes and describe the differentiating features of lymphadenopathy • Describe the pathogenesis and pathology of tuberculous lymphadenitis	1	LGT	Gen Surg	
• PA19.3	• Identify and describe the features of tuberculous lymphadenitis in a gross and microscopic specimen	2	SGT Practical		
• PA19.4	• Describe and discuss the pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma	2	LGT	Gen Surg	
• PA19.5	• Identify and describe the features of Hodgkin's lymphoma in a gross and microscopic specimen	2	SGT Practical	Gen Surg	
• PA19.6	• Enumerate and differentiate the causes of splenomegaly	1	SGT Tutorial	Gen Surg, Gen Med	
• PA19.7	• Identify and describe the gross specimen of an enlarged spleen	2	SGT Practical		
<b>PLASMA CELL MYELOMA</b>					
• PA20.1	• Describe the features of plasma cell myeloma	2	SGT Practical		
<b>HEMORRHAGIC DISORDERS</b>					
• PA21.1	• Describe normal hemostasis	1	SGT Tutorial		

• PA21.2	<ul style="list-style-type: none"> <li>Classify and describe the etiology, pathogenesis and pathology of vascular and platelet disorders including ITP and haemophilia's</li> </ul>	1	LGT	Pedia	
• PA21.3	<ul style="list-style-type: none"> <li>Differentiate platelet from clotting disorders based on the clinical and hematologic features</li> </ul>	1	SGT Tutorial	Gen Med	
• PA21.4 • PA21.5	<ul style="list-style-type: none"> <li>Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of disseminated intravascular coagulation.</li> <li>Vitamin K deficiency</li> </ul>	1	LGT	Gen Med	
<b>BLOOD BANKING AND TRANSFUSION</b>					
• PA22.1	<ul style="list-style-type: none"> <li>Classify and describe blood group systems (ABO and RH)</li> </ul>	2	SDL		
• PA22.2	<ul style="list-style-type: none"> <li>Enumerate the indications, describe the principles, enumerate and demonstrate the steps of compatibility testing</li> </ul>	2	SGT Tutorial	Obs & Gyn	
• PA22.4 • PA22.5	<ul style="list-style-type: none"> <li>Enumerate blood components and describe their clinical uses</li> <li>Enumerate and describe infections transmitted by blood transfusion</li> </ul>	1	LGT	Gen Surg, Gen Med	
• PA22.6 • PA22.7	<ul style="list-style-type: none"> <li>Describe transfusion reactions and enumerate the steps in the investigation of a transfusion reaction</li> <li>Enumerate the indications and describe the principles and procedure of autologous transfusion</li> </ul>	1	LGT	Gen Med	
<b>CLINICAL PATHOLOGY</b>					
• PA23.1	<ul style="list-style-type: none"> <li>Describe abnormal urinary findings in disease states and identify and describe common urinary abnormalities in a clinical specimen</li> </ul>	2	SGT Problem based charts		
• PA23.2	<ul style="list-style-type: none"> <li>Describe abnormal findings in body fluids in various disease states</li> </ul>	1	SGT Tutorial		
• PA23.3	<ul style="list-style-type: none"> <li>Describe and interpret the abnormalities in a panel containing semen analysis, thyroid function tests, renal function tests or liver function tests: Class 1: Semen analysis, Class 2: Thyroid function test, Class 3: Renal function test, Class 4: Liver function test</li> </ul>	8	SGT Problem based charts		
<b>GASTROINTESTINAL TRACT</b>					
• PA24.1 • PA24.2	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, pathology and clinical features of oral cancers</li> <li>Describe the etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease</li> </ul>	1	LGT	Dentistry	

• PA24.3	• Describe and identify the microscopic features of peptic ulcer	2	SGT Practical	Gen Med	
• PA24.4	• Describe and etiology and pathogenesis and pathologic features of carcinoma of the stomach	1	LGT	Gen Surg	
• PA24.5 • PA24.6	• Describe and etiology and pathogenesis and pathologic features of Tuberculosis of the intestine • Describe and etiology and pathogenesis and pathologic and distinguishing features of Inflammatory bowel disease	1	LGT	Gen Surg	
• PA24.7	• Describe the etiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon	1	LGT	Gen Surg	
<b>HEPATOBIILIARY SYSTEM</b>					
• PA25.1	• Describe bilirubin metabolism, enumerate the etiology and pathogenesis of jaundice, distinguish between direct and indirect hyperbilirubinemia	1	SGT GD	Biochem, GenMed	
• PA25.2	• Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences	1	LGT	Gen Med, Gen Surg	
• PA25.3	• Describe the etiology and pathogenesis of viral and toxic hepatitis: distinguish the causes of hepatitis based on the clinical and laboratory features. Describe the pathology, complications and consequences of hepatitis	1	LGT	Gen Med	
• PA25.4	• Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis	1	LGT	Gen Med, Gen Surg	
• PA25.5	• Describe the etiology, pathogenesis and complications of portal hypertension	1	LGT	Gen Med, Gen Surg	
• PA25.6	• Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests	2	SGT Practical	Gen Med	
<b>RESPIRATORY SYSTEM</b>					
• PA26.1 • PA26.2	• Define and describe the etiology, types, pathogenesis, stages, morphology and complications of pneumonia • Describe the etiology, gross and microscopic appearance and complications of lung abscess	1	LGT	Gen Med	Micro
• PA26.3	• Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive airway disease (OAD) and bronchiectasis	1	LGT	Physio, GenMed	Micro

• PA26.4	<ul style="list-style-type: none"> <li>Define and describe the etiology, types, pathogenesis, stages, morphology microscopic appearance and complications of tuberculosis</li> </ul>	1	LGT	Gen Med	Micro
• PA26.5	<ul style="list-style-type: none"> <li>Define and describe the etiology, types, exposure, environmental influence, pathogenesis, stages, morphology, microscopic appearance and complications of Occupational lung disease</li> </ul>	1	LGT	Gen Med, ComMed	
• PA26.6 • PA26.7	<ul style="list-style-type: none"> <li>Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, stages, morphology, microscopic appearance, metastases and complications of tumors of the lung and pleura</li> <li>Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, morphology, microscopic appearance and complications of mesothelioma</li> </ul>	1	LGT	Gen Med	
<b>CARDIOVASCULAR SYSTEM</b>					
• PA27.1	<ul style="list-style-type: none"> <li>Distinguish arteriosclerosis from atherosclerosis. Describe the pathogenesis and pathology of various causes and types of arteriosclerosis</li> </ul>	1	LGT	Gen Med	
• PA27.2	<ul style="list-style-type: none"> <li>Describe the etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms</li> </ul>	1	SGT	Gen Med	
• PA27.3	<ul style="list-style-type: none"> <li>Describe the etiology, types, stages pathophysiology, pathology and complications of heart failure</li> </ul>	1	SGT	Gen Med, Physio	
• PA27.4	<ul style="list-style-type: none"> <li>Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever</li> </ul>	1	LGT	Gen Med	Micro
• PA27.5	<ul style="list-style-type: none"> <li>Describe the epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease</li> </ul>	1	LGT	Gen Med	
• PA27.6	<ul style="list-style-type: none"> <li>Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis</li> </ul>	1	LGT	Gen Med	Micro
• PA27.7	<ul style="list-style-type: none"> <li>Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of pericarditis and pericardial effusion</li> </ul>	1	SGT	Gen Med	
• PA27.8	<ul style="list-style-type: none"> <li>Interpret abnormalities in cardiac function testing in acute coronary syndromes</li> </ul>	2	SGT Problem based charts	Physio, GenMed	

• PA27.9	<ul style="list-style-type: none"> <li>Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of cardiomyopathies</li> </ul>	1	LGT	Gen Med, Physio	
• PA27.10	<ul style="list-style-type: none"> <li>Describe the etiology, pathophysiology, pathology features and complications of syphilis on the cardiovascular system</li> </ul>	1	SGT GD	Gen Med	Micro
<b>URINARY TRACT</b>					
• PA28.1	<ul style="list-style-type: none"> <li>Describe the normal histology of the kidney</li> </ul>	1	SGT		
• PA28.2 • PA28.3 • PA28.4	<ul style="list-style-type: none"> <li>Define, classify and distinguish the clinical syndromes and describe the etiology, pathogenesis, pathology, morphology, clinical and laboratory and urinary findings, complications of renal failure</li> <li>Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute renal failure</li> <li>Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings progression and complications of chronic renal failure</li> </ul>	1	LGT		
• PA28.5	<ul style="list-style-type: none"> <li>Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis: Class 1: Define &amp; Classify glomerular diseases, Common pathogenetic mechanism of them, Class 2: Nephritic syndrome &amp; Nephrotic syndrome, Class 3: Acute GN – PSGN, RPGN, Class 4: MCD, MPGN, CGN</li> </ul>	4	LGT	Physio, GenMed	
• PA28.6	<ul style="list-style-type: none"> <li>Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy</li> </ul>	1	LGT	Gen Med	
• PA28.7	<ul style="list-style-type: none"> <li>Enumerate and describe the findings in glomerular manifestations of systemic disease: SLE, DM, Amyloidosis</li> </ul>	1	SGT Tutorial	Gen Med	
• PA28.8 • PA28.9	<ul style="list-style-type: none"> <li>Enumerate and classify diseases affecting the tubular interstitium</li> <li>Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis</li> </ul>	1	LGT	Gen Med	
• PA28.10	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy</li> </ul>	1	LGT	Anat, Gen Surg	
• PA28.11	<ul style="list-style-type: none"> <li>Define classify and describe the etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney</li> </ul>	1	LGT	Gen Med	

• PA28.12	<ul style="list-style-type: none"> <li>Define classify and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney</li> </ul>	1	LGT	Gen Med, Pedia	
• PA28.13	<ul style="list-style-type: none"> <li>Define classify and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy</li> </ul>	1	LGT	Gen Surg	
• PA28.14	<ul style="list-style-type: none"> <li>Classify and describe the etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors</li> </ul>	1	LGT	Pedia	
• PA28.15	<ul style="list-style-type: none"> <li>Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic microangiopathies</li> </ul>	1	SGT Tutorial	Gen Med	
• PA28.16	<ul style="list-style-type: none"> <li>Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of urothelial tumors</li> </ul>	1	LGT	Gen Surg	
<b>MALE GENITAL TRACT</b>					
• PA29.1	<ul style="list-style-type: none"> <li>Classify testicular tumors and describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of testicular tumors</li> </ul>	1	LGT	Gen Surg	
• PA29.2	<ul style="list-style-type: none"> <li>Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis</li> </ul>	1	LGT	Gen Surg	
• PA29.3	<ul style="list-style-type: none"> <li>Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings &amp; diagnostic tests of benign prostatic hyperplasia</li> </ul>	1	LGT	Gen Surg	
• PA29.4	<ul style="list-style-type: none"> <li>Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate</li> </ul>				
• PA29.5	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, pathology and progression of prostatitis</li> </ul>				
<b>FEMALE GENITAL TRACT</b>					
• PA30.1	<ul style="list-style-type: none"> <li>Describe the epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression of carcinoma of the cervix</li> </ul>	1	LGT	Obs & Gyn	
• PA30.2	<ul style="list-style-type: none"> <li>Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the endometrium</li> </ul>	1	LGT	Obs & Gyn	
• PA30.3	<ul style="list-style-type: none"> <li>Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the leiomyomas and leiomyosarcomas</li> </ul>	1	LGT	Obs & Gyn	

• PA30.4	<ul style="list-style-type: none"> <li>Classify and describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of ovarian tumors: Class 1: Classification, Surface epithelial tumors, Class 2: Germ cell tumors, Class 3: Sex cord stromal tumors, Metastatic</li> </ul>	3	LGT	Obs & Gyn	
• PA30.5	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of gestational trophoblastic neoplasms</li> </ul>	1	LGT	Obs & Gyn	
• PA30.6 • PA30.7 • PA30.8 • PA30.9	<ul style="list-style-type: none"> <li>Describe the etiology and morphologic features of cervicitis</li> <li>Describe the etiology, hormonal dependence, features and morphology of endometriosis</li> <li>Describe the etiology and morphologic features of adenomyosis</li> <li>Describe the etiology, hormonal dependence and morphology of endometrial hyperplasia</li> </ul>	1	SGT Tutorial	Obs & Gyn	
<b>BREAST</b>					
• PA31.1 • PA31.4	<ul style="list-style-type: none"> <li>Classify and describe the types, etiology, pathogenesis, pathology and hormonal dependency of benign breast disease</li> <li>Enumerate and describe the etiology, hormonal dependency and pathogenesis of gynecomastia</li> </ul>	1	LGT	Anat, Gen Surg	
• PA31.2	<ul style="list-style-type: none"> <li>Classify and describe the epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread of carcinoma of the breast</li> </ul>	1	LGT	Gen Surg	
• PA31.3	<ul style="list-style-type: none"> <li>Describe and identify the morphologic and microscopic features of carcinoma of the breast</li> </ul>	2	SGT Practical	Gen Surg	
<b>ENDOCRINE SYSTEM</b>					
• PA32.1	<ul style="list-style-type: none"> <li>Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings</li> </ul>	1	SGT	Physio, Gen Med, Gen	
• PA32.2	<ul style="list-style-type: none"> <li>Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis</li> </ul>	1	LGT	Physio, Gen Med	
• PA32.3	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/hypothyroidism</li> </ul>	1	LGT	Physio, Gen Med	
• PA32.4	<ul style="list-style-type: none"> <li>Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus</li> </ul>	1	LGT	Physio, Gen Med	
• PA32.5	<ul style="list-style-type: none"> <li>Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism</li> </ul>	1	LGT	Physio, Gen Med	

• PA32.6	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer</li> </ul>	1	LGT	Gen Surg	
<ul style="list-style-type: none"> <li>PA32.7</li> <li>PA32.8</li> <li>PA32.9</li> </ul>	<ul style="list-style-type: none"> <li>Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency</li> <li>Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of Cushing's syndrome</li> <li>Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms</li> </ul>	1	LGT	Physio, GenMed	
<b>BONE AND SOFT TISSUE</b>					
• PA33.1	<ul style="list-style-type: none"> <li>Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis</li> </ul>	1	LGT	Anat, Ortho	Micro
<ul style="list-style-type: none"> <li>PA33.2</li> <li>PA33.4</li> </ul>	<ul style="list-style-type: none"> <li>Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of bone tumors</li> <li>Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of Paget's disease of the bone</li> </ul> <p>Class 1: Paget's disease, Classification of Bone tumors, Class 2: Osteochondroma, Osteosarcoma, Class 3: Chondrosarcoma, Ewing's sarcoma.</p>	3	LGT	Ortho	
• PA33.3	<ul style="list-style-type: none"> <li>Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of soft tissue tumors</li> </ul>	1	LGT	Ortho	
• PA33.5	<ul style="list-style-type: none"> <li>Classify and describe the etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications of rheumatoid arthritis</li> </ul>	1	LGT	Gen Med	
<b>SKIN</b>					
<ul style="list-style-type: none"> <li>PA34.1</li> <li>PA34.2</li> </ul>	<ul style="list-style-type: none"> <li>Describe the risk factors pathogenesis, pathology and natural history of squamous cell carcinoma of the skin</li> <li>Describe the risk factors pathogenesis, pathology and natural history of basal cell carcinoma of the skin</li> </ul>	1	LGT	DVL	
• PA34.3	<ul style="list-style-type: none"> <li>Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors morphology clinical features and metastases of melanoma</li> </ul>	1	LGT	DVL	



• PA34.4	• Identify, distinguish and describe common tumors of the skin	2	SGT Practical	DVL	
<b>CENTRAL NERVOUS SYSTEM</b>					
• PA35.1	• Describe the etiology, types and pathogenesis, differentiating factors, CSF findings in meningitis	1	LGT	Gen Med	Micro
• PA35.2	• Classify and describe the etiology, genetics, pathogenesis, pathology, presentation sequelae and complications of CNS tumors	1	LGT	Pedia	
• PA35.3	• Identify the etiology of meningitis based on given CSF parameters	2	SGT Problem based charts	Gen Med	Micro
<b>EYE</b>					
• PA36.1	• Describe the etiology, genetics, pathogenesis, pathology, presentation, sequelae and complications of retinoblastoma	1	LGT	Ophtha	

- **Pattern of questions:** Each section
  - Structured essay type:                    2 x 10 = 20 marks
  - Short answer type:                            5 x 4 = 20 marks
  - Short answer type [Reasoning / Explain the following] /  
Fill in the blanks / MCQs etc.:            5 x 2 = 10 marks.

**MODEL QUESTION PAPER**  
**2<sup>nd</sup> PROFESSIONAL M.B.B.S UNIVERSITY EXAMINATION**  
**PATHOLOGY: Paper I**

**FULL MARKS: 100**

**TIME: 3 Hrs**

**[All questions are compulsory.]**  
**SECTION – A [General Pathology]**

- QA1. Define and classify shock. Discuss in detail about septic shock. **(2+1+7=10 marks)**
- QA2. Define inflammation. Describe the major events of acute inflammation with a note on its outcome. **(2+8=10 marks)**
- QA3. Write the differences between:**(5x4=20 marks)**
- Necrosis & Apoptosis.
  - Transudate & Exudate.
  - Hyperplasia & Hypertrophy.
  - Acute&Chronicinflammation.
  - Dystrophic & Metastatic calcification.
- QA4. Short answer type: **(5x2=10 marks)**
- Enumerate four types of chromosomal rearrangements.
  - Virchow triad.
  - Sago spleen.
  - Microscopic appearance of lepromatous leprosy.
  - Mention four factors influencing wound healing.

**SECTION – B [Hematology]**

- QB1. A male child aged 3yrs. presented with generalized lymphadenopathy, hepatomegaly and bleeding gums. Total WBC – 1,20,000 per cubic mm of blood. What is the probable diagnosis? Write its etiopathogenesis & investigations to confirm your diagnosis. **(2 + 1 + 7 = 10 marks)**
- QB2. Define anaemia. Classify haemolytic anaemia. Write in detail about the pathogenesis and lab diagnosis of sickle cell anaemia. **(2 + 2 + 2 + 4 = 10 marks)**
- QB3. Write the differences between / short notes on: **(5 x 5 = 25 marks)**
- Leukemoid reaction & CML.
  - Non-Hodgkin's lymphoma & Hodgkin's Lymphoma.
  - Peripheral blood and Bone marrow picture of Megaloblastic anemia.
  - Spherocytosis.
  - Splenomegaly.
- QB4. Short answer type: **(5x2=10 marks)**
- Mention important investigations for diagnosis of Hemophilia.
  - NESTROFT.
  - Megaloblast.
  - Bombay blood group.
  - Reed Sternberg Cell.

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**MODEL QUESTION PAPER**  
**2<sup>nd</sup> PROFESSIONAL M.B.B.S UNIVERSITY EXAMINATION**  
**PATHOLOGY: Paper II**

**FULL MARKS: 100**

**TIME: 3 Hrs**

**[All questions are compulsory.]**

**SECTION – A [Systemic Pathology]**

- QA1. A 25 year male is admitted with swelling of the upper end of right tibia. X-ray shows 'Sun-burst' appearance in the metaphyseal area of tibia. [a] What is the probable diagnosis? [b] Give the microscopic picture of the diagnosis with labelled diagram? [c] Name the organs where it metastasizes? [d] Classify bone tumors? **(2+3+1+4=10 marks)**
- QA2. Classify germ cell tumors of testis. Discuss in detail about classical seminoma under the following headings: classification, gross findings, microscopic findings and prognosis. **(3+1+2+3+1=10 marks)**
- QA3. Write the differences between / short notes on: **(5 x 4 = 20 marks)**
- Lobar pneumonia & Bronchopneumonia
  - Primary & Secondary tuberculosis
  - Nephrotic & Nephritic syndrome
  - Risk factors of ischemic heart disease.
  - Ulcerative colitis & Crohn's disease
- QA4. Short answer type: **(5x2=10 marks)**
- Enumerate the four main types of renal calculi.
  - Stages of lobar pneumonia.
  - Barrett's esophagus.
  - List four etiological factors associated with squamous cell carcinoma of oral cavity.
  - Etiological factors in acute pancreatitis.

**SECTION – B [Clinical Pathology, Special Pathology (Endocrine, CNS & PNS, Eye)]**

- QB1. A 45 years male complains of tiredness, polydipsia, polyuria & polyphagia. What is the probable diagnosis? Write etiopathogenesis, laboratory diagnosis & complications of the disease? **(2+4+2+2=10 marks)**
- QB2. Classify tumors of the thyroid gland. Describe papillary carcinoma of thyroid under the following headings: etiopathogenesis, pathology and clinical features. **(3+2+4+1=10 marks)**
- QB3. Write the differences between / short notes on: **(5x4=20 marks)**
- Retinoblastoma
  - Factors influencing ESR
  - Urinary casts
  - Different enzymes in LFT
  - Utility of cytopathology
- QB4. Short answer type: **(5x2=10 marks)**
- Tophi.
  - CSF findings in tubercular meningitis.
  - Low and fixed specific gravity of urine.
  - Enumerate the histologic types of meningioma.
  - Rosettes seen in retinoblastoma.

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**BOOKS:**

1. Kumar V, Abbas A, Aster JC. Pathologic basis of disease: South Asia edition. 9 ed. Haryana: Elsevier; 2014.
2. Kumar V, Abbas A, Aster JC. Robbins Basic Pathology. 9 ed. Philadelphia: Elsevier ;2013.
3. Walter JB, Talbot IC. Walter and Israel General Pathology. 7 ed. Edinburgh; Elsevier ;1963.
4. Cross SS. Underwood's Pathology: A clinical approach. 6 ed. China; Elsevier;2013.
5. Singh T. Text and Practical Hematology for MBBS. New Delhi: APC Publications;2010.
6. Chaturvedi U, Singh T. Practical Pathology. 2 ed. New Delhi: Arya Publications;2015.

**ONLINE RESOURCES:**

1. [www.pathologyoutlines.com](http://www.pathologyoutlines.com)
2. <http://www.webpathology.com>

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## VII:Microbiology

(a) **Competencies:** The undergraduate learner demonstrate:

1. Understanding of role of microbial agents in health and disease,
2. Understanding of the immunological mechanisms in health and disease,
3. Ability to correlate the natural history, mechanisms and clinical manifestations of infectious diseases as they relate to the properties of microbial agents,
4. Knowledge of the principles and application of infection control measures,
5. An understanding of the basis of choice of laboratory diagnostic tests and their interpretation, antimicrobial therapy, control and prevention of infectious diseases.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in organ systems with emphasis on host-microbe-environment interactions and their alterations in disease and clinical correlations so as to provide an overall understanding of the etiological agents, their laboratory diagnosis and prevention.

### TEACHING METHODS & HOURS

Duration	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total
12 months	70	110	10	10	200
Total	70	110	10	10	200

### ASSESSMENT

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical	Viva	Theory	Practical + Viva
Theory=200 Practical =100	Paper 1=100 Paper 2=100	1. Spotting 10 2. Gram Staining 15 3. Acid Fast Staining 15 4. Stool microscopy for ova & cyst 10 5. Hospital Infection Control (Hand hygiene, PPE, BMW management) 10 6. Applied Microbiology (Syndromic case based exercise) 10 7. Practical Record & Log book 10	20 One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

### Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	100	100

### Course Content

Paper I	Paper II
General Microbiology, Immunology, Infections of blood stream and cardiovascular system, gastrointestinal tract and hepatobiliary system	Infections of skin, soft tissue and musculoskeletal system, central nervous system, respiratory system, genitourinary and sexually transmitted infections, hospital infection and control, zoonotic and miscellaneous

### Syllabus Microbiology

LGT - Large Group Teaching, SGD - Small Group Discussion, SDL - Self Directed Learning

Competency Covered	Topic	Sub Topic	No of Hours	Method of Teaching	Horizontal Integration	Vertical Integration
MI 1.1	Introduction and History		1	LGT		
MI 1.1, MI 1.2	Microscopy		2	SGD/ Practical		
MI 1.1	Overview of bacterial infections and bacterial taxonomy		1	LGT		
MI 1.1	Morphology of Bacteria, Morphology of common bacteria	Size of bacteria, Shape & arrangement of bacteria	1	LGT		
		Bacterial anatomy - Cell wall, Cytoplasmic membrane, Cytoplasm, Ribosome, intracytoplasmic inclusions, Nucleus				
		Bacterial anatomy - Slime layer, capsule, Flagella, Fimbriae, Spore				
MI 1.1	Physiology of Bacteria, Bacterial growth curve		1	SDL		
MI 1.4, MI 1.5	Sterilization & Disinfection	Physical Agents,	4	SGD/Practical		General Surgery
		Chemical agents, sterilization & disinfection in a health care condition				
MI 1.1	Culture Media and Culture	Culture Media	4	SGD/ Practical		
		Culture Methods				

	Methods					
MI 1.1, MI 1.2	Identification of Bacteria	Conventional Methods	2	SGD/ Practical		
		Automated & newer methods				
MI 1.1, MI 1.2	Gram Stain		4	SGD/ Practical		
MI 1.1, MI 1.6	Bacterial Genetics	Basic Principles of Molecular Biology	1	LGT		
		Transmission of genetic material				
		Molecular Genetics				
MI 1.6	Antimicrobials & Antimicrobial Susceptibility testing	Basic idea of class of antibiotics, Antimicrobial Susceptibility testing	2	SGD/ Practical	Pharmacology	
		Genetic mechanisms of drug resistance				
MI 1.3	Infection & Epidemiology of Infectious Diseases	Classification of infection, sources of infection, methods of transmission of infection, factors predisposing to microbial pathogenicity, Types of infectious diseases	1	LGT		Community Medicine
MI 1.7, MI 1.9	Immunity (Innate & Acquired)		1	LGT		
MI 1.8	Components of Immune System- Organs, cells and products	Primary & Secondary Lymphoid organs, cells & their maturation	2	LGT	Pathology	Paediatrics
		Major Histocompatibility Complex, HLA typing & MHC Restriction				
MI 1.8	Antigen		1	SDL		
MI 1.8	Antibody	Antibody Structure, Immunoglobulin Classes, Abnormal Immunoglobulin, Antibody Diversity & Class switching	1	LGT		
MI 1.8, MI 1.10	Antigen – Antibody reaction	Principles, General Properties, Measurement of Ag & Ab, Serological Reaction - Precipitation, Agglutination, Neutralization & CFT	4	SGD/ Practical		
		Immunoassay, Blotting Technique, Rapid tests				
MI 1.8, MI 1.10	Complement	Properties, Activation, Pathways, Regulation, Biological effect, deficiency	1	LGT		
MI 1.8	Immune Responses: Cell-mediated and Antibody-mediated	Humoral Immune Response (Antibody Mediated), Monoclonal Antibodies	2	LGT	Pathology	
		Cellular Immune Response, Immunological Tolerance				

MI 1.9, MI 8.16	Immunoprophylaxis	Immunoprophylaxis of infectious diseases, UIP & NIP	2	SGD/ Practical		Community Medicine, Paediatrics
MI 1.10	Hypersensitivity	Types of Hypersensitivity Reactions	2	LGT	Pathology	
MI 1.10	Autoimmunity	Mechanisms of Autoimmunity	1	LGT	Pathology	
		Classification				
		Pathogenesis				
MI 1.10	Immunodeficiency Disorders	Primary immunodeficiencies, Secondary immunodeficiencies	1	LGT	Pathology	
MI 1.11	Transplant immunology & Tumor Immunology		1	SGD/ Practical	Pathology	General Surgery
MI 8.9, MI 8.15	Staphylococcus	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		General Medicine, General Surgery, Dermatology
MI 4.3		Skin & Soft Tissue Infection	2	Seminar		
MI 4.2		Musculoskeletal Infections				
MI 2.2		Bacterimia, IE, & its complication				
MI 6.1		RTI with special reference to CF				
MI 7.1, MI 7.3		UTI				
MI 3.5, MI 4.3		Toxin Mediated Illness				
MI 4.2, MI 5.1, MI 7.1, MI 7.2, MI 8.9, MI 8.15	Streptococcus	Epidemiology, classification, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,			1	LGT
MI 6.1		RTI	2	Seminar	Pathology	
MI 2.1		Acute Rheumatic Fever				
MI 4.3		Skin & Soft Tissue Infection				
MI 2.2		Bacterimia, IE, & its complication				
MI 1.10	Post Streptococcal Glomerulonephritis					
MI 2.2, MI 4.3, MI 7.3, MI 8.9, MI 8.15	Enterococcus	Enterococcus	1	SDL		
MI 8.9, MI 8.15	Pneumococcus	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT	Pathology	General Medicine, Paediatrics
MI 6.2		LRTI				



MI 5.1		Meningitis				
MI 1.2, MI 2.3, MI 5.3, MI 6.2, MI 6.3, MI 1.8, MI 8.13	Demonstration & Identification of Staphylococcus & Streptococcus	Gram Stain from pus, sputum, throat swab	2	SGD/ Practical		
		Colony morphology on BA, CA, MA				
		Biochemical Reactions, AST				
		ASO, CRP				
MI 8.9, MI 8.15	Neisseria	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		Paediatrics
MI 5.1		Meningitis				
MI 7.1, MI 7.2		Gonococcal STI	1	LGT		Dermatology
MI 1.9, MI 6.1, MI 8.9, MI 4.3, MI 7.3, MI 8.4, MI 8.15	Corynebacterium	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		Community Medicine, Paediatrics
MI 6.1, MI 1.9, MI 8.4, MI 8.9		URTI, Diphtheria				
MI 4.3, MI 7.3		Other Pathogenic Corynebacterium & Diphtheroids				
MI 1.2, MI 6.2, MI 8.10, MI 8.11	Demonstration & Identification of C.diphtheriae	Gram Stain & Albert stain of throat swab	2	SGD/ Practical		
		Culture, Biochemical & virulence testing				
MI 8.4, MI 8.9, MI 8.15, MI 1.4	Bacillus	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		
MI 4.3		Cutaneous Anthrax				
MI 6.1		Pulmonary Anthrax				
MI 8.1		Bioterrorism				
MI 3.5		Food poisoning				
MI 1.4		As Sterilization control				
MI 4.1, MI 4.3, MI 3.5, MI 8.6, MI 8.9, MI 8.15	Clostridium	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		General Surgery
MI 4.3, MI 8.9, MI 8.15		Gas Gangrene				
MI 3.5, MI 8.9, MI 8.15		Food poisoning & GI infection				
MI 4.3, MI 8.9, MI 8.15		Tetanus			2	SGD/ Practical

MI 4.3, MI 3.5, MI 8.9, MI 8.15		Botulism					
MI 8.6		C. difficile & antibiotic associated diarrhea	1	SDL			
MI 4.1, MI 7.1	Non sporing anaerobes	Classification, Distribution, Clinical Presentation & Laboratory Diagnosis	1	SGD/ Practical			
MI 3.1	Enterobacteriaceae	Introduction, Classification, General Characteristics	1	LGT			
		Escherichia coli - description of the pathogen, antigenic structure, virulence factor, pathogenicity, laboratory diagnosis					
MI 7.1, MI 7.3, MI 8.5, MI 8.6, MI 8.9, MI 8.15			UTI	1	SGD/ Practical		General Medicine
MI 3.1, MI 8.9, MI 8.15			Diarrhoea	1	SGD/ Practical		
MI 2			Septicemia	1	SGD /Practical		
MI 5.1, MI 8.9, MI 8.15			Meningitis	1	SGD/ Practical		
MI 4.3, MI 8.9, MI 8.15			Pyogenic infection	1	SGD /Practical		
MI 2, MI 4.3, MI 5.1, MI 6.1, MI 7.3, MI 8.5, MI 8.15			Tribe Klebsiellae, Tribe Proteaceae, and other minor tribe	1	SGD/ Practical		
MI 3.1, MI 3.3			Salmonella - description of the pathogen, classification, antigenic structure, virulence factor, pathogenicity, laboratory diagnosis	1	LGT		General Medicine
MI 3.3, MI 8.9, MI 8.15			Enteric fever				
MI 3.5, MI 8.9, MI 8.15			NTS	1	SGD/ Practical		
MI 3.1, MI 8.9, MI 8.15			Shigella - description of the pathogen, classification, antigenic structure, virulence factor, pathogenicity, laboratory diagnosis	1	LGT		
			Dysentery				
MI 1.2, MI 3.2, MI 5.3, MI 6.3, MI 8.10, MI 8.11, MI 8.13		Demonstration & Identification of E.coli, Klebsiella & Proteus	Gram Stain from pus, sputum, Motility, Colony Morphology & Biochemical Reactions, AST	2	SGD/ Practical		

MI 3.2, MI 3.4, MI 8.10, MI 8.11, MI 8.13	Demonstration & Identification of Salmonella & Shigella	Motility, Colony Morphology & Biochemical Reactions, AST, Antisera Agglutination, Widal Test	2	SGD/ Practical		
	Pseudomonas & other non-fermenters	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		General Surgery
MI 4.3, MI 8.9, MI 8.15		Pyogenic infection				
MI 8.5, MI 8.9, MI 8.15		Pseudomonas & Burn infections				
MI 6.1, MI 8.2		Pseudomonas in HAI				
MI 6.1, MI 8.1, MI 8.2, MI 8.4		Burkholderia & cystic fibrosis				
MI 8.2, MI 8.4, MI 8.5		Melioidosis				
		Acinetobacter infections				
	Other non-fermenters					
MI 3.1, MI 8.9, MI 8.15	Vibrio	Vibrio cholerae - description of the pathogen, classification, antigenic structure, virulence factor, pathogenicity, laboratory diagnosis	1	LGT		General Medicine
		Cholera				
MI 3.1, MI 4.3		Halophilic Vibrio				
MI 1.2, MI 3.2, MI 6.3, MI 8.10, MI 8.11, MI 8.13	Demonstration & Identification of Pseudomonas & Vibrio	Motility, Colony Morphology & Biochemical Reactions, AST, Antisera Agglutination	2	SGD/ Practical		
MI 2, MI 8.1, MI 8.4	Brucella	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	SGD/ Practical		
		Brucellosis				
MI 8.9, MI 8.15	Yersenia	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		
MI 4.3, MI 6.1, MI 8.1		Plague				
MI 3.1		Yersiniosis				
MI 8.9, MI 8.15	Haemophilus	Epidemiology, classification, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		
MI 5.1, MI		Meningitis				

5.3						
MI 6.1		Croup				
		Pneumonia				
MI 7.1, MI 7.2		Chancroid				
MI 2.2		Infective Endocarditis				
MI 6.1, MI 8.9, MI 8.15	Bordetella	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	SDL		
MI 6.1		Whooping Cough				
MI 8.9, MI 8.15	Mycobacterium	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	2	LGT	Pathology, Pharmacology	General Medicine, Paediatrics, Pulmonary Medicine
MI 6.1, MI 8.9, MI 8.15		Pulmonary Tuberculosis				
MI 4.2, MI 4.3		Extra pulmonary tuberculosis				
MI 6.1, MI 4.3, MI 8.2, MI 8.4		NTM	1	SDL		
MI 4.3		Hansen's Disease	1	LGT	Pathology, Pharmacology	Dermatology
MI 1.2, MI 6.3, MI 8.10, MI 8.11, MI 8.13	Demonstration & Identification of Mycobacterium	ZN Stain of Sputum, Slit skin smear, Growth on LJ Media, BCG, Tuberculin test	2	SGD/ Practical		
MI 7.1, MI 7.2	Spirochete	Treponema - Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT	Pathology	Dermatology
		Syphilis				
MI 7.2, MI 8.9, MI 8.15		Non Venereal Treponematoses				
MI 8.1, MI 8.4		Borrelia & Relapsing fever				
		Lyme Disease				
MI 6.1		Vincent Angina				
MI 8.1, MI 8.4, MI 8.15		Leptospirosis				
MI 1.10	Demonstration & Identification of Treponema	VDRL, RPR test	2	SGD/ Practical		

MI 6.1, MI 5.1, MI 2.7, MI 4.2, MI 4.3	Nocardia & Actinomycetes	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	SGD/ Practical		
MI 8.1, MI 8.4	Rickettsial Disease	Epidemiology, classification, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	1	LGT		
MI 8.1		Typhus Group				
		Scrub Typhus				
MI 8.1, MI 8.4		Q Fever	1	Seminar		
		Ehrlichia				
		Bartonella				
MI 7.1, MI 7.2	Chlamydia	Epidemiology, classification, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,	2	SGD/ Practical		
MI 7.2, MI 8.9, MI 8.15		Chlamydia trachomatis				
MI 6.1		Chlamydia psittaci				
		Chlamydia pneumonia				
MI 6.1, MI 2.7, MI 7.2	Mycoplasma	Epidemiology, description of the pathogen, virulence factor, pathogenicity, laboratory diagnosis,				
MI 6.1		Atypical pneumonia				
MI 7.2		Non gonococcal Urethritis				
MI 5.1	Miscellaneous Bacteria	Listeria- Meningitis, Sepsis	2	SGD/ Practical		
MI 3.1		Campylobacter				
MI 7.2		Klebsiella granulomatis				
MI 6.1		Legionella				
MI 3.6		Helicobacter	1	LGT	Pathology	General Medicine
MI 1.1	Overview of Viral infections and General Virology	Introduction, Classification, General Characteristics, Viral Replication, Cultivation, Genetic & Nongentic interaction	1	LGT		
MI 1.1, MI 1.3, MI 1.8		Virus - Host interaction	1	LGT		
MI 1.1	Bacteriophage		1	SDL		
MI 4.3	Pox Viruses	Morphology, Classification, Physical & Chemical properties, Cultivation, Host range, Cinical features, Trt & Prevention	1	LGT		
MI 4.3, MI 5.2	Herpes Viruses	Morphology, Classification, Physical & Chemical properties, HSV	1	LGT		

MI 4.3		Varicella, Herpes zoster, CMV, HHV 6,7,8				
MI 6.1, MI 8.3		EBV - Infectious Mononucleosis, Burkitt's Lymphoma	1	LGT	Pathology	
MI 6.1, MI 3.1	Adenoviruses	Morphology, Classification, Physical & Chemical properties, Cultivation, Host range, Clinical features, Trt & Prevention	1	SGD/ Practical		
MI 5.1, MI 5.2, MI 1.9, MI 8.16	Picorna Viruses	Classification, Poliovirus - Morphology, Epidemiology, Resistance, Host range, Pathogenicity, Clinical features, Laboratory diagnosis, Immunoprophylaxis, PULSE polio,	1	LGT		
MI 4.3, MI 5.2, MI 6.1		Coxsackie virus, Echo Virus, New Enterovirus				
MI 6.1		Rhinovirus				
MI 6.1	Orthomyxoviruses	Influenza - History, Epidemiology Morphology	1	LGT		
MI 6.1	Paramyxoviruses	Classification, Mumps Virus, Parainfluenza virus, NDV	1	SGD/ Practical		
MI 4.3, MI 6.1		Measles				
MI 6.1		RSV				
MI 5.2		NIPAH	1	SDL		
MI 8.1	Arthropod- & Rodent borne Viruses	Introduction, Classification, General Characteristics, Pathogenicity, Laboratory Diagnosis, Epidemiology & Control				
MI 5.2		Togaviridae - Encephalitis group, pyrexia group	2	LGT		
MI 5.2		Flaviviridae - Encephalitis group				
MI 2.4, MI 4.2		Flaviviridae - Hemorrhagic group			Pathology	General Medicine
MI 8.1, MI 8.4		Other arboviral diseases				
MI 5.2,	Rhabdoviruses	Introduction, Classification, General Characteristics, Pathogenicity, Clinical Pictures & stages, Laboratory Diagnosis, Immunoprophylaxis	1	Seminar		Community Medicine
MI 3.7	Hepatitis Viruses	Types of Viral Hepatitis, Hepatitis A & E	1	SGD/ Practical		

MI 3.7, MI 8.3		Hepatitis B & D - History, Epidemiology, Morphology, Resistance, antigenic structure & variation, Classification, Pathogenicity, Clinical features, Laboratory diagnosis, Treatment & Immunoprophylaxis	1	LGT	Pathology	General Medicine
MI 3.7, MI 8.3		Hepatitis C	1	LGT	Pathology	General Medicine
MI 2.7	HIV	History, Morphology, Viral genes & antigens, Resistance, Epidemiology, Pathogenicity	2	LGT	Pathology, Pharmacology	General Medicine, Paediatrics, Community Medicine, General Surgery
MI 2.7, MI 8.2		AIDS & AIDS defining illness				
MI 2.7, MI 8.9		Laboratory Diagnosis & strategies for HIV testing				
MI 2.7		Management, Prophylaxis, NACO				
MI 8.3	Miscellaneous Viruses	HPV	1	SGD/ Practical	Pathology	
MI 2.5, MI 4.3, MI 6.1		Parvovirus & Rubella	2	Seminar		
MI 6.1		Corona Virus				
MI 3.1		Rota & Norovirus				
MI 2.7		Ebola				
MI 5.2		Slow Virus disease				
MI 8.3	Oncogenic Viruses	Introduction, Classification, Oncogenes, Anti-oncogenes, Mechanism of viral oncogenesis	1	LGT	Pathology	
MI 2.7, MI 3.2, MI 8.10, MI 8.11	Demonstration & Identification of Viruses		2	SGD/ Practical		
MI 1.1	Overview of parasitic infections and General Parasitology	Taxonomy of parasites	1	LGT		
		Parasite				
		Host				
		Host-parasite relationship				
		Transmission of parasites				
		Life cycle of the parasites				
		Pathogenesis of parasitic diseases				
		Immunology of parasitic diseases				
		Laboratory diagnosis of				

		parasitic diseases				
		Treatment of parasitic diseases				
MI 1.2, MI 3.1	Amoeba	General features of protozoa	2	SGD/ Practical		
		Classification of protozoa				
		Classification of amoeba				
		Intestinal amoeba				
MI 5.2		Free-living (opportunistic) amoeba				
MI 1.2, MI 3.1	Intestinal & Genital Flagellates	Classification of flagellates	2	SGD/ Practical		
MI 3.1		Giardia lamblia				
MI 7.2		Trichomonas vaginalis				
MI 2.4, MI 2.5	Hemoflagellates	Morphology of hemoflagellates	2	LGT		
MI 2.5		Leishmania				
MI 2.4, MI 2.5		Trypanosoma				
MI 2.5	Malaria & Babesia	Malaria - Life cycle, Pathogenesis	2	LGT	Pathology, Pharmacology	General Medicine, Paediatrics, Community Medicine
MI 2.5		Malaria - Complication, Laboratory diagnosis, Treatment, Prevention				
MI 2.5		Babesia				
MI 8.1, MI 8.2	Opportunistic Coccidian Parasite	Toxoplasma gondii	1	SGD/ Practical		
MI 8.2, MI 2.7		Other coccidian parasites	1	SDL		
MI 8.2	Miscellaneous Protozoa	Microsporidium species, Balantidium coli, Blastocystis hominis	1	SGD/ Practical		
MI 1.1	Cestodes	General characteristics of cestodes	1	LGT		
MI 2.5, MI 5.1		Taenia species			Pathology	General Medicine
MI 2.5		Echinococcus species				
MI 8.2		Hymenolepis nana, Dipylidium caninum, Diphyllbothrium species	1	Seminar		
MI 1.1	Trematodes	Classification of trematodes	1	LGT		
MI 2.5		Liver fluke				
MI 2.5		Intestinal fluke				
MI 2.4		Schistosoma species	1	SGD/ Practical		
MI 6.1		Paragonimus species				Pulmonary Medicine



MI 8.2		Other Trematodes				
MI 1.1	Intestinal nematodes	General properties of nematodes	1	LGT		
MI 2.5		Large intestinal nematodes - Enterobius vermicularis, Trichuris trichiura				General Medicine
MI 2.4, MI 3.1		Small intestinal nematodes - Hookworm, Strongyloides species, Ascaris species	2	LGT		General Medicine
MI 8.2		Accidental human pathogen				
MI 1.1	Tissue Nematodes	Classification	1	LGT		General Medicine
MI 2.5		Lymphatic filarial nematodes - Wuchereria bancrofti, Brugia species			Pathology	
MI 2.6, MI 8.2		Other filarial nematodes	1	SGD/ Practical		
MI 2.6, MI 8.2		Other Somatic nematodes				
MI 1.2, MI 2.6, MI 3.2, MI 8.10, MI 8.11	Laboratory Diagnosis of Parasitic Diseases		4	SGD/ Practical		
MI 2.5	Medical Entomology		1	SDL		
MI 1.1	Overview of fungal infections and General Mycology	Introduction, General Properties, Classification, Laboratory Diagnosis, Treatment	1	LGT		
MI 4.2, MI 4.3	Superficial & Subcutaneous Mycoses	Definition, Agents causing superficial & subcutaneous mycoses, Clinical Pictures, Laboratory Diagnosis, Management	2	LGT	Pathology	Dermatology
MI 8.2	Systemic & Opportunistic Mycoses	Agents causing systemic mycoses	3	LGT		
MI 5.1		Histoplasmosis, Blastomycosis, Paracoccidiomycosis, Coccidiomycosis			Pathology	
MI 6.1		Aspergillosis, ABPA			Pathology	Pulmonary Medicine
MI 2		Candidemia & Candidosis				General Medicine
MI 5.1, MI 6.1, MI 4.3		Cryptococcosis				
MI 4.2, MI 4.3		Zygomycoses			Pathology	
MI 8.2		Otomycosis, Oculomycosis				
MI 3.5		Mycotic poisoning				

MI 1.2	Laboratory Diagnosis of Fungal Infection	KOH mount, LCB mount, Colony on SDA	4	SGD/ Practical		
MI 1.1	Normal Microbial Flora of Human Body & Microbial Pathogenesis	Microbiology of normal microbiota, Resident flora & transient flora, Role of normal flora.	1	SGD/ Practical		
MI8.8	Bacteriology of water, Air, Milk, & Food	Bacterial flora of water, water borne infectious diseases, Bacteriological examination of water, Methods.	2	SGD/ Practical		
MI 8.8, MI 8.5, MI 8.6		Air borne & droplet infection, Indication of microbial air surveillance, Evaluation of quality of air				
MI 8.8		Bacteriological examination of Milk & food				
MI 1.6, MI 8.5	Laboratory control of antimicrobial Therapy	Methods of antimicrobial testing, Antibiotic policy & AMSP	2	SGD/ Practical	Pharmacology	
MI 8.5	Health care associated infection	Definition, Types & Terminology, Measures to control HAI	4	SGD/ Practical		
MI 8.5		HAI Surveillance & Prevention				
MI 8.7	Demonstrate Infection control practices and use of Personal Protective Equipments (PPE)		4	SGD/ Practical/ OSPE		
MI 8.5	Biomedical Waste Management	Rules, Segregation, Treatment & disposal	2	SGD/ Practical/ OSPE		Community Medicine
MI 8.4	Emerging & Re-emerging infections	Definition, Factors, WHO priority list, Bioterrorism	1	LGT		

MI 8.9, MI 8.10	Recent advances in diagnostic microbiology	Automated system, Molecular assay, Sequencing etc	2	SGD/ Practical		
	Blood Stream Infections	Bacterimia, Septicemia, Sepsis	2	SGD/ Practical		
		Etiological Agent				
		Approach to the laboratory diagnosis				
	Fever of Unknown Origin	Definition, Etiology, Approach to Laboratory diagnosis	2	SGD/ Practical		
MI 8.12, MI 8.14	Demonstrate confidentiality pertaining to patient identity in laboratory results		1	SGD/ Practical		
MI 8.9, MI 8.10, MI 8.11, MI 8.3, MI 8.13, MI 8.15	Principles of Laboratory Diagnosis of Infectious Diseases	Pre analytical, analytical & post analytical steps in Laboratory diagnosis, Quality control in microbiology	2	SGD/ Practical		
			190			

# MODEL QUESTION PAPERS

## PAPER-I

General Microbiology, Immunology,  
Infections of Blood Stream and Cardiovascular System, Gastrointestinal Tract  
and Hepatobiliary System

**Full Marks 100**

**Time: 03:00 Hours**

### Section I A

(General Microbiology, Immunology)

#### 1. Long answer question (2 x 10 marks)

- a. Enumerate different physical methods of sterilization. Write the principle of autoclave, its working condition and various sterilization control. (3+2+3+2)
- b. Define Complement? Enumerate different pathways for complement activation? Draw the flow diagram of classical pathway of complement activation. (2+3+5)

#### 2. Short answer question

(4 x 5 marks)

- a. Koch's Postulates
- b. Agglutination reaction
- c. Transformation
- d. Hypersensitivity reaction I

#### 3. Very short answer type question

(5 x 2 marks)

- a. Write two contribution of Louis Pasteur.
- b. Short note on Herd Immunity.
- c. Enumerate four uses of ELISA.
- d. Draw a labelled diagram of Cell wall of a Gram negative bacteria.
- e. Heterophile antigen.

### Section I B

(Infections of Blood Stream and Cardiovascular System, Gastrointestinal Tract and Hepatobiliary System)

#### 1. Long answer question (2 x 10 marks)

- a. A 25-year-old male with history of multiple sex partners is admitted with complaints of unexplained fever, progressive loss of weight, persistent diarrhoea and generalized lymphadenopathy for the past 6 months. (2+2+6)
  - i. What is the most probable diagnosis and how you arrived at?
  - ii. Draw a labelled diagram of the morphology of the causative agent of this condition.
  - iii. Discuss the laboratory diagnosis of the above condition.
- b. A 10 year old girl suffered from increased frequency of stools mixed with blood and mucus along with painful defecation (tenesmus) and severe abdominal cramps after attending a summer camp. She has also a fever of 38.4°C. Five to six other children also have complained of same type of illness. (3+1+6)

- i. Write the differential diagnosis of the condition?
- ii. Write the route of transmission?
- iii. How will you approach the patient with respect to laboratory diagnosis?

**2. Short answer question (4 x 5 marks)**

- a. Laboratory diagnosis of enteric fever?
- b. Write briefly on amoebic liver abscess?
- c. Write the pathogenesis of cholera?
- d. Laboratory diagnosis of falciparum malaria?

**3. Very short answer type question (5 x 2 marks)**

- a. Write the laboratory diagnosis of acute rheumatic fever?
- b. Write two helminth causing anaemia?
- c. Write examples of faeco – orally transmitted hepatitis?
- d. What is PKDL?
- e. What is the vaccination schedule of Hepatitis B in adults?

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**PAPER-II**

Infections of Skin, Soft Tissue and Musculoskeletal System, Central Nervous System, Respiratory System, Genitourinary System, Hospital Infection and Control, Zoonotic and Miscellaneous

**Full Marks 100**

**Time: 03:00 Hours**

**Section II A**

(Infections of Skin, Soft Tissue and Musculoskeletal System, Central Nervous System, Respiratory System)

**1. Long answer question (2 x 10 marks)**

- a. Enumerate the viruses causing respiratory infections? Define antigenic shift and antigenic drift? Write briefly about laboratory diagnosis of influenza? **(3+2+5)**
- b. A 6-year-old boy develops a high-grade fever and headache. He is taken to the emergency department, where he is noted to have a stiff neck, suggesting meningeal irritation and presence of purpuric rash on the body. **(1+2+2+2+3)**
  - i. What is the likely clinical condition?
  - ii. Enumerate the etiological agents of this condition?
  - iii. What are the samples to be collected in such condition?
  - iv. What is the significance of Gram stain in this condition?
  - v. What are the culture media and incubation condition to isolate the probable organism?

**2. Short answer question (4 x 5 marks)**

- a. Write short note on primary amoebic encephalitis?
- b. Write the pathogenesis of gas gangrene?
- c. Short note on cutaneous anthrax?
- d. Short note on subcutaneous mycoses?

**3. Very short answer type question**

**(5 x 2 marks)**

- a. Enumerate two rapidly growing Mycobacteria?
- b. Name two agent causing viral exanthem?
- c. Mention the current vaccination schedule for polio under national immunization Program.
- d. What is the mechanism of action of botulinum toxin?
- e. Name two causes of neonatal pyogenic meningitis?

**Section II B**

(Infections of Genitourinary System, Hospital Infection and Control, Zoonotic And Miscellaneous)

**1. Long answer question (2 x 10 marks)**

- a. A 20 year old female patient visited the OPD with a four day history of increased frequency of urination, dysuria, left flank pain and fever. On physical examination she had a temperature of 38.8°C and left costovertebral angle tenderness. **(1+1+4+4)**
  - i. What is the most probable diagnosis?
  - ii. What is the most common organism in such infection?
  - iii. What sample is to collected & how?
  - iv. Describe the laboratory diagnosis in such cases?

- b. Enumerate various rickettsial diseases? What is the causative agent and vector of Scrub typhus? Enumerate the different modalities of diagnosis of Scrub typhus? Add a note on Weil – Felix test? **(3+2+2+3)**

**2. Short answer question**

**( 4 x 5 marks)**

- a. Post exposure prophylaxis following needle stick injury.
- b. Trichomonas vaginalis- clinical manifestation and laboratory diagnosis?
- c. Laboratory diagnosis of brucellosis?
- d. Write various aspect of confidentiality of a patient to be maintained in a laboratory?

**3. Very short answer type question**

**(5 x 2 marks)**

- a. What are the 'My five moments' of hand hygiene?
- b. What are the colour codes of biomedical waste according to BMW management rule 2016?
- c. Name two agents causing non-gonococcal urethritis?
- d. Define hospital acquired infection?
- e. Enumerate clinical manifestation of plague?

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## Suggested Books

### **Textbook**

1. Kanungo. R; Ananthanarayan and Paniker's Textbook of Microbiology, 10th Edition, University Press
2. Sastry,S; Bhat,S;Essentials of Medical Microbiology, 2nd Edition, Jaypee Brothers Medical Publishers
3. Baveja, C.P;Textbook of Microbiology, 6th Edition, Arya Publications
4. Chatterjee, K.D; Parasitology (Protozoology and Helminthology), 13th Edition, CBS Publications.
5. Sastry,S; Bhat,S;Essentials of Medical Parasitology, 2nd Edition, Jaypee Brothers Medical Publishers

### **Reference books:**

1. Redel,S; Morse,S;Metzener, T; Miller,S; Jawetz, Melnick, & Adelberg's Medical Microbiology , 28th Edition, Lange Publications
2. Greenwood,D;Baerer,M;Irving, W; Slack, R; Medical Microbiology, 17th Edition, Elsevier Health Sciences
3. Procop GW;Koneman's Color Atlas and Textbook of Diagnostic Microbiology, 7th Edition, Wolter Kluwers
4. Garcia, LS; Diagnostic Medical Parasitology, 6th Edition, ASM Press
5. Punt J; Stranford S; Jones, P; Kuby Immunology, 8th Edition, WH Freeman

## VIII: Pharmacology

- (a) **Competencies:** The undergraduate must demonstrate:
1. Knowledge about essential and commonly used drugs and an understanding of the pharmacologic basis of therapeutics
  2. Ability to select and prescribe medicines based on clinical condition and the pharmacologic properties, efficacy, safety, suitability and cost of medicines for common clinical conditions of national importance
  3. Knowledge of pharmacovigilance, essential medicine concept and sources of drug information and industry-doctor relationship
  4. Ability to counsel patients regarding appropriate use of prescribed drug and drug delivery systems
- (b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in organ systems recognizing the interaction between drug, host and disease in order to provide an overall understanding of the context of therapy.

### TEACHING METHODS & HOURS

Duration	Large group Teaching	SGT(Tutorials/Seminars / Practical) /Integrated learning	SDL	Total	AETCOM
12 months	<b>80 hours</b>	Practical - 92 hrs 46 hrs – Tutorial/ Seminar + integrated teaching Total = <b>138 hrs</b>	<b>12hours</b>	<b>230 hrs</b>	9 hrs

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical	Viva	Theory	Practical + Viva
Theory=200 Practical & Viva =100	Paper 1=100 Paper 2=100	Practical- Prescription writing and auditing =10 Spotter = 10 Record+ Log Book = 10 Experimental Pharmacology = 25 Clinical Pharmacology = 25	20  One external & one Internal in each Group	100	80 +20 =100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	



## Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	100	100

### Course contents

#### Paper I

1. General pharmacology -

Sources of drugs, Dosage forms, Routes of drug administration, Pharmacokinetics(Absorption, distribution, metabolism and excretion, Bioavailability, Half life etc) and Pharmacodynamics(Mechanism of drug action, Drug Interaction, Combined drug effect, Adverse drug effect, Pharmacogenetics and pharmacogenomics), Factors affecting drug action, Drug use in paediatric and geriatric patients, drugs used in pregnancy and lactation, Sources of drug information, Essential drug and RUD , Evidence based medicine, Generic medicine, New Drug development.

2. Drugs acting on autonomic nervous systems ( Adrenergic agonists and antagonists, Cholinergic agonists and antagonists) and Central & Peripheral skeletal muscle relaxants
3. Drugs acting on Central Nervous System – Sedative hypnotics and anxiolytics, antipsychotics, antidepressants, drugs used in bipolar disorder, antiepileptics, General anesthesia, Local anesthesia, drugs used in neurodegenerative disorders, opioids, drug abuse and addiction, psychedelic drugs
4. Cardiovascular system (antihypertensives, antianginal drugs , drugs used in heart failure, antiarrhythmics), Lipid lowering drugs and management of shock
5. Autacoids(Antihistamines, 5HT receptor modulators , Prostaglandin receptor modulators, Bradykinin, NO, RAAS ), drugs used in rheumatoid arthritis and gout
6. Haematinics(Iron, Vit B12, folic acid), Haematopoietic factors, anticoagulants, antiplatelets, fibrinolytics and antifibrinolytics
7. Drugs acting on Uterus( oxicotics, tocolytics)
8. Management of poisoning and heavy metal antagonists

#### Paper II

1. Endocrine pharmacology (hormones and antihormones) : drugs acting on pituitary gland, gonadotrophins, GnRH analogues, thyroid and antithyroids, corticosteroids, sex steroids, treatment of infertility & impotence, antidiabetics , drugs used in calcium balance
2. GIS( antipepticulcer drugs, Drugs used in GERD, antidiarrhoeals, antiemetics, drugs used in constipation, ORS, drugs used in IBS and IBD)
3. Respiratory system- Antiasthmatic drugs, Cough suppressants and mucolytics
4. Immunosuppressants and immune stimulants
5. Diuretics(renal Pharmacology)
6. Antimicrobials(Beta lactam antibiotics, aminoglycosides, Macolides, tetracycline and chloramphenicols, Quinolones, sulphonamides)
7. Chemotherapeutic agents- Antimalarials, anti TB, Anti leprotic, Antihelminthetics, anticancer, anti filarials, anti fungal, antivirals including anti HIV drugs
8. Miscellaneous: Drugs used in dermatology, Drugs used in Ophthalmology, antiseptic disinfectants, Vitamins & enzymes, Vaccines and sera

Sl no.	Topic code	Topic	TL Method	
<b>GENERAL PHARMACOLOGY</b>				
1	PH1.1	Define and describe the principles of pharmacology and Pharmacotherapeutics	LGT	
2	PH1.2	Describe the basis of Evidence based medicine and Therapeutic drug monitoring	LGT	
3	PH1.3	Enumerate and identify drug formulations and drug delivery Systems	LGT	
4	PH1.4.1	Describe absorption, distribution, metabolism & excretion of drugs <b>Biotransformation-phase 1</b>	LGT	
5	PH1.4.2	Biotransformation-phase 2 and excretion	LGT	
6	PH1.4.3	<b>Clinical Pharmacokinetic</b>	<b>SGT(Group discussion)</b>	
7	PH1.5.1	Describe general principles of mechanism of drug action	LGT	
8	PH1.5.2	<b>Drug receptor interaction and receptor occupation theory</b>	<b>SGT(Group discussion)</b>	
9	PH1.6	Describe principles of Pharmacovigilance & ADR reporting systems	} LGT	
	PH1.7	Define, identify and describe the management of adverse drug reactions (ADR)		
	PH1.8	Identify and describe the management of drug interactions		
10	PH1.11	Describe various routes of drug administration, eg., oral, SC, IV, IM, SL	LGT	
11		Bioassay and biostandardization	SDL	
<b>ANS PHARMACOLOGY</b>				
12	PH1.13.1	[Describe mechanism of action, types, doses, side effects, indications and contraindications of:] <b>Adrenergic agonists</b>	LGT	

13	PH1.13.2.	Adrenergic antagonists( $\alpha$ ) Drugs	LGT	
14	PH1.13.3.	. Adrenergic antagonists( $\beta$ ) Drugs	LGT	
15	PH.1.13.4	Adrenergic and antiadrenergic drugs	SGT (Small group discussion)	
16	PH.14.1	Describe mechanism of action, types, doses, side effects, indications and contraindications of:Cholinergic(DIRECTLY ACTING	LGT	
17	PH.14.2	Cholinergic(Indirectly acting)	LGT	
18	PH.14.3.	Anticholinergic Drugs	LGT	
19	PH.14.4	Cholinergic and anticholinergic drugs	SGT (Small group discussion)	
20	PH1.15	Describe mechanisms of action, types, doses, side effects, indications and contraindications of <b>Skeletal muscle relaxants</b>	LGT	

#### AUTACOIDS (LOCAL HORMONES)

21	PH1.16.1	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act by modulating autacoids. <b>Anti-histaminics</b>	LGT
22	PH1.16.2	5-HT modulating Drugs	SGT
23	PH1.16.3	Prostaglandin and leukotrienes	LGT
24	PH1.16.4	NSAIDs	LGT
25	PH1.16.5	Drugs for gout, anti-rheumatic drugs	LGT
26.	PH1.16.6	Drugs for Migraine	<b>SGT(Seminar)</b>

#### CNS PHARMACOLOGY

27.	PH1.17	Describe the mechanism/s of action, types, doses, side effects,indications and contraindications of local anesthetics	LGT
28	PH1.18.1	Describe the mechanism/s of action, types, doses, side effects,indications and contraindications of: <b>General Principle of GA &amp; Pre- anaesthetic medication</b>	LGT

29	PH1.18.2	Inhalational GA	LGT
30	PH1.18.3	IV Anaesthetics	SGT(Seminar)
31	PH1.19.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS: <b>Anxiolytics, sedatives &amp; hypnotics</b>	LGT
32	PH1.19.2	Anti-psychotic drugs	LGT
33	PH1.19.3.1	Antidepressant Drugs	LGT
34	PH1.19.3.2	Anti-maniacs	SGT
35	PH1.19.4	Opioid agonists	LGT
36	PH1.19.5	Anti-epileptics drugs	LGT
37	PH1.19.6.1	Drugs used for neurodegenerative disorders( Anti parkinsonism drugs)	LGT
38	PH1.19.6.2	Drugs used in Alzheimer's disease	LGT
39	PH1.19.7	Opioid antagonists and Management of morphine poisoning	SGT
40	PH1.20	Describe the effects of acute and chronic ethanol intake	LGT
41	PH.20,PH 21	Methanol and ethanol poisoning and management	SGT(Small group discussion)
42	PH1.22.1	Describe drugs of abuse dependence, addiction, stimulants, depressants	LGT
43	PH1.22.2.	psychedelics, drugs used for criminal offences	SGT
44	PH1.23	Describe the process and mechanism of drug deaddiction	SGT( Seminar)
<b>RENAL PHARMACOLOGY</b>			
45	PH1.24.1	Describe the mechanism of action, types, doses, side effects, indications and contraindications of: the drugs affecting renal systems : <b>Diuretics</b>	LGT
46	PH1.24.3	Antidiuretics- vasopressin and Analogues	SGT(Seminar)
<b>BLOOD AND BLOOD FORMING AGENTS</b>			
47	PH1.25.1	Describe the mechanisms of action, types, doses, side effects,	
48	PH1.25.2.	Antiplatelets	LGT

49	PH1.25.3.	Fibrinolytics	LGT
50	PH1.25.4.	Plasma expanders	SGT(Seminar)
<b>RENIN ANGIOTENSIN ALDOSTERONE SYSEM</b>			
51	PH1.26	Describe mechanisms of action, types, doses, side effects, indications and contraindications of the drugs modulating the rennin angiotensin and aldosterone system	LGT
<b>CVS PHARMACOLOGY</b>			
52	PH1.27.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of: <b>Antihypertensive drugs-1</b>	LGT
53	PH1.27.2	Antihypertensive drugs-2	LGT
54	PH1.27.3	Drugs used in shock	SGT
55	PH1.28.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of: Drugs used in ischemic heart disease <b>(stable, unstable angina and myocardial infarction)</b>	LGT
56	PH1.28.2	Peripheral vascular disease	SGT(Group discussion)
57	PH1.29.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in <b>congestive heart failure</b>	LGT
58	PH1.29.2.	Management of CHF	SGT (Seminar)
59	PH1.30.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the <b>Antiarrhythmics- 1</b>	LGT
60	PH1.30.2	<b>Antiarrhythmic drugs- 2</b>	<b>LGT</b>
61	PH1.31.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in the <b>management of dyslipedemia</b>	LGT
62	PH1.31.2.	Dyslipidemia Management	SGT(smallgroup discussion)

## RESPIRATORY SYSTEM PHARMACOLOGY

63	PH1.32.1	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of : <b>Drugs used in Bronchial asthma and COPD</b>	LGT
64	PH1.32.2	<b>Management of chronic asthma and COPD</b>	<b>SGT (Seminar)</b>
65	PH1.32.3	Management of Acute severe Asthma	<b>SDL</b>
66	PH1.33	Describe the mechanism of action, types, doses, side effects, indications and contraindications of : <b>The drugs used in cough(antitussives, expectorants/ mucolytics)</b>	LGT

## GIS PHARMACOLOGY

67	PH1.34.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used as below: <b>Acid-peptic disease and GERD</b>	LGT
68	PH1.34.2	Antiemetics and prokinetics	LGT
69	PH1.34.3	Antidiarrhoeals	LGT
70	PH1.34.4	Laxatives and Purgatives	LGT
71	PH1.34.5	Inflammatory Bowel Disease & Irritable Bowel syndrome	LGT
72	PH1.34.6	Biliary and pancreatic diseases	SDL
73	PH1.34.1.7	Management of Peptic ulcer	SGT(Small group discussion)

## DRUGS USED IN HAEMATOLOGICAL DISORDERS

74	PH1.35.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of drugs used in haematological disorders like: . <b>Drugs used in Anemias[ IDA &amp; MEGALOBLASTIC ANEMIA]</b>	LGT
75	PH1.35.2.	Drugs used in haemolytic anemia	<b>LGT</b>
76	PH1.35.3.	<b>Vitamins</b>	<b>SDL</b>

## ENDOCRINE PHARMACOLOGY(HORMONES AND ANTIHORMONES)

77	PH1.36.1	Describe the mechanism of action, types, doses, side effects, indications and contraindications of drugs used in <b>endocrine disorders :</b> Diabetes mellitus(ODA)	LGT
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78	PH1.36.2.	Insulin and insulin analogues	LGT
79	PH1.36.3	Thyroid disorders (Thyroid preparations and management of hypothyroidism)	LGT
80	PH1.36.4.	Antithyroid drugs and management of hyperthyroidism	LGT
81	PH1.36.5.	Calcium balance and Osteoporosis	SGT
82	PH1.37.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used as: Sex hormones, their analogues	LGT
83	PH1.37.2	Anterior Pituitary hormones	LGT
84	PH1.38.1	Describe the mechanism of action, types, doses, side effects, indications and contraindications of <b>corticosteroids</b>	LGT
85	PH1.39.1	Describe mechanism of action, types, doses, side effects, indications and contraindications the drugs used for <b>contraception</b>	LGT
86	PH1.40.1	Describe mechanism of action, types, doses, side effects, indications and contraindications of : <b>Drugs used in the treatment of infertility</b>	LGT
87	PH1.40.2.	<b>Drugs used in erectile dysfunction</b>	SGT(Group discussion)
88	PH1.41	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of <b>uterine relaxants and stimulants</b>	<b>SGT (Seminar)</b>
<b>ANTIMICROBIALS</b>			
89	PH1.42	Describe general principles of chemotherapy	} LGT
		Describe and discuss the rational use of antimicrobials including antibiotic stewardship program	
90	PH1.43.1	Chloramphenicol and tetracyclines	SDL
91	PH1.43.2	Penicillins – 1	LGT
92	PH1.43.3	Penicillins – 2	LGT
93	PH1.43.4	Cephalosporins-1	LGT
94	PH1.43.5	Cephalosporins-2	LGT
95	PH1.43.6	Sulphonamides	LGT

96	PH1.43.7	Macrolides	LGT
97	PH1.43.8	Quinolones-1	LGT
98	PH1.43.9	Quinolones-2	LGT
99	PH1.43.10	Aminoglycosides-1	LGT
100	PH1.43.11	Aminoglycosides-2	LGT
101	PH1.44	<b>Describe the first line antitubercular drugs</b> , their mechanisms of action, side effects and doses	LGT
102	PH1.45	Describe the drugs used in MDR and XDR Tuberculosis	SGT
103	PH1.46	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of <b>Anti-leprotic drugs</b>	LGT
104	PH1.47.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in <b>Malaria, Antimalarial drugs and ACTs</b>	LGT
105	PH1.47.2	Prophylaxis and Management of Malaria	SGT
106	PH1.47.3	Management of complicated malaria	SDL
107	PH1.47.4	<b>Drugs used in KALA-AZAR</b>	SGT
108	PH1.47.5	<b>Amebiasis</b>	SGT
109	PH1.47.6	<b>Intestinal helminthiasis</b>	SGT- small group discussion
110	PH1.48.1	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in <b>:UTI/ STD</b>	SGT
111	PH1.48.2	<b>Antiviral drugs</b>	LGT
112	PH1.48.3	Anti-AIDS drugs and HAART regimen	LGT

### CANCER CHEMOTHERAPY

SL.No	Code	TOPIC	TL Method
113	PH1.49.1	Describe mechanism of action, classes, side effects, indications and contraindications of <b>anticancer drugs: General principles of anticancer chemotherapy</b>	LGT
114	PH1.49.2	<b>Anticancer drugs</b>	LGT
115	PH1.49.3	<b>Anticancer drugs uses</b>	SGT( Group discussion)



<b>IMMUNOMODULATORS</b>			
116	PH1.50.1	Describe mechanisms of action, types, doses, side effects, indications and contraindications of: <b>Immunomodulators</b>	LGT
117	PH1.50.2	<b>Management of organ transplant rejection</b>	SDL
<b>POISONING &amp; HEAVY METAL ANTAGONISTS AND CHELATING AGENTS</b>			
	PH1.51	Describe occupational and environmental pesticides, food adulterants, pollutants and insect repellents	Integrated with community medicine
118	PH1.52.1	Describe management of : .common poisoning and common sting and bites	SGT
119	PH1.52.2	Insecticides and OP poisoning	SDL
120	PH1.53	General principles of poisoning management	}SDL
		Describe heavy metal poisoning and chelating agents	
<b>VACCINES</b>			
121	PH1.54	Describe vaccines and their uses	SGT
122	PH1.55.1	Describe and discuss the following National Health Programmes including Immunization	Integrated with Community Medicine
123	PH1.55.2	Tuberculosis, Leprosy, Malaria, HIV ( NHP)	Integrated with Community medicine
124	PH1.55.3	, Filaria, Kala Azar, Diarrhoeal diseases(NHP)	Integrated with Community Medicine
125	PH1.55.4	Anaemia & nutritional disorder(NHP)	Integrated with Community Medicine
126	PH1.55.5	Blindness and Vit A (NHP)	Integrated with Community

			Medicine
127	PH1.55.6	Cancer and Non-communicable diseases(NHP)	Integrated with Community Medicine
128	PH1.55.7	Iodine deficiency (NHP)	Integrated with Community Medicine

#### **GERIATRIC AND PEDIATRIC PHARMACOLOGY**

129	PH1.56	Describe basic aspects of <b>Geriatric and Pediatric pharmacology</b>	SGT(Seminar)
130	PH1.57	Describe drugs used in skin disorders	SGT(Group Discussion)
131	PH1.58	Describe drugs used in Ocular disorders	SGT ( Seminar)
132	PH1.59	Describe and discuss the following: <b>Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines</b>	SGT

#### **PHARMACOGENOMICS AND PHARMACOECONOMICS**

133	PH1.60.1	Describe and discuss : <b>Pharmacogenomics</b>	SDL
134	PH1.60.2.	<b>Pharmacoeconomics</b>	SDL
	PH1.61	Describe and discuss dietary supplements and nutraceuticals	Integrated with Community Medicine

#### **ANTISEPTICS AND DISINFECTANTS**

135	PH1.62	Describe and discuss antiseptics and disinfectants	SDL
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#### **DRUG DEVELOPMENT AND DRUG REGULATION**

Sl.No.	CODE	TOPIC	TL Method
136	PH1.63	Describe Drug Regulations, acts and other legal aspects	SGT
137	PH1.64.1	Describe overview of <b>.Drug development, Phases of clinical trials</b>	SGT

138	PH1.64.2	<b>Good Practice</b>	<b>Clinical</b>	SGT
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**PHARMACOLOGY (PRACTICALS): Total =23x2 =46 hrs [For 2 Batches - 46 x2= 92hrs ]**

SL. NO.	CODE	TOPIC	TL Method	
1	PH 1.3	Understanding and uses of various dosage form Enumerate and identify drug formulations and drug delivery systems	SGT	
2	PH 1.3.1	Oral and parenteral dosage form	SGT	
3	PH 1.3.2	Topical dosage form and devices	SGT	
4	PH 1.9	Describe the nomenclature of drugs in generic and branded drug	SGT	
5	PH 1.10.1	Describe correct complete legible generic prescription	SGT	
6	PH 1.10.2	Identify the errors in prescription and correct appropriately	SGT	
7	PH 1.8	Define and identify the drug –drug interactions	SGT	
8	PH 1.6	Principles of pharmacovigilance and ADR reporting	SGT	
9	PH2.1	Prepare ORS from ORS packet and explain the use	SGT	
10	PH2.3	Administer drugs through various routes in a simulated environment using mannequins	SGT	
11	PH 4.1	Demonstrated the appropriate setting up of an IV drip in a simulated environment	SGT	
12	PH 1.12	Demonstrate the correct method of dose for a patient in special situation(Paediatrics and Geriatrics) - Calculate the dosage of drugs using appropriate formulae for an individual patient, including children, elderly and patient with renal dysfunction	SGT	
13	PH 3.2.1	Write a rational prescription	SGT	
14	PH3.2.2	Write a rational prescription and communicate to the patient	SGT	

15	PH 3.3.1	Critical appraisal(audit) of a given prescription	SGT	
16	PH3.3.2	Critical evaluation of the drug promotional literature	SGT	
17	PH 3.4	Record and report an ADR	SGT	
18	PH3.5	To prepare a list of ‘P’ drug for a given case/ condition	SGT	
19	PH 3.6	To demonstrate how to optimise interaction with pharmaceutical representatives to get authentic information on drug	SGT	
20	PH 3.7	Prepare a list of essential medicine for a healthcare facility	SGT	
21	PH 3.8	effectively with a patient on proper use of prescribed medications	SGT	
		<b>EXPERIMENTAL PHARMACOLOGY(CAL</b>		
22	PH 4.2.1	Demonstrate the effect of vasopressure drugs on Dog’s Blood Pressure with appropriate blockers on Dog’s BP	SGT	
23	PH 4.2.2	Demonstrate the effect of vasodepressor s with appropriate blockers on dog’s BP	SGT	

**COMMUNICATION—**

**Total hr= 4x2=8 hrs      AETCOM- 8 hrs**

SI NO	Code	Topic	TL method
1	PH 5.2	Communicating patient regarding optimal use of drug therapy, device, and storage of medication	AETCOM
2	PH 5.3	Motivate the patient with chronic diseases to adhere to prescribed management by	AETCOM

		the healthcare provider	
3	PH 5.4	Explain the patient the relationship between cost of treatment and patient compliance	AETCOM
4	PH5.5	Demonstration an understanding of the caution in prescribing drugs likely to produce dependence and recommended the line of management	AETCOM

**Model Questions-  
PHARMACOLOGY**

**PAPER -1**

**Time - 3 hrs**

**Full Mark- 100**

**Each section to be answered in a separate answer book**

**Answer all questions**

**SECTION- A**

**Q.1.** What is biotransformation? Enumerate Phase 2 metabolism with suitable examples. Explain why phenobarbitone is given in case of kernicterus? [2+5+3]

**Q.2. Write short notes on:**

[5x3]

- (a) Competitive antagonist.
- (b) Propofol.
- (c) Low molecular weight heparin.

**Q.3. Write therapeutic basis of –**

[3x5]

- (i) Use of ACEIs in CHF.
- (ii) Use of adrenaline in anaphylactic shock.
- (iii) Use of valproic acid as broad spectrum antiepileptic.
- (iv) Use of misoprostal with long term NSAIDs therapy.
- (v) Use of thiazide diuretic in essential hypertension.

**Q.4. Answer as per direction**

[2x5]

- (i) Name two iron chelating agents.
- (ii) Mention two important mechanism of tolerance.
- (iii) Define iatrogenic diseases with one example?
- (iv) Name two drugs used for the treatment of acute severe migraine
- (v) Why KMnO<sub>4</sub> solution used for stomach wash in case of organophosphate poisoning?

## SEC-B

**Q.1.** Classify drugs used in case o Parkinsonism. Why Levodopa is used in combination with carbidopa? Give a note on adverse effect of Levodopa. [5+2+3]

**Q.2. Write short notes on:** [5x3]

- (i) Essential drug list.
- (ii) DMARDs.
- (iii) Uricosuric agents.

**Q.3. Write therapeutic basis of use of-** [3x5]

- (i) Fluoxetine in major depression
- (ii) Oxytocin for induction of labour
- (iii) Naloxone in morphine poisoning
- (iv) Sublingual nitroglycerine in acute attack of angina
- (v) Adrenaline with local anesthesia

**Q.4. Answer as per direction:** [2x5]

- a. Mention 2 adverse effects of statins.
- b. Mention 2 drugs used in supra-ventricular tachycardia.
- c. Why ACEIs contraindicated in patients of hypertension with Asthma?
- d. Mention two nonepileptic uses of carbamazepine.
- e. Why dobutamine preferred in case of cardiogenic shock?

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### Model Questions-

### PHARMACOLOGY

### Paper -II

Time - 3 hrs

Full Mark- 100

Each section to be answered in a separate answer book

Answer all questions

### SECTION- A

**Q.1.** Enumerate the oral antidiabetic drugs. Describe mechanism of action and adverse effects of metformin & 2<sup>nd</sup> generation sulfonylurea. [4+3+3]

**Q.2. Write short notes on:** [5x3]

- a. HAARTs
- b. Topical antifungal agents
- c. Azithromycin

**Q.3. Write therapeutic basis of –** [3x5]

- i. Use of ACTs in uncomplicated malaria

- ii. Use of omeprazole in peptic ulcer
- iii. Use of folic acid along with methotrexate
- iv. Use of ciprofloxacin in UTI
- v. Use of cephoperazone with sulbactam

**Q.4. Answer as per direction:**

**[2x5]**

- i. Mention 2 drugs used in scabies
- ii. Write the dosing schedule of diethyl carbamzine in case of filariasis
- iii. Name 2 drugs used in hook worm infestation
- iv. Name 2 the orally used iron chelating agents used for thalasemia patients.
- v. Mention the dosing schedule of oseltamvir for swine flu infection.

### SECTION - B

**Q.1.** Enumerate different groups of anticancer drugs. Write briefly the mechanism of action and adverse effects of cell cycle specific anticancer drugs.

**[4+3+3]**

**Q.2.Short notes on:**

**[5x3]**

- (i) Drugs used in XDR tuberculosis
- (ii) Management of cerebral malaria
- (iii) Management of Acute severe Bronchial Asthma

**Q.3. Give pharmacological basis of:**

**[3x5]**

- a) Use of tacrolimus for prevention of graft rejection.
- b) Use of acyclovir for herpes simplex infection.
- c) Use of clofazimine in lepra reaction.
- d) Use of primaquin in case of P.vivax malaria.
- e) Use of bromocriptin for suppression of lactation.

**Q.4. Answer the question as per the direction:**

**[2x5]**

- (i) Name 2 drugs used in intestinal amebiasis.
  - (ii) Mention 2 drugs proffered in Typhoid fever.
  - (iii) Why ciprofloxacin is contraindicated in case of pregnancy with UTI.
  - (iv) Name two SERMs.
  - (v) Name 2 third generation cephalosporin with anti-pseudomonal action.
-

## **Prescribed Books-**

1. Katzung BG, Trevor AJ, Master SB. Basic and clinical Pharmacology, New York, Mc Graw Hill
2. Bennett PN, Brown MJ, Sharma P. Clinical Pharmacology, Edinburgh, Churchill Livingstone
3. Essentials of Medical Pharmacology- by K D Tripathy
4. Goodman and Gilman's - Pharmacological basis of therapeutics
5. Lippincott's Illustrated Reviews Pharmacology



## IX: Forensic Medicine and Toxicology

(a) **Competencies:** The learner must demonstrate:

1. Understanding of medico-legal responsibilities of physicians in primary and secondary care settings,
2. Understanding of the rational approach to the investigation of crime, based on scientific and legal principles,
3. Ability to manage medical and legal issues in cases of poisoning / overdose,
4. Understanding the medico-legal framework of medical practice and medical negligence,
5. Understanding of codes of conduct and medical ethics.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically recognizing the importance of medico-legal, ethical and toxicological issues as they relate to the practice of medicine.

### TEACHING METHODS & HOURS

Phase	Lectures (LGT)	Tutorials (SGT)	Practicals	Autopsy Demo	AETCOM	Total
2 <sup>nd</sup> year	20 hrs	5 hrs	15 hrs	5 hrs	5 hrs	50 hrs
3 <sup>rd</sup> year	35 hrs	10 hrs	20 hrs	10 hrs	0 hrs	75 hrs
<b>Total</b>	55 hrs	15 hrs	35 hrs	15 hrs	5 hrs	125 hrs

### S SCHEME OF ASSESSMENT

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical+Record	Viva	Theory	Practical + Viva
Theory=100 Practical =100	Paper =100	Practical =70 Log Book +Record=10	20(10+10) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

#### Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	-----	-----
3 <sup>rd</sup> Professional Year	January	100	100
	August	100	100

**CURRICULUM FOR UNDER GRADUATE M.B.B.S. COURSE 2020-21:-**

<b>Sl. No. &amp; Competency codes</b>	<b>Topics as per various competencies</b>	<b>Teaching/ Learning methods</b>	<b>No. of Hours</b>
1. FM1.1  FM1.2	Demonstrate knowledge of basics of Forensic Medicine like definitions of Forensic medicine, Clinical Forensic Medicine, Forensic Pathology, State Medicine, Legal Medicine and Medical Jurisprudence  Describe history of Forensic Medicine	LGT	1 hr
2. <b><u>Legal Procedure</u></b> FM1.3  FM1.4  FM1.5  FM1.6  FM2.29  FM1.7 FM1.8  FM14.20	Describe legal procedures including Criminal Procedure Code, Indian Penal Code, Indian Evidence Act, Civil and Criminal Cases, Inquest, Cognizable and Non-cognizable offences, Evidences Describe Courts in India and their powers: Supreme Court, High Court, Sessions court, Magistrate's Court, Labour Court, Family Court, Executive Magistrate Court and Juvenile Justice Board  Describe Court procedures including issue of Summons, conduct money, types of witnesses, recording of evidence, oath, affirmation, examination in chief, cross examination, re-examination and court questions, recording of evidence & conduct of doctor in witness box Describe Offenses in Court including Perjury; Court strictures vis-avis Medical Officer  Demonstrate respect to the directions of courts, while appearing as a witness for recording of evidence under oath or affirmation, examination in chief, cross examination, re-examination and court questions, recording of evidence  Describe Dying Declaration & Dying Deposition Describe the latest decisions/notifications/resolutions/ circulars/standing orders related to medico-legal practice issued by Courts/Government. To record and certify dying declaration in a simulated/ supervised environment	LGT     LGT   SGD   LGT	1 hr                1 hr
3. <b><u>Death &amp; its causes</u></b> FM2.1  FM2.2 FM2.5	Define, describe and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical Death and Brainstem Death. Describe and discuss natural and unnatural deaths. Discuss moment of death, modes of death-coma, asphyxia and syncope.	LGT	1 hr

FM2.3 FM2.6 FM2.7	Describe and discuss issues related to sudden natural deaths Discuss presumption of death and survivorship Describe and discuss suspended animation	LGT	1 hr
FM2.4	Describe salient features of the Organ Transplantation and The Human Organ Transplant(Amendment)Act2011anddiscuss ethical issues regarding organ donation	LGT	1 hr
FM1.10	Select appropriate cause of death in a particular scenario by referring ICD 10 code		
FM1.11	Write a correct cause of death certificate as per ICD 10 document	SGT	1 hr
<b>4. <u>Post Mortem Changes</u></b> FM2.8	Describeanddiscuss postmortemchanges including signsofdeath, coolingofbody,post-mortem lividity, rigormortis, cadavericspasm, cold stiffening and heat stiffening	LGT	2 hr
FM2.9	Describe putrefaction, mummification, adipocere and maceration	LGT	1 hr
FM2.10	Discuss estimation of time since death		
<b>5. <u>Autopsy Procedure</u></b> FM2.12	Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post-mortem examination	LGT	2 hr
FM2.11	Describeanddiscuss autopsy procedures including post-mortem examination, different types of autopsies, aims and objectives of post-mortem examination		
FM2.14	Describe and discuss examination ofclothing, preservation of viscera on post-mortem examination for chemicalanalysis and other medico-legal purposes, post-mortem artefacts	LGT	1hr
FM2.13 FM2.17	Describe and discuss obscure autopsy Describe and discuss exhumation		
<b>6. <u>Identification</u></b> FM3.1	IDENTIFICATION Define and describe Corpus Delicti, establishment of identity of living persons including race,Sex,religion,complexion,stature, age determination using morphology, teeth-eruption, decay,bitemarks, bones-ossification centres, medico-legal aspects of age.	LGT	4 hr
FM14.9	Demonstrate examination of & present an opinion		

FM14.4	after examination of skeletal remains in a simulated/ supervised environment. Conduct and prepare report of estimation of age of a person for medico-legal and other purposes & prepare medico-legal report in a simulated/ supervised environment	SGT Practical	4 hr
FM3.2	IDENTIFICATION Describe and discuss identification of criminals, unknown persons, deadbodies from the remains-hairs, fibers,teeth, anthropometry, dactylography,footprints,scars, tattoos, poroscopy and superimposition.	Practical Demo	10 hr
FM14.6	Demonstrate and interpret medico-legal aspects from examination of hair (human & animal) fibre, semen & other biological fluids		
<b>7. <u>Mechanical Injuries</u></b>			
FM3.3	Mechanical injuries and wounds: Define, describe and classify different types of mechanical injuries, abrasion, bruise, laceration, stabwound, incised wound, chop wound, defense wound, self-inflicted/ fabricated wounds and their medico-legal aspects	LGT	3 hr
FM3.6	Mechanical injuries and wounds: Describe healing of injury and fracture of bones with its medico-legal importance		
FM3.7	Describe factors influencing infliction of injuries and healing, examination and certification of wounds and wound as a cause of death: Primary and Secondary	SGT Practical	1 hr
FM14.1	Examine and prepare Medico-legal report of an injured person with different etiologies in a simulated/ supervised environment.	SGT	1 hr
FM3.4	Mechanical injuries and wounds: Define injury, assault & hurt. Describe IPC pertaining to injuries	LGT	2 hr
FM3.5	Mechanical injuries and wounds: Describe accidental,suicidalandhomicidalinjuries. Describe simple, grievous and dangerous injuries. Describe ante-mortem and post-mortem injuries		
FM3.8	Mechanical injuries and wounds: Describe and discuss different types of weapons including dangerous weapons and their examination.	SGT Practical	2 hr
FM14.11	To identify & describe weapons of medicolegal importance whichare commonly used e.g. lathi, knife, kripa, axe, gandasa, gupti,farsha, dagger, bhalla, razor & stick.Able to prepare report of the weapons brought by police and to giveopinion regarding injuries present on the person as described in injury report/ PM report so as to connect weapon with the injuries.(Prepare injury		

	report/ PM report must be provided to connect the weapon with the injuries)		
<b><u>Firearm Injuries</u></b> FM3.9	Firearm injuries: Describe different types of firearms including structure and components. Along with description of ammunition propellant charge and mechanism of fire-arms, different types of cartridges and bullets and various terminology in relation to firearm–caliber, range, choking	LGT	2 hr
FM3.10	Firearm injuries: Describe and discuss wound ballistics-different types of firearm injuries, blast injuries and their interpretation, preservation and dispatch of trace evidence in cases of firearm and blast injuries, various tests related to confirmation of use of firearms.		
FM14.12	Describe the contents and structure of bullet and cartridges used & to provide medico-legal interpretation from these.		
<b><u>8. Regional Injuries</u></b> FM3.11	Regional Injuries: Describe and discuss regional injuries to head(Scalp wounds, fracture skull, intracranial haemorrhages, coup and contrecoup injuries),neck,chest,abdomen,limbs,genitalorgan, spinalcord and skeleton	LGT	2 hr
FM3.12	Regional Injuries Describe and discuss injuries related to fall from height and vehicular injuries– Primary and Secondary impact, Secondary injuries, crush syndrome, railway spine		
<b><u>9. Mechanical Asphyxia</u></b> FM2.20	Mechanical asphyxia: Define, classify and describe asphyxia and medico-legal interpretation of post-mortem findings in asphyxial deaths	LGT	2 hr
FM2.21	Mechanical asphyxia: Describe and discuss different types of hanging and strangulation including clinical findings, causes of death, post-mortem findings and medico-legal aspects of death due to hanging and strangulation including examination, preservation and dispatch of ligature material	Autopsy Demo	1 hr
FM2.22	Mechanical asphyxia: Describe and discuss pathophysiology, clinical features, postmortem findings and medico-legal aspects of traumatic asphyxia, obstruction of nose & mouth, suffocation and sexual asphyxia	LGT	1 hr

FM2.23	Describe and discuss types, pathophysiology, clinical features, postmortem findings and medico-legal aspects of drowning, diatom test and, gettler test.	LGT Autopsy Demo	1 hr 1 hr
<b>10. <u>Medical Law &amp; Ethics</u></b>			
FM4.1	Describe Medical Ethics and explain its historical emergence.	LGT	1 hr
FM4.2	Describe the Code of Medical Ethics 2002 conduct, Etiquette and Ethics in medical practice and unethical practices & the dichotomy		
FM4.3	Describe the functions and role of Medical Council of India and State Medical Councils.		
FM4.4	Describe the Indian Medical Register.		
FM4.5	Rights/privileges of a medical practitioner, penal erasure, infamous conduct, disciplinary Committee, disciplinary procedures, warning notice and penal erasure.	LGT	1 hr
FM4.6	Describe the Laws in Relation to medical practice and the duties of a medical practitioner towards patients and society.		
FM4.28	Demonstrate respect to laws relating to medical practice and Ethical code of conduct prescribed by Medical Council of India and rules and regulations prescribed by it from time to time		
FM4.24	Enumerate rights, privileges and duties of a Registered Medical Practitioner. Discuss doctor-patient relationship: professional Secrecy and privileged communication.	AETCOM	1 hr
FM4.19	Define Consent. Describe different types of consent and ingredients of informed consent. Describe the rules of consent and importance of consent in relation to age, emergency situation, mental illness and alcohol intoxication.	AETCOM SGT	1 hr 1 hr
FM4.20	Describe therapeutic privilege, Malingering, Therapeutic Misadventure, Professional Secrecy, Human Experimentation.		
FM4.21	Describe Products liability and Medical Indemnity Insurance.		
FM4.17	Describe and discuss ethical Principles: Respect for autonomy, non-maleficence, beneficence & justice.	LGT	1 hr
FM4.18	Describe and discuss medical negligence		

FM4.8	including civil and criminal negligence, contributory negligence, corporate negligence, vicarious liability, Res Ipsa Loquitor, prevention of medical negligence and defenses in medical negligence litigations. Describe the Consumer Protection Act-1986 (Medical Indemnity Insurance, Civil Litigations and Compensations), Workman's Compensation Act & ESI Act	AETCOM	1 hr
FM4.11	Describe and discuss euthanasia	LGT	1 hr
FM4.22 FM4.23	Explain Oath – Hippocrates, Charaka and Sushruta and procedure for administration of Oath.		
FM4.16 FM4.27	Describe the modified Declaration of Geneva and its relevance. Describe and discuss Bioethics.	AETCOM	1 hr
FM4.25	Describe and discuss Ethical Guidelines for Biomedical Research on Human Subjects & Animals Clinical research & Ethics. Discuss human experimentation including clinical trials		
<b>11. Thermal Injuries</b> FM2.24	Thermal deaths: Describe the clinical features, post-mortem finding and medicolegal aspects of injuries due to physical agents like heat (heat-hyper-pyrexia, heat stroke, sun stroke, heat exhaustion/prostration, heat cramps[miner's cramp] or cold(systemic and localized)	LGT	2 hr
FM2.25	hypothermia, frostbite, trenchfoot, immersion foot Describe types of injuries, clinical features, pathophysiology, postmortem findings and medico-legal aspects in cases of burns, scalds, lightning, electrocution and radiations		
<b>12. Documentation Certifications</b> FM1.9	Describe the importance of documentation in medical practice in regard to medicolegal examinations, Medical Certificates and medico legal reports especially - maintenance of patient case records, discharge summary, prescribed registers to be maintained in Health Centres. - documents for estimation of age by physical, dental and radiological examination and issuance of certificate - maintenance of medico-legal register like accident register. - documents of issuance of wound certificate - documents of issuance of sickness and fitness certificate. - documents for issuance of death certificate. -	SGT AETCOM Practical SGT Practical SGT	1 hr 1 hr 4 hr 1 hr 2 hr 1 hr

	documents of Medical Certification of Cause of Death - Form Number4 and 4A - documents of issuance of drunkenness certificate.	SGT	1 hr
<b>13. <u>Impotence</u> <u>Sterility A.I.D.</u></b> FM3.18  FM3.22  FM3.23  FM3.20	Describe anatomy of male and female genitalia, hymen and its types. Discuss the medico-legal importance of hymen. Define virginity, defloration, legitimacy, medicolegal importance. Define and discuss impotence, sterility, frigidity, sexual dysfunction, premature ejaculation. Discuss the causes of impotence and sterility in male and female. Discuss Sterilization of male and female, artificial insemination, Test Tube Baby, surrogate mother, hormonal replacement therapy with respect to appropriate national and state laws. Discuss disputed paternity and maternity	LGT	3 hr
<b>14. <u>Virginity</u> <u>Pregnancy</u> <u>Delivery</u></b> FM3.19  FM3.21  FM3.24	Discuss the medicolegal aspects of pregnancy and delivery, signs of pregnancy, precipitate labour superfoetation, superfecundation and signs of recent and remote delivery in living and dead. Discuss Pre-conception and Pre Natal Diagnostic Techniques (PC&PNDT) - Prohibition of Sex Selection Act 2003& Domestic Violence Act 2005. Discuss the relative importance of surgical methods of contraception (vasectomy and tubectomy) as methods of contraception in the National Family Planning Programme	LGT	2 hr
<b>15. <u>Abortion</u> <u>MTP</u></b> FM3.27  FM3.28	Define, classify and discuss abortion, methods of procuring MTP and criminal abortion and complication of abortion. MTP Act 1971. Describe evidences of abortion - living and dead, duties of doctor in cases of abortion, investigations of death due to criminal abortion.	LGT	2 hr
<b>16. <u>Live birth</u> <u>Still birth</u> <u>Infanticide</u></b> FM2.28	Describe and discuss signs of intrauterine death, signs of live birth, viability of foetus, age determination of foetus, DOAP session of	LGT	2 hr



FM2.27	ossification centres, Hydrostatic test, Sudden Infants Death syndrome and Munchausen's syndrome by proxy.		
FM3.29	Define and discuss infanticide, foeticide and stillbirth.		
FM14.13	Describe and discuss child abuse and battered baby syndrome. To estimate the age of foetus by post-mortem examination	Practical	2 hr
<b>17. <u>Torture</u></b>			
FM3.30	Describe and discuss issues relating to torture, identification of injuries caused by torture and its sequelae, management of torture survivors.	LGT	1 hr
FM3.31	Torture and Human rights Describe and discuss guidelines and Protocols of National Human Rights Commission regarding torture.		
<b>18. <u>Sexual Offences</u></b>			
FM3.13	Describe different types of sexual offences. Describe various sections of IPC regarding rape including definition of rape (Section 375 IPC), Punishment for Rape (Section 376 IPC) and recent amendments notified till date.	LGT	1 hr
FM3.14	Describe and discuss the examination of the victim of an alleged case of rape, and the preparation of report, framing the opinion and preservation and despatch of trace evidences in such cases.	LGT	1 hr
FM3.15	Describe and discuss examination of accused and victim of sodomy, preparation of report, framing of opinion, preservation and despatch of trace evidences in such cases.	LGT	1 hr
FM3.16	Describe and discuss adultery and unnatural sexual offences sodomy, incest, lesbianism, buccal coitus, bestiality, indecent assault and preparation of report, framing the opinion and preservation and despatch of trace evidences in such cases.	LGT	1 hr
FM3.17	Describe and discuss the sexual perversions fetishism, transvestism, voyeurism, sadism, necrophagia, masochism, exhibitionism, frotteurim necrophilia.		
FM14.14	To examine & prepare report of an alleged accused in rape/unnatural sexual offence in a simulated/ supervised environment.	Practical	3 hr
FM14.15	To examine & prepare medico-legal report of a victim of sexual offence/unnatural sexual offence in a simulated/ supervised environment.		
<b>19. <u>Forensic Serology</u></b>			
FM6.1	Describe different types of specimen and tissues to be collected both in the living and dead: Body fluids (blood, urine, semen, faeces saliva), Skin, Nails, tooth pulp, vaginal smear, viscera, skull,	LGT	1 hr

FM6.2	specimen for histo-pathological examination, blood grouping, HLA Typing and DNA Fingerprinting. Describe Locard's Exchange Principle Describe the methods of sample collection, preservation, labelling, dispatch, and interpretation of reports.	SGT Practical	1 hr 4 hr
FM6.3	Demonstrate professionalism while sending the biological or trace evidences to Forensic Science laboratory, specifying the required tests to be carried out, objectives of preservation of evidences sent for examination, personal discussions on interpretation of findings.		
FM14.7	Demonstrate & identify that a particular stain is blood and identify the species of its origin.		
FM14.8	Demonstrate the correct technique to perform and identify ABO & RH blood group of a person.		
FM14.21	To collect, preserve, seal and dispatch exhibits for DNA-Finger printing using various formats of different laboratories		
<b>20. <u>Recent Advances and FSL</u></b>			
FM7.1	Enumerate the indications and describe the principles and appropriate use for: - DNA profiling -Facial reconstruction - Polygraph (Lie Detector)- Narcoanalysis,- Brain Mapping,- Digital autopsy,- Virtual Autopsy,- Imaging technologies	LGT	1 hr
FM8.10	Describe the general principles of Analytical Toxicology and give a brief description of analytical methods available for toxicological analysis: Chromatography – Thin Layer Chromatography, Gas Chromatography, Liquid Chromatography and Atomic Absorption Spectroscopy.	LGT	1 hr
<b>21. <u>Forensic Psychiatry</u></b>			
FM5.1	Classify common mental illnesses including post-traumatic stress disorder (PTSD).	LGT	1 hr
FM5.2	Define, classify and describe delusions, hallucinations, illusion, lucid interval and obsessions with exemplification.		
FM5.3	Describe Civil and criminal responsibilities of a mentally ill person.	LGT	1 hr
FM5.4	Differentiate between true insanity from feigned insanity.		
FM5.5	Describe & discuss Delirium tremens.	LGT	1 hr
FM5.6	Describe the Indian Mental Health Act, 1987 with special reference to admission, care and discharge of a mentally ill person		

<b>21. <u>General Toxicology</u></b>			
FM8.1	Describe the history of Toxicology.	LGT	1 hr
FM8.2	Define the terms Toxicology, Forensic Toxicology, Clinical Toxicology and poison.		
FM8.3	Describe the various types of poisons, Toxicokinetics and Toxicodynamics and diagnosis of poisoning in living and dead.		
FM8.4	Describe the Laws in relations to poisons including NDPS Act, Medico-legal aspects of poisons.	LGT	1 hr
FM8.5	Describe Medico-legal autopsy in cases of poisoning including preservation and dispatch of viscera for chemical analysis.		
FM8.6	Describe the general symptoms, principles of diagnosis and management of common poisons encountered in India.		
FM8.7	Describe simple Bedside clinic tests to detect poison/drug in a patient's body fluids.	LGT	1 hr
FM8.8	Describe basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination.		
FM8.9	Describe the procedure of intimation of suspicious cases or actual cases of foul play to the police, maintenance of records, preservation and despatch of relevant samples for laboratory analysis.	SGT	1 hr
<b>22. <u>corrosives</u></b>			
FM9.1	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to: Caustics Inorganic – sulphuric, nitric, and hydrochloric acids; Organic- Carbolic Acid (phenol), Oxalic and acetylsalicylic acids	LGT Practical	1 hr 2 hr
<b>23. <u>Inorganic Irritant</u></b>			
FM9.2	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Phosphorus, Iodine, Barium	LGT Practical	1 hr 1 hr
<b>24. <u>Heavy Metals</u></b>			
FM9.3	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Arsenic, lead, mercury, copper, iron, cadmium and thallium.	LGT Practical	2 hr 2 hr
<b>25. <u>Alcohol</u></b>			
FM9.4	Describe General Principles and basic methodologies in treatment of poisoning:	LGT	2 hr

FM14.16	decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ethanol, methanol, ethylene glycol. To examine & prepare medico-legal report of drunk person in a simulated/ supervised environment	SGT Practical	1 hr 1 hr
26. <u>Insecticides</u> <u>Pesticides</u> FM9.5	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Organophosphates, Carbamates, Organochlorines, Pyrethroids, Paraquat, Aluminium and Zinc phosphide	LGT Practical Autopsy Demo	2 hr 1 hr 1 hr
27. FM9.6	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ammonia, carbon monoxide, hydrogen cyanide & derivatives, methyl isocyanate, tear (riot control) gases	LGT	1 hr
28. FM12.1	Describe features and management of abuse/poisoning with following chemicals: Tobacco, cannabis, amphetamines, cocaine, hallucinogens, designer drugs & solvent	LGT	1 hr
29. FM11.1	Describe features and management of Snake bite, scorpion sting, bee and wasp sting and spider bite	LGT Practical	2 hr 1 hr
30. FM10.1	Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to: i. Antipyretics – Paracetamol, Salicylates ii. Anti-Infectives (Common antibiotics – an overview) iii. Neuropsychotoxicology Barbiturates, benzodiazepins phenytoin, lithium, haloperidol, neuroleptics, tricyclics iv .Narcotic Analgesics, Anaesthetics, and Muscle Relaxants v. Cardiovascular Toxicology Cardiotoxic plants – oleander, odollam, aconite, digitalis vi. Gastro-Intestinal and Endocrinal Drugs – Insulin	LGT      LGT	1 hr      1 hr
31. FM13.1	Describe toxic pollution of environment, its medico-legal aspects & toxic hazards of occupation and industry	LGT	1 hr
32. FM14.5 FM14.10	Conduct & prepare post-mortem examination report of varied etiologies (at least 15) in a simulated/ supervised environment.	Autopsy Demo	12 hrs

	Demonstrate ability to identify & prepare medicolegal inference from specimens obtained from various types of injuries e.g. contusion, abrasion, laceration, firearm wounds, burns, head injury and fracture of bone		
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### **INTEGRATION with other Departments**

<b>Departments</b>	<b>Competencies</b>
Anatomy	AN14.3
Pharmacology	PH1.22, PH5.7
Radio diagnosis	RD1.13
Psychiatry	PS19.3
General Medicine	IM20.1, IM20.2, IM20.3, IM20.4, IM21.2, IM21.3, IM21.4 IM21.5, IM21.6, IM21.7, IM21.8
Obs. Gynaecology	OG1.3, OG9.2, OG20.1, OG20.2, OG20.3
General Surgery	SU8.1, SU8.2, SU8.3

### **SDL**

1. PCPNDT Act in relation to medical practice. 1 hours
2. POCSO Act and responsibilities of a doctor. 2 hours
3. Importance of history in medico-legal practice. 1 hours
4. Important penal codes a doctor should be aware off. 1 hour

### **MODEL UNIVERSITY EXAMINATION QUESTION PAPER**

#### **3<sup>rd</sup> Professional M.B.B.S. Part I Examination**

#### **SAMBALPUR UNIVERSITY**

**Full Marks – 100**

**Time – 3 Hours**

#### **SECTION – I**

**(Answer all questions)**

1. Long type questions, structured. **[3+3+4=10]**  
e.g. Classify mechanical injuries. Define abrasion and write briefly about various types. Describe various medico-legal importances of different types of mechanical injuries.
2. Differentiate between: **[3x5]**  
e.g. i) Mummification & Adipocere formation  
ii) Burns & Scalds  
iii) homicidal & suicidal cut throat wound.
3. Write short notes : **[4x5]**  
e.g. i) Vicarious Liability

- ii) Infamous Conduct
- iii) Mechanism of Contre Coup injury
- iv) Post Mortem features in a death due to lightning

4. Very Short Type : [5x1]

- e.g.** i) What is a diatom and what is its medico-legal significance?  
 ii) What is choking in case of fire arms; what is its purpose?  
 iii) What is dowry death; it is dealt under which IPC?  
 iv) Casper's Dictum  
 v) Burking

**SECTION II**  
**(Answer all questions)**

1. Long type questions, structured. [3+4+3=10]  
**e.g.** Define rape. Enumerate various types of punishment for rape prescribed in Law. What are the various types of samples to be preserved and their purpose in an alleged case of rape.

2. Differentiate between: [3x5]

- e.g.** i) Acute arsenic poisoning & Cholera  
 ii) True & Feigned insanity  
 iii) Strychnine poisoning & Tetanus

3. Write short notes : [4x5]

- e.g.** i) Delirium Tremens  
 ii) Testamentary Capacity  
 iii) Battered Baby Syndrome  
 iv) Criteria & Precautions to select a donor for artificial insemination

2. Very Short Type : [5x1]

- e.g.** i) Acid Phosphatase Test  
 ii) Magnan's symptom  
 iii) McEwan's Sign  
 iv) Name two sexual perversions which are punishable.  
 v) What is precipitate labour & What is its MLI.

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**Reference Books**

1. Modi's textbook of MEDICAL JURISPRUDENCE AND TOXICOLOGY
2. The Essentials of Forensic Medicine & Toxicology by Dr. K.S.Narayan Reddy
3. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology for classrooms and courtrooms
4. Textbook of Forensic Medicine and Toxicology principles and practice by Krishan Vij
5. J B Mukherjee's Forensic Medicine and Toxicology
6. Review of Forensic Medicine and Toxicology by Gautam Biswas
7. Forensic Medicine and Toxicology for MBBS by Anil Aggrawal

# X: Community Medicine

(a) **Competencies:** The learner must demonstrate:

1. Understanding of physical, social, psychological, economic and environmental determinants of health and disease,
2. Ability to recognize and manage common health problems including physical, emotional and social aspects at individual family and community level in the context of National Health Programmes
3. Ability to Implement and monitor National Health Programmes in the primary care setting
4. Knowledge of maternal and child wellness as they apply to national health care priorities and programmes,
5. Ability to recognize, investigate, report, plan and manage community health problems including malnutrition and emergencies.

(b) **Integration:** The teaching should be aligned and integrated **horizontally** and vertically in order to allow the learner to understand the impact of environment, society and national health priorities as they relate to the promotion of health and prevention and cure of disease.

## TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
1 <sup>st</sup> Year	20 hours	27 hours	5hours	-	52hours	-
2nd	20 hours	30 hours	10hours	7 hours	60 hours	4weeks
3rd	40 hours	60 hours	5 hours	-	105 hours	6weeks
Total	80 hours	117 hours	20 hours	7 hours	217 hours	10weeks

Total marks	University Examination Marks			Internal Assessment	
	Theory	clinical	Viva	Theory	Clinical + Viva
Theory=200 Clinical =100 Oral =100	Paper 1=100 Paper 2=100	Long Case & Short Case =100	100 One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

## Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
1 <sup>st</sup> Professional Year	December	100	100
	<del>April</del>	----	-----
	<del>July</del>	-----	----
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100

	August	-----	-----
3 <sup>rd</sup> Professional Year	January August	100 100	100 100

<b>Course contents</b>	<b>Paper I</b> (Concept of Health, Principles of Epidemiology, Social science & Health, Health Information system and Basic Medical statistics, Environment & health, Demography and Family planning, Nutrition, Preventive Medicine in Obstetric, Paediatric and Geriatrics, International Health)	<b>Paper II</b> (Epidemiology of Communicable & Non communicable diseases, Occupational Health, Health Programmes in India, Diaster Management, Genetics & Health, Mental Health, Health planning and Management, Health Care system, Communication for Health Education , Recent advances in Health)

Sl no		Topic	Method of teaching	Integra tion	Hour
<b>Concept of Health &amp; Diseases-13hours</b>					
1	CM 1.1	Define and describe the concept of Public Health	LGT		1
2	CM1.2	Define health; describe the concept of holistic health including concept of spiritual health and the relativeness &	SGT		1
3	CM1.3.1	Describe the characteristics of agent, host and environmental factors in health .and disease .	SGT		1
4	CM1.3 .2	Describe the characteristics of agent, host and environmental factors in the multi factorial etiology of disease	LGT		1
5	CM1.4	Describe and discuss the natural history of disease .	LGT		1
6	CM1.5 .1	Describe the application of interventions at various levels of prevention	LGT		1
7	CM1.5.2	Describe the application of prevention at different level in Natural History of disease (With scenario at field level)	<b>SGT</b>		1
8	CM1.6.1	Describe and discuss the concepts, the principles of Health promotion and Education	LGT		1
9	CM 1.6.2	Enumerate the Contents of health education	<b>SGT</b>		1
10	CM1.6. 3	Health promotion and Health Education in Community	<b>LGT</b>		1
11	CM 1.6.4	Describe the barriers to Communication and methods to overcome it.	SGT		1
12	CM1.6	Describe the concept of Health promotion and Education for IEC and Behavioral change communication (BCC)	<b>SDL</b>		2
		<b>Principles of Health promotion and education-1 hour</b>			



13	CM4.2	Describe the methods of organizing health promotion and education and counseling activities at individual, family and community level	SGT		1
		<b>December-1<sup>st</sup> Internal Assessment</b>			
		<b>Relationship of Social &amp; Behavioral science with health-4 hour</b>			
14	CM2.4 .1	Describe Social Psychology ,Community behaviour	LGT		1
15	CM2.4 .2	Describe relationship and impact of social psychology, community behaviour on health & disease	SGT		1
16	CM 2.5.1	Describe relationship of poverty to health and disease	LGT		1
17	CM2.1	Describe the steps and perform socio-cultural and demographic assessment of individual ,family & community(SES)	LGT		1
		<b>Nutrition-8 hour</b>			
18	CM 5.1.1	Describe classification of nutrients	LGT		1
19	CM 5.1.2	Describe the common sources of various nutrients.	SGT		1
20	CM5.1.3	Describe special nutritional requirements according to age, sex, activity	LGT		1
21	CM 5.1.4	Describe nutritional requirements according, physiological conditions	LGT		1
22	CM 5.8 .1	Describe and discuss the importance and methods of food fortification, food enrichment and food adulteration	SGT		1
23	CM5.8.2	Discuss the importance of food additives and food adulteration and laws to protect against the same	SGT		1
24	CM 5.7.1	Prevention and control of food borne diseases(food hygiene) Farm to Fork)	SDL		2
		<b>Hospital waste management-3 hour</b>			
25	CM 14.1.1	Define and classify hospital waste and need for proper disposal.	LGT		1
26	CM14.1.2	Discuss Methods of proper disposal of Biomedical waste	SGT		1
27	CM14.1.3	Discuss about the waste generated in different depts. and its disposal	SDL		1
		<b>Health care of the Community-3 hour</b>			
28	CM17.1.1	Define and describe the concept of health care to community	LGT		1
29	CM17.1.2	Discuss Primary health care and its changing need.	SGT		1
30	CM17.5.1	Describe health care delivery in India	LGT		1
31		Revision	SGT		1
32		<b>Internal Assessment</b>			
33		<b>Feedback on assessment</b>	SGT		1
		<b>Biostatistics &amp; its application-9 hours</b>			
34	CM6.2.1 CM9.7	Describe and discuss the relevance of Biostatistics Enumerate the sources of vital statistics including	LGT		1

		census,SRS,NFHGS,NSSO			
35	CM6.2.2	Describe and discuss the principles of data collection	SGT		1
36	CM 6.2.3	Describe and discuss the principles of classification of statistical data	LGT		1
37	CM 6.2.4	Describe and discuss the principles of presentation of statistical data in tables and its analysis	SGT		1
38	CM6.2.5	Describe and discuss the principles of data analysis, interpretation and presentation of statistical data in graphs	SGT		1
39	CM 6.2	Demonstrate the methods of collection, classification, analysis, interpretation and presentation of statistical data	SGT		1
40	CM 1.7.1	Enumerate health indicators	LGT		1
41	CM 1.7.1	Describe health indicators related to morbidity&disability	SGT		1
42	CM 1.7.2	Describe health indicators related to mortality	SGT		1
		<b>Demography-3 hour</b>			
43	CM 1.8.1	Describe the Demographic profile of India.	LGT		1
44	CM 1.8.2	Impact of present demographic situation in India on health	SGT		1
45	CM 9.1.	Describe the principles of Demographic Cycle and vital statistics	LGT		1
		<b>Environmental Health Problems(6)</b>			
47	CM 3.2.1	Describe concept of safe & wholesome water, sanitary sources of water,	SGT		1
48	CM 3.1.1 CM3.3	Describe the health hazards of Water pollution Describe the etiology and basis of water borne diseases	SGT		1
49	CM 3.1.2	Describe the health hazards of Air pollution	SGT		1
50	CM3.1.3	Describe the health hazards of Noise pollution	SGT		1
51	CM3.5	Describe the standards of Housing and the effect of housing on health	SGT		1
52	CM3.4.1	Describe the concept of solid waste & its disposal	SGT		1
LGT- 20 hours		SGT -27 hours	SDL- 5hours	Total=52hrs	
<b>Internal assessment examination</b>					
1 <sup>st</sup> Professional MBBS Examination					

## 2<sup>nd</sup> Professional MBBS

Sl. No.	2 <sup>nd</sup> Professional Year	TL Method	Integration	Hour
	<b>Epidemiology(26 classes)</b>			

1	CM7.1.1 CM7.1.2	Define Epidemiology and its aim. Describe epidemiological methods and enumerate the principles, concepts and uses	LGT		1
2	CM7.5.1	Enumerate, define, describe and discuss epidemiological study designs	LGT		1
3	CM7.5.2	Describe descriptive epidemiology	LGT		1
4	CM7.5.3	Describe analytical epidemiology Case control study	LGT		1
5	CM7.5.4	Describe analytical epidemiology (Cohort studies)	LGT		1
6	CM7.5.5	Describe experimental Epidemiology	LGT		1
7	CM7.5.6	Problems in Epidemiological study(Relative risk, Attributable Risk, Odds Ratio))	SGT		1
8	CM7.5.7	Problems in Epidemiological study	SGT		1
9	CM6.3.1	Describe, discuss and demonstrate the application of elementary statistical methods	SGT		1
10	CM6.3.2	Discuss test of significance in various study designs	SGT		1
11	CM6.3.3	Problems on Statistical significance	SGT		1
12	CM6.4	Enumerate, discuss and demonstrate Common sampling techniques	SGT		1
13	CM7.4.1	Calculate and comment on morbidity problem	SGT		1
14	CM7.4.2	Calculate and comment on Mortality related problem (Crude death rate , specific death rate, standardized death rate)	SGT		1
15	CM7.4.2	Calculate and comment on Mortality related problem(Infant mortality rate, Underfive mortality rate)	SGT		1
16	CM7.9	Describe and demonstrate the application of computers in epidemiology	SGT		1
17	CM7.8	Describe the principles of association, causation and biases in epidemiological studies	LGT		1
18	CM7.7.1	Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures	LGT		1
19	CM7.7.2 CM 8.4	Demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures in simulated environment	SGT		1
20	CM6.1	Formulate a research question for a study	SGT		1
21	CM7.2.1	Enumerate, describe and discuss the modes of transmission and measures for prevention of communicable diseases	LGT		1
22	CM7.2.2	Enumerate, describe and discuss control of communicable diseases	SGT		1
23	CM7.2	Enumerate, describe and discuss the natural history and measures for prevention and control of non-communicable diseases	LGT		1
24	CM7.6.1	Enumerate & Evaluate the need of screening tests	LGT		1
25	CM10.2	Enumerate and describe the methods of screening high risk groups and common health problems(RBSK, HWC)	SGT		1
26	CM10.3	Calculate and comment on Screening tests (sensitivity & specificity)	SGT		1
		<b>Internal assessment</b>			
27		<b>Feedback on Internal assessment</b>			

<b>Nutrition</b>					
28	CM5.3.1	Define and describe common nutrition related health disorders (Under nutrition, wasting & stunting) & its management	LGT		1
29	CM5.3.2	Describe control & management of common nutrition related health disorders (Micronutrient-iron, Zn, iodine, Vit. A)	LGT		1
30	CM5.3.3 PE9.2	Describe the methods for assessment of nutritional status	LGT	Integration	1
31	CM5.5	Describe the methods of nutritional surveillance, principles of nutritional education and rehabilitation in the context of socio- cultural factors.	LGT		1
32	CM5.7.2	Describe Food standards	LGT		1
33	CM5.1.1	Describe the common sources of various nutrients (spotters)	SGT		1
34	CM5.1.2	Describe special nutritional requirements according to age, sex, activity, physiological conditions	SGT		1
35	CM5.4	Plan and recommend a suitable diet for the individuals and families based on local availability of	SGT		
		<b>Environment</b>			1
36	CM3.2.2	Describe water purification process	LGT		1
37	CM3.2.3	Describe disinfectants used for water purification	SGT		1
38	CM3.2.4	Describe procedure for Chlorination	LGT		1
39	CM3.2.5	Describe water quality standards.	SGT		1
40	CM3.1.3	Describe the health hazards of air, noise, radiation	SGT		1
41	CM3.4.2	Describe the concept of solid waste, human excreta	LGT		1
42	CM3.2.4	Concepts of water conservation and rainwater harvesting & National programmes related to Water, WASH	<b>SDL</b>		2
		Internal assessment			
43		Feedback on Internal assessment	<b>SGT</b>		1
		<b>Entomology</b>			
44	CM3.6	Describe the role of vectors in the causation of diseases . Also discuss National Vector Borne disease Control Program	SGT		1
45	CM3.7.1	Identify and describe the identifying features and life cycles of vectors of Public Health importance: Mosquito, (Anopheles, Culex, Aedes)	SGT		1
46	CM3.7.1.2	Describe the control measures for mosquito as part of programme. (NVBDCP)			1
47	CM3.7.2	Flea, Sand fly. House Fly	SGT		1

48	CM3.7.3	Lice, Bedbugs, Cyclope	SGT		1
49	CM3.7.4	Tick, Mite	SGT		1
50	CM3.8	Describe the mode of action, application cycle of commonly used insecticides	SGT		1
		<b>Epidemiology of Communicable &amp; Non-communicable disease</b>			
51	CM8.1	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for communicable diseases	SGT		1
52	CM8.2.1	Describe and discuss the epidemiological and control measures of including the use of essential laboratory tests at the primary care level for Non Communicable diseases	LGT		1
53	CM8.2.2	Describe and discuss the epidemiological and control measures of including the use of essential laboratory tests at the primary care level for Non Communicable diseases (Hypertension & stroke)	SDL		1
54	CM8.2.3	Describe and discuss the epidemiological and control measures of including the use of essential laboratory tests at the primary care level for Non Communicable diseases (Obesity)	<b>SDL</b>		1
55	CM8.2.4	Describe and discuss the epidemiological and control measures of including the use of essential laboratory tests at the primary care level for Non Communicable diseases (Diabetes)	<b>SDL</b>		<b>1</b>
56	CM8.2.5	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Non Communicable diseases (Cancer)	<b>SDL</b>		<b>1</b>
57	CM8.2.5	Describe and discuss the epidemiological and control measures of Non Communicable diseases (Accidents & Injury)	SDL		1
58	IM25.1	Describe and discuss the response and the influence of host immune status, risk factors and co-morbidities on zoonotic diseases	SDL		1
59	MI8.5	Define Healthcare Associated Infections (HAI) and enumerate the types. Discuss the factors that contribute to the development of HAI and the methods for prevention (Nosocomial infection)	SDL		1
60	M18.4	Describe the etiologic agents of emerging Infectious diseases. Discuss the clinical course and diagnosis	SDL		1
		LGT=20, SGT=30, SDL=10			

		<b>Epidemiology of Communicable &amp; Non-communicable diseases</b>		Integration
1	<b>CM8.3.1</b>	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case (Tuberculosis) <b>MI8.16</b> Describe the National Health Programs in the prevention of common infectious disease (for information purpose only as taught in CM) <b>PH1.55</b> Describe and discuss the following National Health programmes including Immunisation, Tuberculosis, Leprosy, Malaria, HIV, Filariasis, Kala-azar, Diarrhoeal diseases, Anaemia & nutritional disorders, Blindness, Non-communicable diseases, Cancer and Iodine deficiency	<b>LGT</b>	Medicine Pharmacology
2	CM8.3.2	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - RNTCP	<b>LGT</b>	
3	CM8.3.3	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - Leprosy and leprosy elimination programme	<b>LGT</b>	
4	CM8.3.4	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case NVBDCP	<b>LGT</b>	
5	CM8.3.5	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case Malaria	<b>LGT</b>	
6		Problems on Malaria, Tuberculosis	<b>SGT</b>	
7	CM8.3.6	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case Filariasis, Kala-azar,	<b>LGT</b>	
8	CM8.3.7	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - Dengue, Chikungunya	<b>LGT</b>	
9	CM8.3.8	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - JE	<b>LGT</b>	
10	IM25.1.1	Describe and discuss the response and the influence of host immune status, risk factors and co-morbidities on zoonotic diseases ( Rabies)	<b>LGT</b>	Medicine
11	IM25.1.2	Describe and discuss the response and the influence of host immune status, risk factors and co-morbidities on zoonotic diseases ( Leptospirosis, Brucellosis)	<b>LGT</b>	Medicine
12	IM25.1.3	Describe and discuss the response and the influence of host immune status, risk factors and co-morbidities on zoonotic diseases ( Plague)	<b>LGT</b>	Medicine
13	CM8.3.9	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - Diarrhoeal diseases	<b>LGT</b>	
14	CM8.3.10	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - Typhoid, Cholera	<b>LGT</b>	

15	CM8.3.11	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - STD	LGT	
16	CM8.3.12	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case – HIV/AIDS	LGT	
17	CM8.3.13	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case - NACO	LGT	
18	CM8.3.14 PE19.5	Enumerate and describe disease specific National Health Programs including their prevention and treatment of a case – National Immunization Programme	LGT	
19	CM10.5.1 (PH1.55) PE19.4	Describe Universal Immunization Program (cold chain equipments)	SGT	Pharmacology, Microbiology
20	CM10.5.2 PE19.3	Immunization spotters	SGT	Paediatrics
21	CM10.5.3	Microplanning in Immunization	SGT	
22	CM10.5.4	AEFI in Immunization	SGT	
23	CM 10.5.3	Describe Integrated Management of Neonatal and Childhood Illness (IMNCI) (0-2 months)	SGT	
24	CM 10.5.3	Describe Integrated Management of Neonatal and Childhood Illness (IMNCI) (2 months-1 year)	SGT	
		Internal assessment		
25		Feedback on Internal assessment	SGT	
26	CM 10.5.3	Describe Integrated Management of Neonatal and Childhood Illness (IMNCI) (1-5 year)	SGT	
27	CM10.6.1	Enumerate and describe various family planning methods, their advantages and shortcomings	SGT	
28	PE19.2.4	Explain the epidemiology of Vaccine preventable diseases - Hepatitis B	SGT	Paeditrics
29	PE19.2.1	Explain the epidemiology of Vaccine preventable diseases - Poliomyelitis	SGT	
30	PE19.2.2	Explain the epidemiology of Vaccine preventable diseases - Diphtheria, Pertussis, Tetanus	SGT	
31	PE19.2.3	Explain the epidemiology of Vaccine preventable diseases – MMR,chickenpox	SGT	
		<b>MCH</b>		
32	CM10.1	Describe the current status of Reproductive, maternal, newborn and Child Health	LGT	

33	CM10.4.1	Describe the safe motherhood interventions	SGT	
34	CM9.2.1	Define Calculate and interpret demographic indices related to Fertility	SGT	
35	CM9.2.1	Define Calculate and interpret Maternal death	SGT	
36	CM10.4.2	Describe MCPC ,Growth chart,	SGT	
37	CM10.4.3	Describe newborn child survival interventions (New born action Plan)	SGT	
38	CM10.3	Describe local customs and practices during pregnancy, childbirth, lactation and child feeding practices	SGT	
39	CM10.9	Describe and discuss gender issues and women empowerment	SGT	
40	CM10.7	Enumerate and describe the basis and principles of the Family Welfare Program including the organization, technical aspect and operational aspect.	LGT	
41	CM10.6.1	Enumerate and describe various family planning methods, their advantages and shortcomings	SGT	
42	CM10.6.2	Identification with description of various family planning methods(Spotters)	SGT	
43	PE8.1 PE8.2 PE8.3	Define the term Complementary Feeding , Discuss the principles the initiation, attributes , frequency, techniques and hygiene related to complementary feeding including IYCF, Enumerate the common complimentary foods	SGT	
44	CM10.6.3	Evaluation of Family Planning Programme	LGT	
45	CM10.8	Describe the physiology, clinical management and principles of adolescent health including ARSH	LGT	
		<b>Occupational Health</b>		
46	CM11.1.1	Enumerate the Occupational environment and occupational hazards {classification}	LGT	
47	CM11.1.2	Describe the presenting features of patients with different occupational illness including agriculture	SGT	
48	CM11.3	Enumerate and describe specific occupational health hazards, their risk factors and preventive measures	SGT	
49	CM11.2	Describe the role ,benefits and functioning of the employees state insurance scheme	LGT	
50	CM2.5.2	Describe poverty and social security measures SGT	SGT	
51	CM11.4	Describe the principle of ergonomics in health prevention	SGT	
52	CM11.5	Describe the occupational disorders of health professionals and their prevention & management	SGT	
		Internal assessment		



53		Feedback on Internal assessment	SGT	
		<b>Topic: Health care of the Community</b>		
54	CM17.5	Describe health care delivery in India	LGT	
55	CM17.3.1	Describe primary health care, its components and principles	LGT	
56	CM17.1.2	Define and describe the concept of health care to community (HWC)	SGT	
57	CM17.5.1	Describe health care delivery in India (Organization, job responsibility of HW s, Health supervisors )	SGT	
58	CM17.5.2	Describe health care delivery in India ( job responsibility MO PHC)	SGT	
59		IPHS standards for PHC/CHC	SGT	
60	CM9.6	Describe the National Population Policy	LGT	
61	CM17.4.3	Describe Universal Health coverage	LGT	
62	CM17.4.1	Describe National policies related to health and health planning and millennium development goals	LGT	
63	CM17.4.2	Describe National policies related to health and health planning-SDG	LGT	
64	CM16.1	Define and describe the concept of Health planning	LGT	
		CM16.2 Describe planning cycle		
65	CM16.3	Describe Health management techniques	SGT	
66	CM16.4	Describe health planning in India and National policies related to health and health planning	SGT	
		<b>Geriatric care</b>		
67	CM12.1	Define and describe the concept of Geriatric services	SGT	
	CM12.2	Describe health problems of aged population		
	CM12.3	Describe the prevention of health problems of aged population		
	CM12.4	Describe National program for elderly		
		<b>National Health Programme</b>		
68	PE17.1	State the vision and outline the goals, strategies and plan of action of NHM	LGT	
69	PE17.2	Analyse the outcomes and appraise the monitoring and evaluation of NHM	LGT	
70	PE18.1	List and explain the components, plans, outcomes of RCH program and appraise the monitoring and evaluation	LGT	
71	OP9.4	Blindness Enumerate, describe and discuss the causes of avoidable blindness and the National Programs for Control of Blindness (including vision 2020)	LGT	
		<b>Disaster Management</b>		

72	CM13.1 CM13.2  CM13.3 CM13.4 FM2.33	Define and describe the concept of Disaster management Describe disaster management cycle Describe man made disasters in the world and in India Describe the details of the National Disaster management Authority Demonstrate ability to use local resources whenever required like in mass disaster situations	LGT	
		<b>Mental Health</b>		
73	CM15.1  CM15.2 CM15.3 PS19.1	Define and describe the concept of mental Health Describe warning signals of mental health disorder Describe National Mental Health program Describe the relevance, role and status of community psychiatry	LGT	
74	PS19.2 PS19.4 PS19.5	Describe the objectives strategies and contents of the of the National Mental Health Programme Enumerate and describe the salient features of the prevalent mental health laws in India Describe the concept and principles of preventive psychiatry and mental health promotion (positive mental health); and community education	LGT	
		<b>Nutrition</b>		
75	CM5.6.1	Enumerate and discuss the National Nutrition Policy	LGT	
76	CM5.6.2	Describe important national nutritional Programs including the Integrated Child Development Services Scheme(ICDS)	SGT	
77	CM5.6.3 (PH1.55.1) (IM9.15)	Describe and discuss the following National Health programmes including , Anaemia & nutritional disorders. (Describe the national programs for anemia prevention )	SGT	Medicine Pharmacology
78	IM12.12	Describe and discuss the iodisation programs of the government of India	SGT	
79	CM19.1 CM19.2 CM19.3	Define and describe the concept of Essential Medicine List (EML) Describe roles of essential medicine in primary health care Describe counterfeit medicine and its prevention	SGT	
		<b>Demography</b>		
80	CM9.3	Enumerate and describe the causes of declining sex ratio and its social and health implications	SGT	
81	CM9.4.1	Enumerate and describe the causes and consequences of population explosion and population dynamics of India	SGT	
		<b>Health Education</b>		
82	CM1.6.1	Describe the approach & principles of health education	LGT	

83	CM4.2	Describe the methods of organizing health promotion and education and counseling activities at individual family and community	SGT	
84	CM4.1	Describe the models of Health education & Describe various methods of health education with their advantages and limitations	LGT	
85	CM4.3	Demonstrate and describe the steps in evaluation of health promotion and education program	SGT	
86	CM1.9	Demonstrate the role of effective Communication skills in health in a simulated environment	SGT	
87	CM1.10	Demonstrate the important aspects of the doctor patient relationship in a simulated environment	SGT	
		<b>International Health</b>		
88	CM18.1	Define and describe the concept of International health (international Health Regulation)	SGT	
89	CM18.2	Describe roles of various international health agencies		
		<b>Recent advances</b>		
90	CM 20.3	Genetic counseling	SGT	
91	CM20.4.1	Demonstrate awareness about laws pertaining to practice of medicine such as Clinical establishment Act and Human Organ Transplantation Act and its implications	SGT	
92	CM20.4.2	Public health Act:--MTP, PCPNDT	SGT	
93	CM20.4.3	POCSO Act, COPRA Act	SGT	
94	CM14.3	Describe laws relate to Hospital Waste Management	SGT	
		<b>Revision</b>		
95		Entomology repeat	SGT	
96		Epidemiological exercises	SGT	
97		Problems on water analysis	SGT	
98		Problems on Nutrition	SGT	
99		Mortality related problem	SGT	
100		MCH Problem(Fertility related Problem)	SGT	
		<b>SDL-5hours</b>		
1		ICD 10	SDL	2
2		Indicators of MCH care	SDL	2

3	PE17.1	State the vision and outline the goals, strategies and plan of action of important national programs pertaining to maternal and child health including RMNCH A+, RKSK, JSSK, RBSK	SDL	2
4	CM20.2	Describe various issues during outbreaks and their prevention	SDL	
5	CM20.1	List important public health events of last five years	SDL	
LGT=40hours, SGT=60 hours, SDL=5hours, Total=105 hours				

### Clinical Postiung (10 weeks):

<b>4 weeks (II MBBS)</b>	UH&TC UH&TC	Staff pattern Purpose, Services provided, Family schedule discussion, transect walk  Family- Socio demographic & environmental study  Family & nutrition: Family diet survey, Individual diet survey. (PE9.6 Assess and classify the nutrition status of infants, children and adolescents and recognize deviations PE9.4 Elicit, Document and present an appropriate nutritional history and perform a dietary recall). PE9.5 Calculate the age related Calorie requirement in Health and Disease and identify gap
	UH&TC	Health status of all members RCH practices in the family Adolescent schedule Geriatric schedule
	ILR Centre	Immunization(cold chain equipment) PE19.3 Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, PE19.4 Define cold chain and discuss the methods of safe storage and handling of vaccines PE19.5 Discuss immunization in special situations – HIV positive children, immunodeficiency, preterm, organ transplants, those who received blood and blood products, splenectomised children, Adolescents, travellers PE19.8 Demonstrate willingness to participate in the National and sub national immunisation days
	UHND Session	Antenatal case ( PE18.3 Conduct Antenatal examination of women independently and apply at-risk approach in antenatal care(along with O & G) PE18.6 Perform Postnatal assessment of newborn and mother, provide advice on breast feeding, weaning and on family planning (along with O & G) PE10.4 Identify children with under nutrition as per IMNCI criteria and plan referral Growth and development of under-5(PE3.5: Discuss the role of the child developmental unit in management of developmental delay) Diet survey of under-5 children (Nutritional assessment of under-5)

<b>6weeks(III MBBS Part I)</b>	AWC	<p>Infant feeding practices (PE8.1) Define the term Complementary Feeding.</p> <p>PE9.4 PE9.5 Elicit, Document and present an appropriate nutritional history and perform a dietary recall</p> <p>Calculate the age related Calorie requirement in Health and Disease and identify gap</p> <p>PE9.6 Assess and classify the nutrition status of infants, children and adolescents and recognize deviations</p> <p>PE8.4 PE8.5 Elicit history on the Complementary Feeding habits , Counsel and educate mothers on the best practices in Complimentary Feeding</p> <p>Elicit history on the Complementary Feeding habits. PE8.5 Counsel and educate mothers on the best practices in Complimentary Feeding</p> <p>Visit to an AWC</p>
	UH&TC	Clinico-social case study: TB, Leprosy, DM, HTN, Scabies
	ARC	Animal Bite Cases
	UHTC/HWC	Evaluation of Services provided at HWC
	Visit	<p>Visit to water treatment plant</p> <p>Visit to ICTC, district TB unit, NVBDCP, DEIC</p> <p>Visit to Sewage treatment plant</p>

### COMMUNITY MEDICINE

#### Paper – 1

(Concept of Health, Principles of Epidemiology; Social science & Health, Health Information system and Basic Medical statistics, Environment & health, Demography and Family planning, Nutrition, Preventive Medicine in Obstetric, Paediatrics and Geriatric, International Health)

**Time: Three Hours**

**Maximum Marks: 100**

**Each Section to be answered in separate answer book Illustrate with suitable diagrams wherever necessary**

#### SECTION A (Marks: 50)

1. Enumerate the different types of Observational studies and write in detail about descriptive epidemiology. (4+6=10)
2. Explain the concept of dependency ratio in demography. Describe the health problems of aged .Mention the preventive health care of the elderly. (3+4+3=10)
3. Write short notes on (4\*5=20)
  - a) Confounding factors
  - b) Food adulteration
  - c) Major air pollutants and air quality index
  - d) Health Promotional measures for adolescent girls
4. Explain the following. (2\*5=10)
  - a) Pearl index
  - b) Iodization of salt
  - c) Yellow fever vaccination for travellers

- d) Declining sex ratio
- e) Risk factor avoidance in coronary Heart diseases

**SECTION B (Marks: 50)**

5. What are the sources of Bio-medical waste? Describe in detail the methods of segregation, collection, transport and final disposal of Biomedical waste. (4+6=10)
6. What are the causes of Infant mortality? Describe the programmes aimed at improving the health status of infants. (3+7=10)
7. Write short notes on (4\*5=20)
- a) Screening test
  - b) Overcrowding and health
  - c) Iceberg phenomena of diseases
  - d) MR (Measles & Rubella) vaccine
8. Explain the following. (2\*5=10)
- a) Triage in disaster
  - b) TT vaccine in Pregnancy
  - c) Case fatality rate
  - d) Vitamin A supplementation
  - e) Orthotoludene Test

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**COMMUNITY MEDICINE**

**Paper – 2**

(Epidemiology of Communicable & Non communicable diseases Occupational Health, Health Programmes in India, Disaster Management, Genetics & Health, Mental Health, Health planning and Management, Health Care system, Communication for Health Education, Recent advances in Health)

**Time: Three Hours**

**Maximum Marks: 100**

**Each Section to be answered in separate answer book Illustrate with suitable diagrams wherever necessary PART A (50 marks)**

1. A 50 year old female has come to out patient department with complains of lump in left breast. Name with justification, the conditions you will screen her for. Name the National Programme under which these facilities are available? What are the goals and objectives of the Programme? (3+3+4=10)
2. Describe the components of National AIDS control Programme. Discuss about the post exposure prophylaxis in case of accidental needle puncture. (5+5=10)
3. Write short notes on (4\*5=20)
  - a) Mission Indradhanush.
  - b) Sanitation Barrier.
  - c) Positive Eugenics
  - d) BCC(Behaviour Change Communication)
4. Explain the following. (2\*5=10)
  - a) Mass drug administration for Filariasis
  - b) Annual parasite incidence
  - c) Surveillance for vaccine preventable diseases
  - d) Kangaroo mother care
  - e) Isolation period for Measles

**PART B (50 marks)**

5. Describe the epidemiology of Japanese Encephalitis. Discuss its prevention and control measures. (5+5=10)

6. What are the Health hazards after a disaster? What are the fundamental aspects of disaster management? (5+5=10)

7. Write short notes on (5× 4 =20 )

- a. Non Communicable Disease risk factors
- b. Syndromic management of RTI/STI.
- c. Management of some dehydration in children according to IMNCI
- d. Cost effective / Cost benefit

8. . Explain the following. (2\*5=10)

- a) **Vaccination at Birth**
- b) **Key messages in Vaccination programme**
- c) **Role of Immunoglobulin in Rabies**
- d) **Genetic counselling**
- e) **Vision 2020**

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### **INTERNSHIP**

Period :There shall be a period of compulsory internship for two months in this discipline after the final examination in MBBS as detailed in the interns' logbook.

### **RECORDS**

- Practical record
- Clinical & Field Practice Record
- Intern's Logbook

### **REFERENCE BOOKS**

COMMUNITY MEDICINE RECOMMENDED TEXTBOOKS (Latest edition)

1. Park's Text Book for preventive and Social Medicine, Edited by K. Park

#### REFERENCE BOOKS

1. Oxford text book of Public Health (3 volumes), Edited by Walter W.Holland, Roger Detels & George Knox
2. Maxey-Rosenau-Last Public Health and Preventive Medicine (Public Health and Preventive Medicine by Robert B. Wallace
3. Preventive Medicine for the Doctor in his Community: An epidemiological Approach. Edited by Hugh Rodman Level and E. Gurney Clark
4. Mahajan's Methods in Biostatistics for Medical Students and Research Workers edited and revised by Bratati Banerjee
5. Bradford Hill's Principles of Medical Statistics, by Bradford Hill
6. Short Text book of Preventive & Social Medicine, by G.N.Prabhakara
7. Research Methods in Community Medicine: Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials, by Joseph Abramson
8. Modern Nutrition in Health and Disease, by Maurice E. Shils
9. Text book for the Health Worker, by A.M.Chalkey
10. Community Medicine-Practical manual, by A A Kameswara Rao
- 11.IAPSM Text Book on Community Medicine

#### REPRODUCTIVE CHILD HEALTH

1. Preventive Medicine in Obstetrics, Paediatrics and Geriatrics. In: Park's Textbook of Preventive and Social Medicine.
2. Immunization Handbook for medical officers, 2017. Available from <https://mohfw.gov.in/basicpage/immunization-handbook-medical-officers2017>

3. India Newborn Action Plan - New Born Baby. Available from [https://www.newbornwhocc.org/INAP\\_Final.pdf](https://www.newbornwhocc.org/INAP_Final.pdf)  
Operational guidelines Mission Indradhanush, 2015. Available from [https://www.who.int/pmnch/about/governance/partnersforum/enap\\_full.pdf](https://www.who.int/pmnch/about/governance/partnersforum/enap_full.pdf)

4. Every Newborn Action Plan - World Health Organization. Available from [https://www.who.int/pmnch/about/governance/partnersforum/enap\\_full.pdf](https://www.who.int/pmnch/about/governance/partnersforum/enap_full.pdf)

#### SOCIOLOGY

1. Medicine and Social Sciences. In: Park's Textbook of Preventive and Social Medicine.

#### OCCUPATIONAL HEALTH

1. International Labour Organization - ILO. Available from [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms\\_615594.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_615594.pdf)

#### GENETICS AND HEALTH

1. [upnrhm.gov.in/site.../pdf](http://upnrhm.gov.in/site.../pdf)

2. The Human Genome Project available from <http://ghr.nlm.nih.gov/primer/hgp.pdf>, Page 26 of 31

# XI: Otorhinolaryngology

(a) **Competencies:** The learner must demonstrate:

1. Knowledge of the common Otorhinolaryngological (ENT) emergencies and problems,
2. Ability to recognize, diagnose and manage common ENT emergencies and problems in primary care setting,
3. Ability to perform simple ENT procedures as applicable in a primary care setting,
4. Ability to recognize hearing impairment and refer to the appropriate hearing impairment rehabilitation programme.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to allow the learner to understand the structural basis of ENT problems, their management and correlation with function, rehabilitation and quality of life.

## TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
3rd part 1	25 hours	40 hours	5 hours		70 hours	144 hours
Total	25 hours	40 hours	5 hours		70 hours	144 hours

## Mark Distribution

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical/clinical	Viva	Theory	Practical + Viva
Theory=100 Clinical =100	Paper 1=100	Clinical=60 Practical=10 Record & LogBook=10	20(10+10) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical+Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

## Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
3 <sup>rd</sup> Professional Year Part 1	January	100	100
	August	100	100

## CURRICULUM

### UG CURRICULUM FOR LARGE GROUP TEACHING

Sl No	No	COMPETENCY	Hr	INTEGRATION	TL Method
1	EN1.1	Describe the Anatomy & physiology of ear, nose, throat, head & neck	3	Anatomy(36.1,36.2,36.3,36.5,37.1,37.2,38.1,40.1)	LGT



2	EN1.2	Describe the pathophysiology of common diseases in ENT	2	Anatomy40.4&40.5	LGT
3	EN2.15	Describe the national programs for prevention of deafness, cancer, noise & environmental pollution	1		LGT
4	EN4.12	Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Hearing loss	1	PY10.16	LGT
5	EN4.13		1		LGT
6	EN4.14 & 4.15		1		LGT
7	EN4.18		1		LGT
8	EN4.19,4.20	Describe the clinical features, investigations management of Vertigo, Describe the clinical features,investigation& principle of management of Meniers disease	1		LGT
9	EN4.21	Describe the clinical features, investigation& principle of management of Tinnitus	1		LGT
10	EN4.27	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of seasonal type of Allergic Rhinitis	1	PE31.1,PE31.3	LGT
11	EN4.28	Discuss the types, clinical presentation, and management of foreign body aspiration in infants and children	1		LGT
12	EN4.30	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Epistaxis	1		LGT
	EN4.31	Describe the clinical features, investigations and principles of management of trauma to the face & neck	1		LGT
	EN4.32	Describe the clinical features, investigations and principles of management of nasopharyngeal Angiofibroma	1		LGT

EN4.33	Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Acute & Chronic Sinusitis	1		LGT
EN4.34	Describe the clinical features, investigations and principles of management of Tumors of Maxilla	1	AN37.3	LGT
EN4.35	Describe the clinical features, investigations and principles of management of Tumors of Nasopharynx	1		LGT
EN4.38	Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of type of dysphagia,	1		LGT
EN4.46	Describe the clinical features, investigations and principles of management of Malignancy of the Larynx & Hypopharynx	1	SU20.1	LGT
EN4.52	Describe the Clinical features, Investigations and principles of management of diseases of Oesophagus	1		LGT
EN4.53	Describe the clinical features, investigations and principles of management of HIV manifestations of the ENT	2		LGT

### **UG CURRICULUM FOR SMALL GROUP TEACHING**

<b>Sl No</b>	<b>No</b>	<b>COMPETENCY</b>	<b>Hour</b>	<b>INTEGRATION</b>	<b>TL METHOD</b>
1	EN2.11	Describe and identify by clinical examination malignant & pre- malignant ENT diseases	2		Small group teaching
2	EN3.1	Observe and describe the indications for and steps involved in the performance of Otomicroscopic examination in a simulated environment	2		Small group teaching
3	EN3.2,	Observe and describe the indications for and steps involved in the performance of	2		Small group teaching

		diagnostic nasal Endoscopy			
4	EN3.3	Observe and describe the indications for and steps involved in the performance of Rigid/Flexible Laryngoscopy	2		Small group teaching
5	EN3.4	Observe and describe the indications for and steps involved in the removal of foreign bodies from ear, nose & throat	2		Small group teaching
6	EN4.3	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of ASOM	2		Small group teaching
7	EN4.22	Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Nasal Obstruction	2		Small group teaching
8	EN23,EN4.24	Describe the clinical features, investigations and principles of management of DNS, Enumerate the indications observe and describe the steps of septoplasty	2		Small group teaching
9	EN4.25	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Nasal Polyps	2		Small group teaching
10	EN4.36	Describe the clinical features, investigations and principles of management of diseases of the Salivary glands	2		Small group teaching
11	EN4.37	Describe the clinical features, investigations and principles of management of Ludwig's angina	2		Small group teaching
12	EN4.39	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Acute & Chronic Tonsillitis	2		Small group teaching
13	EN4.42	Elicit, document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles	2		Small group teaching

		of management of hoarseness of voice			
14	EN4.43	Describe the clinical features, investigations and principles of management of Acute & Chronic Laryngitis	4		Small group teaching
15	EN4.44	Describe the clinical features, investigations and principles of management of Benign lesions of the vocal cord		AN38.3 Describe anatomical basis of recurrent laryngeal nerve injury	Small group teaching
16	EN4.45	Describe the clinical features, investigations and principles of management of Vocal cord palsy	2		Small group teaching

17	EN4.47	Describe the clinical features, investigations and principles of management of Stridor	4	PE28.7 Discuss the etiology, clinical features and management of Stridor in children	Small group teaching
18	EN4.48	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Airway Emergencies			Small group teaching
19	EN4.49	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of foreign bodies in the air & food passages	4	PE28.8 Discuss the types, clinical presentation, and management of foreign body aspiration in infants and children	Small group teaching
20	EN3.6	Observe and describe the indications for and steps involved in the skills of emergency procedures in ear, nose & throat	5		SDL

**UG CURRICULUM FOR CLINICAL DEMONSTRATION/BED SIDE TEACHING/DOAP**

SI No	No	COMPETENCY	Hour	Integration	TL METHOD
1	EN2.1	Elicit document and present an appropriate history in a patient	3		Clinical Demonstration/Bed

		presenting with an ENT complaint			side teaching
2	EN2.10	Identify and describe the use of common instruments used in ENT surgery	3		Clinical Demonstration/Bed side teaching
3	EN2.12	Counsel and administer informed consent to patients and their families in a simulated environment	3		Clinical Demonstration/Bed side teaching
4	EN4.1	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Otagia	3		Clinical Demonstration/Bed side teaching
5	EN4.2	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of diseases of the external Ear	3		Clinical Demonstration/Bed side teaching
6	EN4.4	Demonstrate the correct technique to hold visualize and assess the mobility of the tympanic membrane and its mobility and interpret and diagrammatically represent the findings	3		Clinical Demonstration/Bed side teaching
7	EN4.5	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of OME	3		Clinical Demonstration/Bed side teaching
8	EN4.6	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of Discharging ear	3		Clinical Demonstration/Bed side teaching
9	EN4.7	Elicit document and present a correct history demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of CSOM	3		Clinical Demonstration/Bed side teaching
10	EN4.8	Elicit document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of CSOM	3		Clinical Demonstration/Bed side teaching
11	EN4.26	Elicit document and present a correct	3		Clinical

		history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Adenoids			Demonstration/Bed side teaching
12	EN4.29	Elicit, document and present a correct history, demonstrate and describe the clinical features, choose the correct investigations and describe the principles of management of squamosal type of Acute & Chronic Rhinitis	3		Clinical Demonstration/Bed side teaching
13	EN4.41	Describe the clinical features, investigations and principles of management of Acute & chronic abscesses in relation to Pharynx	3		Clinical Demonstration/Bed side teaching
14	EN2.2	Demonstrate the correct use of a headlamp in the examination of the ear, nose and throat	6	PY10.15.PE 28.10.PE28.11,PE28.12	DOAP
15	EN2.3	Demonstrate the correct technique of examination of the ear including Otoscopy	6		DOAP
16	EN2.4	Demonstrate the correct technique of performance and interpret tuning fork tests	6		DOAP
17	EN2.5	Demonstrate the correct technique of examination of the nose & paranasal sinuses including the use of nasal speculum	6		DOAP
18	EN2.6	Demonstrate the correct technique of examining the throat including the use of a tongue depressor	6		DOAP
19	EN2.7	Demonstrate the correct technique of examination of neck including elicitation of laryngeal crepitus	6		DOAP
20	EN2.8	Demonstrate the correct technique to perform and interpret pure tone audiogram & impedance audiogram	6		DOAP
21	EN2.9	Choose correctly and interpret radiological, microbiological & histological investigations relevant to the ENT disorders	6	PE28.4 Discuss the etio-pathogenesis, clinical features and management of Acute Otitis Media	DOAP

				(AOM)	
22	EN2.13	Identify, resuscitate and manage ENT emergencies in a simulated environment (including tracheostomy, anterior nasal packing, removal of foreign bodies in ear, nose, throat and upper respiratory tract)	6		DOAP
23	EN4.9	Demonstrate the correct technique for syringing wax from the ear in a simulated environment	6		DOAP
24	EN4.10	Observe and describe the indications for and steps involved in myringotomy and myringoplasty	6		DOAP
25	EN4.11		6		DOAP
26	EN4.16	Observe and describe the indications for and steps involved in the performance of pure tone audiometry	6		DOAP
27	EN4.17	Enumerate the indications and interpret the results of an audiogram	3		DOAP
28	En4.40	Observe and describe the indications for and steps involved in a tonsillectomy / adenoidectomy	6		DOAP
29	EN4.5	Observe and describe the indications for and steps involved in tracheostomy	6		DOAP
30	EN4.51	Observe and describe the care of the patient with a tracheostomy	6		DOAP
31	EN4.4	Demonstrate the correct technique to hold visualize and assess the mobility of the tympanic membrane and its mobility and interpret and diagrammatically represent the findings	6		DOAP

# **SAMPLE QUESTION PAPER**

**Subject: Otorhinolaryngology**

**Total Marks: 100**

**Time: 3 Hours**

**Answer all questions  
Use separate answer sheets for each section  
Figures in right-hand denote marks**

## **SECTION A**

1. Describe aetiopathology and investigation of Atrophic rhinitis **5+5**
2. Describe the stages and treatment of acute suppurative otitis media **5+5**
3. Write short notes on the following: **4x5**
  - a. Positional vertigo
  - b. Singers node
  - c. Referred otalgia
  - d. Rhinoscleroma
4. Explain the following **5x2**
  - a) Carharts notch at 2 kHz
  - b) Cone of light' on the tympanic membrane.
  - c) Malignant otitis externa.
  - d) Little's area
  - e) Peritonsilar abscess.

## **SECTION B**

5. Enumerate causes of epistaxis. How will you manage a case of epistaxis? **5+5**
6. Describe indications and complications of tracheostomy **5+5**
7. Write short notes on the following **4x5**
  - a) Globus hystericus
  - b) Branchial cyst
  - c) Atresia pinna
  - d) Cauliflower ear
8. Explain the following **5x2**
  - a) Safety muscle of larynx
  - b) Bleeding polyp nose
  - c) Keratosis obturans
  - d) Grommet
  - e) Killian dehiscence



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## **Suggested books**

Fundamentals of EAR, NOSE AND THROAT & HEAD & NECK SURGERY- Dr.S.K.Dey

Diseases of EAR, NOSE & THROAT- Dr P L Dhingra

A short practice of Otolaryngology- Prof. K.K. Ramalingam

## XII:Ophthalmology

(a) **Competencies:** The student must demonstrate:

1. Knowledge of common eye problems in the community
2. Recognize, diagnose and manage common eye problems and identify indications for referral,
3. Ability to recognize visual impairment and blindness in the community and implement National programmes as applicable in the primary care setting.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to allow the student to understand the structural basis of ophthalmologic problems, their management and correlation with function, rehabilitation and quality of life.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practicals/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2 <sup>nd</sup>	-	-	-	-	-	4Weeks
3 <sup>rd</sup> Part I	30hours	60hours	10hours		100hours	4Weeks
Total	30hours	60hours	10hours		100hours	8Weeks

### Marks Distribution

Total marks	University Examination Marks			Internal Assessment	
	Theory	Practical/clinical+Oral	Viva	Theory	Practical + Viva
Theory=100 Practical =100	Paper 1=100	Long Case =40 Short case=20 Spotter=10 Record=10	20(10+10) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

### Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
3 <sup>rd</sup> Professional Year Part I	January	100	100
	August	100	100

# CURRICULUM

## UG CURRICULUM FOR LARGE GROUP TEACHING

### DEPT. OF OPHTHALMOLOGY

Topic code	Topic	No. of Hours (30)	Integration	Method of Teaching
	Visual Acuity Assessment			
OP1.1	Describe the physiology of vision	<u>1 hr</u>	<u>Physiology</u>	<u>LGT</u>
OP1.2	Define, classify and describe the types and methods of correcting refractive errors	<u>2 hr</u>		<u>LGT</u>
OP1.4	Enumerate the indications and describe the principles of refractive surgery	<u>1 hr</u>		<u>LGT</u>
	Lids and Adnexa, Orbit			
OP2.1	Enumerate the causes, describe and discuss the aetiology, clinical presentations and diagnostic features of common conditions of the lid and adnexa including Hordeolum externum/ internum, blepharitis, preseptal cellulitis, dacryocystitis, hemangioma, dermoid, ptosis, entropion, lid lag, lagophthalmos	<u>2 hr</u>	<u>Human Anatomy</u>	<u>LGT</u>
OP2.6	Enumerate the causes and describe the differentiating features, and clinical features and management of proptosis	<u>1 hr</u>		<u>LGT</u>
	Conjunctiva			
OP3.3	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications. and management of various causes of conjunctivitis	<u>2 hr</u>		<u>LGT</u>
	Corneas			
OP4.1 & OP4.2	Enumerate, describe and discuss the types and causes of corneal Ulceration Enumerate and discuss the differential diagnosis of infective Keratitis	<u>3 hr</u>	<u>Human Anatomy</u>	<u>LGT</u>
OP4.4	Enumerate the causes and discuss the management of dry eye	<u>1 hr</u>		<u>LGT</u>
OP4.5	Enumerate the causes of corneal blindness	<u>1 hr</u>		<u>LGT</u>
OP4.6	Enumerate the indications and the types of keratoplasty	<u>1 hr</u>		<u>LGT</u>
OP4.9	Describe and discuss the importance and protocols involved in eye donation and eye banking	<u>1 hr</u>		<u>LGT</u>
	Iris and Anterior chamber			
OP6.1	Describe clinical signs of intraocular inflammation and enumerate the features that distinguish granulomatous from nongranulomatous Inflammation. Identify acute iridocyclitis from chronic condition	<u>2 hr</u>		<u>LGT</u>
OP6.2	Identify and distinguish acute iridocyclitis from chronic			

	iritidocyclitis			
OP6.7	Enumerate and discuss the aetiology, the clinical distinguishing features of shallow and deep anterior chamber. Choose appropriate investigations for patients with above conditions of the anterior chamber	<u>4 hr</u>	<u>Human Anatomy</u>	<u>LGT</u>
	Lens			
OP7.2	Describe and discuss the aetio-pathogenesis, stages of maturation and complications of cataract	<u>1 hr</u>	<u>Pathology</u>	<u>LGT</u>
OP7.4	Enumerate the types of cataract surgery and describe the steps, intra-operative and post-operative complications of extracapsular cataract extraction surgery.	<u>1 hr</u>		<u>LGT</u>
	Retina & optic Nerve			
OP8.1	Discuss the aetiology, pathology, clinical features and management of vascular occlusions of the retina	<u>1 hr</u>	<u>Human Anatomy, Pathology</u>	<u>LGT</u>
OP8.3	Demonstrate the correct technique of a fundus examination and describe and distinguish the fundoscopic features in a normal condition and in conditions causing an abnormal retinal exam	<u>1 hr</u>		<u>LGT</u>
OP8.5	Describe and discuss the correlative anatomy, aetiology, clinical manifestations, diagnostic tests, imaging and management of diseases of the optic nerve and visual pathway	<u>2 hr</u>		<u>LGT</u>
	Miscellaneous			
OP9.2	Classify, enumerate the types, methods of diagnosis and indications for referral in a patient with heterotropia/ strabismus	<u>1 hr</u>		<u>LGT</u>
OP9.5	Describe the evaluation and enumerate the steps involved in the stabilisation, initial management and indication for referral in a patient with ocular injury	<u>1 hr</u>		<u>LGT</u>

UG CURRICULUM FOR SMALL GROUP TEACHING  
DEPT. OF OPHTHALMOLOGY

<b>Topic code</b>	<b>Topic</b>	<b>No. of Hours (60)</b>	<b>Integration</b>	<b>Method of Teaching</b>
	Visual Acuity Assessment			
OP1.5	Define, enumerate the types and the mechanism by which strabismus leads to amblyopia	<u>2 hr</u>		<u>SGT</u>
	Lids and Adnexa, Orbit			
OP2.4	Describe the aetiology, clinical presentation. Discuss the complications and management of orbital cellulitis	<u>2 hr</u>		<u>SGT</u>
OP2.5	Describe the clinical features on ocular examination and management of a patient with cavernous sinus thrombosis	<u>2 hr</u>		<u>SGT</u>

OP2.6	Enumerate the causes and describe the differentiating features, and clinical features and management of proptosis	<u>3 hr</u>		<u>SGT</u>
OP2.7	Classify the various types of orbital tumours. Differentiate the symptoms and signs of the presentation of various types of ocular tumours	<u>4 hr</u>		<u>SGT</u>
OP2.8	List the investigations helpful in diagnosis of orbital tumors. Enumerate the indications for appropriate referral	<u>2 hr</u>		<u>SGT</u>
	Conjunctiva			
OP3.4	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of trachoma.	<u>2 hr</u>		<u>SGT</u>
OP3.5	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of vernal catarrh	<u>2 hr</u>		<u>SGT</u>
OP3.6	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of pterygium	<u>2 hr</u>		<u>SGT</u>
OP3.7	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of symblepharon	<u>1 hr</u>		<u>SGT</u>
	Corneas			
OP4.3	Enumerate the causes of corneal edema	<u>2 hr</u>		<u>SGT</u>
OP4.7	Enumerate the indications and describe the methods of tarsorrhaphy	<u>2 hr</u>		<u>SGT</u>
	Sclera			
OP5.1	Define, enumerate and describe the aetiology, associated systemic conditions, clinical features complications indications for referral and management of episcleritis	<u>2 hr</u>		<u>SGT</u>
OP5.2	Define, enumerate and describe the aetiology, associated systemic conditions, clinical features, complications, indications for referral and management of scleritis	<u>2 hr</u>		<u>SGT</u>
	Iris and Anterior chamber			
OP6.3	Enumerate systemic conditions that can present as iridocyclitis and describe their ocular manifestations	<u>3 hr</u>		<u>SGT</u>
OP6.4	Describe and distinguish hyphema and hypopyon	<u>3 hr</u>		<u>SGT</u>
OP6.5	Describe and discuss the angle of the anterior chamber and its clinical correlates	<u>3 hr</u>		<u>SGT</u>
OP6.8	Enumerate and choose the appropriate investigation for patients with conditions affecting the Uvea	<u>3 hr</u>		<u>SGT</u>
OP6.9	Choose the correct local and systemic therapy for conditions of the anterior chamber and enumerate their indications, adverse events and interactions	<u>2 hr</u>		<u>SGT</u>

	Lens			
OP7.1	Describe the surgical anatomy and the metabolism of the lens	<u>2 hr</u>	<u>Biochemistry, Human Anatomy</u>	<u>SGT</u>
	Retina & optic Nerve			
OP8.2	Enumerate the indications for laser therapy in the treatment of retinal diseases (including retinal detachment, retinal degenerations, diabetic retinopathy & hypertensive retinopathy)	<u>4 hr</u>		<u>SGT</u>
OP8.4	Enumerate and discuss treatment modalities in management of diseases of the retina	<u>5 hr</u>		<u>SGT</u>
	Miscellaneous			
OP9.3	Describe the role of refractive error correction in a patient with headache and enumerate the indications for referral	<u>2 hr</u>		<u>SGT</u>
OP9.4	Enumerate, describe and discuss the causes of avoidable blindness and the National Programs for Control of Blindness (including vision 2020)	<u>3 hr</u>		<u>SGT</u>

**UG CURRICULUM FOR CLINICAL DEMONSTRATION/BED SIDE TEACHING/DOAP**

**DEPT. OF OPHTHALMOLOGY**

<b><u>Topic code</u></b>	<b><u>Topic</u></b>	<b><u>No. of Hours (10)</u></b>	<b><u>Integration</u></b>	<b><u>Method of Teaching</u></b>
	Visual Acuity Assessment			
OP1.3	Demonstrate the steps in performing the visual acuity assessment for distance vision, near vision, colour vision, the pin hole test and the menace and blink reflexes	<u>1 hr</u>	<u>Physiology</u>	<u>DOAP</u>
	Lids and Adnexa, Orbit			
OP2.2	Demonstrate the symptoms & clinical signs of conditions enumerated in OP2.1	<u>1 hr</u>	<u>Human Anatomy</u>	<u>DOAP</u>
OP2.3	Demonstrate under supervision clinical procedures performed in the lid including: bells phenomenon, assessment of entropion/ ectropion, perform the regurgitation test of lacrimal sac. massage technique in cong. dacryocystitis, and trichiatric cilia removal by epilation	<u>1 hr</u>		<u>DOAP</u>
	Conjunctiva			
OP3.1	Elicit document and present an appropriate history in a patient presenting with a “red eye” including congestion, discharge, pain	<u>1 hr</u>		<u>DOAP</u>
OP3.2	Demonstrate document and present the correct method of examination of a “red eye” including vision assessment, corneal lustre, pupil abnormality, ciliary tenderness			
OP3.8	Demonstrate correct technique of removal of foreign body from the eye in a simulated environment			
OP3.9	Demonstrate the correct technique of instillation of eye drops in			

	a simulated environment	<u>1 hr</u>		<u>DOAP</u>
	Corneas			
OP4.8	Demonstrate technique of removal of foreign body in the cornea in a simulated environment			
OP4.10	Counsel patients and family about eye donation in a simulated environment	<u>1 hr</u>		<u>DOAP</u>
	Iris and Anterior chamber			
OP6.6	Identify and demonstrate the clinical features and distinguish and diagnose common clinical conditions affecting the anterior chamber	<u>1 hr</u>		<u>DOAP</u>
OP6.10	Counsel patients with conditions of the iris and anterior chamber about their diagnosis, therapy and prognosis in an empathetic manner in a simulated environment			
	Lens			
OP7.3	Demonstrate the correct technique of ocular examination in a patient with a cataract	<u>1 hr</u>		
OP7.5	To participate in the team for cataract surgery			
OP7.6	Administer informed consent and counsel patients for cataract surgery in a simulated environment	<u>1 hr</u>		<u>DOAP</u>
	Miscellaneous			
OP9.1	Demonstrate the correct technique to examine extra ocular movements (Unioocular& Binocular)	<u>1 hr</u>		<u>DOAP</u>

**UG CURRICULUM FOR SDL**  
**DEPT. OF OPHTHALMOLOGY**

<b>Topic code</b>	<b>Topic</b>	<b>No. of Hours (10)</b>	<b>Integration</b>	<b>Method of Teaching</b>
	Examination of extra ocularmovements?	<u>1 hr</u>		<u>SDL</u>
	Fundus examination techniques. Describe & distinguish the fundoscopic features of abnormal retina?	<u>1 hr</u>		<u>SDL</u>
	Ocular examination of a patient with cataract	<u>1 hr</u>		<u>SDL</u>
	Counsel patients and family about eye donation	<u>1 hr</u>		<u>SDL</u>
	Elicit document present an appropriate history in a patient presenting with red eye	<u>1 hr</u>		<u>SDL</u>
	Demonstrate, document and present the correct method of examination of red eye	<u>1 hr</u>		<u>SDL</u>
	Demonstrate the symptoms & clinical signs of different lid disorder	<u>1 hr</u>		<u>SDL</u>
	Demonstrate & describe the steps in performing visual acuity	<u>1 hr</u>		<u>SDL</u>

	assessment for distance vision, near vision, colour vision pin hole test			
	Demonstrate and describe bell's phenomena regurgitation test of lacrimal sac, massage technique in Cong. NLDO	<u>1 hr</u>		<u>SDL</u>
	Demonstrate and describe the technique of removal of foreign body from eye	<u>1 hr</u>		<u>SDL</u>

## SAMPLE QUESTION PAPER

**Subject: Ophthalmology**

**Total Marks: 100**

**Time: 3 Hours**

**Answer all questions**

**Use separate answer sheets for each section**

**Figures in right-hand denote marks**

### SECTION A

Total Mark:50

Long Question:

[2×10]

1. What is corneal ulcer? Enumerate the causes, clinical features, investigations & management of corneal ulcer?
2. Enumerate the causes clinical features, investigations & management of POAG?

Short Notes:

[4×5]

1. Absolute glaucoma
2. Phthisis bulbi
3. Anterior staphyloma
4. Iris boonbe

Reasoning:

[5×2]

1. Why is there reduction in visual acuity in pin hole testing macular disorders?
2. Why hyprometric shift is seen in CSR?
3. Plus spherical lenses are added in presbyopic correction, why?
4. IOP is raised in Irisbombe , why?
5. Laser therapy is used in diabetic retinopathy , why?

### SECTION B

Total Mark:50

Long Question:

[2×10]

1. Classify Diabetic retinopathy? Enumerate the clinical features & management of diabetic retinopathy?
2. Describe the different types of cataract surgery & write about the postoperative complications of SICS?



Short Notes:

[4×5]

1. Buphthalmos
2. Keratic precipitates
3. Hypopyon
4. Malignant glaucoma

Reasoning:\_\_\_\_\_

[5×2]

1. Why tunnel vision is seen in advance stage of POAG?
2. Diabetics show third nerve palsy with pupillary sparing, why?
3. Why there is pain reduction in perfocation of corneal ulcer?
4. Conjectivalperitomy is done in Non-healing corneal ulcer, why?
5. Hutchinson sign is seen in HZO, why?

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Suggested books

1. Parson's text book of Ophthalmology
2. Kanski's clinical Ophthalmology
3. Khurana's text book of Ophthalmology

## XIII: General Medicine

**Competencies:** The student must demonstrate ability to do the following in relation to common medical problems of the adult in the community:

1. Demonstrate understanding of the patho-physiologic basis, epidemiological profile, signs and symptoms of disease and their investigation and management,
2. Competently interview and examine an adult patient and make a clinical diagnosis,
3. Appropriately order and interpret laboratory tests,
4. Initiate appropriate cost-effective treatment based on an understanding of the rational drug prescriptions, medical interventions required and preventive measures,
5. Follow up of patients with medical problems and refer whenever required,
6. Communicate effectively, educate and counsel the patient and family,
7. Manage common medical emergencies and refer when required,
8. Independently perform common medical procedures safely and understand patient safety issues.

**Integration:** The teaching should be aligned and integrated horizontally and vertically in order to provide sound biologic basis and incorporating the principles of general medicine into a holistic and comprehensive approach to the care of the patient.

### TEACHING METHODS AND HOURS

<u>Professional Year</u>	Duration  (months)	Teaching hours  (hours)	Tutorials/ seminars/ Integrated Teaching (hours)	Self- Directed Learning  (hours)	Total  (hours)
Second Professional MBBS	12	25	-	-	25
Third Professional Part I	13	25	35	5	65
Third Professional Part II	13	70	125	15	210

25% of allotted time of third professional shall be utilized for integrated learning with pre- and para- clinical subjects and shall be assessed during the clinical subjects examination. This allotted time will be utilized as integrated teaching by para-clinical subjects with clinical subjects (as Clinical Pathology, Clinical Pharmacology and Clinical Microbiology).

### CLINICAL POSTINGS

Subjects	Period of Training in weeks			Total
	II MBBS	III MBBS Part I	III MBBS Part II	
General Medicine	4	4	8+4	20

The clinical postings in the third professional part I shall be 18 hours per week (3 hrs per day from Monday to Saturday

The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday).

Hours from clinical postings can also be used for AETCOM modules.

### UNIVERSITY EXAMINATION: MARK DISTRIBUTION

III MBBS Part II	Marks	Pass Criteria
Theory – Paper I	100	Mandatory 50% marks separately in theory and practical (clinical + viva)
Theory – Paper II	100	
Clinicals	100	
Orals	100	
Total	400	

The discipline of Psychiatry and Dermatology, Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis will constitute 25% of the total theory marks in General Medicine incorporated as a separate section in paper II of General Medicine

#### Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	-----	-----
3 <sup>rd</sup> Professional Year part I	January	100	100
	August	100	100
3 <sup>rd</sup> Professional Year part II	June	100	100
	December	100	100

### DISTRIBUTION OF TOPICS IN PAPER I & III IN UNIVERSITY EXAMINATION

Paper	Topics
I	Fever and febrile Syndromes, HIV, Anaemia, Hypertension, Heart Failure, Acute Myocardial Infarction/ IHD, Liver Disease, GI Bleeding, Diarrhoeal disorders, Nutritional and Vitamin Deficiencies, Obesity, Poisoning, Envenomation, Acute and Chronic Kidney Failure, Mineral, Fluid Electrolyte Acid base disorders, Role of Physicians in Community
II	Diabetes Mellitus, Thyroid dysfunction, Endocrine disorders, Rheumatologic Problems, Headache, Cerebrovascular Accident, Movement Disorders, Common Malignancies, Geriatrics, Pneumonia, Respiratory Medicine, Psychiatry, Dermatology, Venereology and Leprosy (DVL)

## SECOND PROFESSIONAL MBBS

Sl No	Topic Code	Topic	Learning Methods	Integration
	<b>IM 4</b>	<b>Fever and febrile syndromes</b>		
1	4. 1 4.2	Describe and discuss the febrile response and the influence of host immune status, risk factors and comorbidities on the febrile response Describe and discuss the influence of special populations on the febrile response including: the elderly, immune suppression, malignancy and neutropenia, HIV and travel	Lecture	Micro
2	4. 3	Discuss and describe the common causes, pathophysiology and manifestations of fever in various regions in India including bacterial, parasitic and viral causes (e.g.Dengue, Chikungunya, Typhus)	Lecture	Micro
3	4. 4 4. 5	Describe and discuss the pathophysiology and manifestations of inflammatory causes of fever Describe and discuss the pathophysiology and manifestations of malignant causes of fever including hematologic and lymph node malignancies	Lecture	Patho Micro
4	4.8	Discuss and describe the pathophysiology, aetiology and clinical manifestations of fever of unknown origin (FUO) including in a normal host, neutropenic host, nosocomial host and a host with HIV disease	Lecture	Micro
5	4.16 4.18	Enumerate the indications and describe the findings in tests of inflammation and specific rheumatologic tests, serologic testing for pathogens including HIV, bone marrow aspiration and biopsy Enumerate the indications for use of imaging in the diagnosis of febrile syndromes	Lecture	Path
6	4. 7	Discuss and describe the pathophysiology and manifestations of the sepsis syndrome	Lecture	Micro
7	4. 6 4.22	Discuss and describe the pathophysiology and manifestations of malaria Describe and discuss the pharmacology, indications, adverse reactions, interactions of antimalarial drugs and basis of resistance	Lecture	Micro
	<b>IM25</b>	<b>Miscellaneous Infections</b>		
8	25.1	Describe and discuss the response and the influence of host, immune status, risk factors and comorbidities on zoonotic diseases (e.g. Leptospirosis, Rabies) and non-febrile infectious disease (e.g. Tetanus)	Lecture	Micro
9	25.2 25.8	Discuss and describe the common causes, pathophysiology and manifestations of these diseases Enumerate the indications for use of newer techniques in the diagnosis of these infections	Lecture	Micro
	<b>IM23</b>	<b>Nutritional and Vitamin Deficiencies</b>		
10	23.1	Discuss and describe the methods of nutritional assessment	Lecture	Physio

	23.2 23.4	in an adult and calculation of caloric requirements during illnesses Discuss and describe the causes and consequences of protein caloric malnutrition in the hospital Enumerate the indications for enteral and parenteral nutrition in critically ill patients		Biochem Paed
11	23.3	Discuss and describe the aetiology, causes, clinical manifestations, complications, diagnosis and management of common vitamin deficiencies	Lecture	Physio Biochem
	<b>IM16</b>	<b>Diarrheal disorder</b>		
12	16.1	Describe, discuss the aetiology of acute and chronic diarrhoea including infectious and noninfectious causes	Lecture	Micro
13	16.2	Describe and discuss the acute systemic consequences of diarrhoea including its impact on fluid balance	Lecture	
14	16.3	Describe and discuss the chronic effects of diarrhoea including malabsorption	Lecture	
15	16.6 16.11	Distinguish between diarrhoea and dysentery based on clinical features Enumerate the indications for stool cultures and blood cultures in patients with acute diarrhoea	Lecture	Micro
16	16.12	Enumerate and discuss the indications for further investigations including antibodies, colonoscopy, diagnostic imaging and biopsy in the diagnosis of chronic diarrhoea	Lecture	Patho
17	16.13 16.14	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for parasitic causes of diarrhoea Describe, enumerate the indications, pharmacology and side effects of drugs for bacterial and viral diarrhoea	Lecture	Pharma Micro
18	16.15 16.16 16.17	Distinguish based on the clinical presentation Crohn's disease from Ulcerative Colitis Describe and the indications, pharmacology and side effects of pharmacotherapy including immunotherapy Describe and enumerate the indications for surgery in inflammatory bowel disease	Lecture	Path Pharma Surg
	<b>IM15</b>	<b>GI bleeding</b>		
19	15.1 15.6	Enumerate, describe and discuss the aetiology of upper and lower GI bleeding Distinguish between upper and lower gastrointestinal bleeding based on the clinical features	Lecture	Path Surg
20	15.3 15.2	Describe and discuss the physiologic effects of acute blood and volume loss Enumerate, describe and discuss the evaluation and steps involved in stabilizing a patient who presents with acute volume loss and GI bleed	Lecture	Physio Path
21	15.9 15.10	Choose and interpret diagnostic tests based on the clinical diagnosis including complete blood count, PT and PTT, stool examination, occult blood, liver function tests, H.pylori test Enumerate the indications for endoscopy, colonoscopy and other imaging procedures in the investigation of Upper GI bleeding	Lecture	Path Surg
22	15.11	Develop, document and present a treatment plan that	Lecture	Path

	15.12	includes fluid resuscitation, blood and blood component transfusion, and specific therapy for arresting blood loss Enumerate the indications for whole blood, component and platelet transfusion and describe the clinical features and management of a mismatched transfusion		
23	15.14	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy of pressors used in the treatment of Upper GI bleed	Lecture	Pharma Surg
	15.15	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy of acid peptic disease including Helicobacter pylori		
	15.16	Enumerate the indications for endoscopic interventions and Surgery		
	<b>IM 9</b>	<b>Anaemia</b>		
24	9.1	Define, describe and classify anemia based on red blood cell size and reticulocyte count	Lecture	Path
	9.2	Describe and discuss the morphological characteristics, aetiology, prevalence of each of the causes of anemia		
	9.7	Describe and discuss the meaning and utility of various components of the hemogram		
	9.8	Describe, discuss the various tests for iron deficiency		
25	9.11	Describe the indications and interpret the results of a bone marrow aspirations and biopsy	Lecture	Path
	9.12	Describe, develop a diagnostic plan to determine the aetiology of anemia		
	9.17	Describe the indications for blood transfusion and the appropriate use of blood components		
	9.18	Describe the precautions required necessary when performing a blood transfusion		

### THIRD PROFESSIONAL MBBS PART- I

Sl No	Topic Code	Topic	Learning Methods	Integration
	<b>IM 8</b>	<b>Hypertension</b>		
1	8.1	Epidemiology, aetiology and prevalence of primary and secondary hypertension	Lecture	Patho Physio
	8.2	Pathophysiology of hypertension		
2	8.4	Define and classify hypertension	Lecture	Path
	8.8	Discuss target organ damage due to hypertension		
3	8.5	Differences between primary and secondary hypertension	Lecture	Path
	8.7	Clinical manifestations of the various aetiologies of secondary hypertension		
4	8.12	Describe the appropriate diagnostic work up based on the presumed aetiology	Small group	
	8.13	Enumerate the indications for and interpret the results of: CBC, Urine routine, BUN, Cr, Electrolytes, Uric acid, ECG		
5	8.14	Develop an appropriate treatment plan for essential hypertension	Small group	
	8.20	Determine the need for specialist consultation		
6	8.6	Define, describe, discuss and recognise hypertensive urgency	Lecture	

	8.15	and emergency Management of hypertensive emergencies		
7	8.3	Describe and discuss the genetic basis of hypertension	SDL	
	<b>IM14</b>	<b>Obesity</b>		
8	14.1 14.2	Define and measure obesity in the Indian population Aetiology of obesity including modifiable and non-modifiable risk factors and secondary causes	Lecture	Path
9	14.3	Describe and discuss the monogenic forms of obesity	SDL	
10	14.4 14.5	Describe and discuss the impact of environmental factors -eating habits, food, work, environment, physical activity on the incidence of obesity Natural history of obesity and its complications	Lecture	Path Com Med
11	14.9 14.10	Order and interpret diagnostic tests based on the clinical diagnosis including blood glucose, lipids, thyroid function tests etc. Describe the indications and interpret the results of tests for secondary causes of obesity	Small group	
12	14.13	Describe and enumerate the indications, pharmacology and side effects of pharmacotherapy for obesity	Lecture	Pharma
13	14.14 14.15	Describe and enumerate the indications and side effects of bariatric surgery Describe and enumerate and educate patients, health care workers and the public on measures to prevent obesity and promote a healthy lifestyle	Small group	Surg
	<b>IM21</b>	<b>Poisoning</b>		
14	21.1	Describe the initial approach to the stabilisation of the patient who presents with poisoning	Lecture	Pharma
15	21.2	Enumerate the common plant poisons seen in your area and describe their toxicology, clinical features, prognosis and specific approach to detoxification	Lecture	Pharma FMT
16	21.3	Enumerate the common corrosives used in your area and describe their toxicology, clinical features, prognosis and approach to therapy	Lecture	FMT Pharma
17	21.4	Commonly observed Drug overdose, their toxicology, clinical features, prognosis and approach	Lecture	Pharma FMT
18	21.6	Describe the medico legal aspects of suspected suicidal or homicidal poisoning and demonstrate the correct procedure to write a medico legal report on a suspected poisoning	Small group	Pharma FMT
	<b>IM20</b>	<b>Envenomation</b>		
19	20.1 20.3	Enumerate the local poisonous snakes and describe the distinguishing marks of each Describe the initial approach to the stabilisation of the patient who presents with snake bite	Lecture	FMT Pharma
20	20.6 20.7	Choose and interpret the appropriate diagnostic testing in patients with snake bites Enumerate the indications and describe the pharmacology, dose, adverse reactions, hypersensitivity reactions of anti-snake venom	Small group	Pharma
21	20.8	Describe the diagnosis, initial approach stabilisation and therapy of scorpion envenomation	Lecture	Pharma

	20.9	Describe the diagnosis initial approach stabilisation and therapy of bee sting allergy		
		<b>Environmental Medicine</b>		
22		Enumerate the heat-related illnesses. Discuss the clinical features and management of heat stroke	Small group	
23		Discuss the causes, clinical features, investigations and management of hypothermia. Discuss frostbite.	Small group	
24		Discuss the adverse effects and management of radiation exposure	Small group	
	<b>IM 3</b>	<b>Pneumonia</b>		
25	3. 1 3. 2	Define, discuss, describe and distinguish community acquired pneumonia, nosocomial pneumonia and aspiration pneumonia Discuss and describe the aetiologies of various kinds of pneumonia and their microbiology depending on the setting and immune status of the host	Lecture	Anatomy Patho Micro
26	3. 3	Discuss and describe the pathogenesis, presentation, natural history and complications of pneumonia	Lecture	Patho Micro
27	3.15 3.16	Describe and enumerate the indications for hospitalisation in patients with pneumonia Describe and enumerate the indications for isolation and barrier nursing in patients with pneumonia	Small group	Path Micro
28	3.17 1.19	Describe and discuss the supportive therapy in patients with pneumonia including oxygen use and indications for ventilation Discuss, describe, enumerate the indications and communicate to patients on pneumococcal and influenza vaccines	Small group	
	<b>IM 6</b>	<b>HIV</b>		
29	6. 1 6. 2	Describe and discuss the symptoms and signs of acute HIV seroconversion Define and classify HIV AIDS based on the CDC criteria	Lecture	Micro
30	6. 3	Describe and discuss the relationship between CDC count and the risk of opportunistic infections	Small group	Patho Micro
31	6.4	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related opportunistic infections	Lecture	Micro
32	6. 6	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related skin and oral lesions	Lecture	Patho Micro
33	6.5	Describe and discuss the pathogenesis, evolution and clinical features of common HIV related malignancies	Lecture	Patho Micro
34	6.9	Choose and interpret appropriate diagnostic tests to diagnose and classify the severity of HIV-AIDS including specific tests of HIV, CDC	Small group	Micro
35	6.10	Choose and interpret appropriate diagnostic tests to diagnose opportunistic infections including CBC sputum examination and cultures, blood cultures, stool analysis, CSF analysis and Chest radiograph	Small group	
36	6.11	Enumerate the indications and describe the findings for CT of the chest and brain and MRI	Small group	Radiology
37	6.12	Enumerate the indications for and interpret the results of: pulse	Small	



		oximetry, ABG, Chest Radiograph	group	
38	6.13	Indications, side effects of drugs for bacterial, viral and other types of diarrhoea	Lecture	Pharma Micro
39	6.14	Discuss and describe the principles of HAART, the classes of antiretrovirals used, adverse reactions and interactions	Lecture	Pharma
40	6.17 6.18	Discuss and describe the principles and regimens used in post exposure prophylaxis Enumerate the indications and discuss prophylactic drugs used to prevent HIV related opportunistic infections	Lecture	Pharma Micro
41	6.22 6.23	Demonstrate understanding of ethical and legal issues regarding patient confidentiality and disclosure in patients with HIV Demonstrate a non-judgemental attitude to patients with HIV and to their lifestyles	Small group	
	<b>IM5</b>	<b>Liver disease</b>		
42	5.1 5.2	Describe and discuss the physiologic and biochemical basis of hyperbilirubinemia Describe and discuss the aetiology and pathophysiology of liver injury	Lecture	Path Physio
43	5.3	Describe and discuss the pathologic changes in various forms of liver disease	Lecture	Patho
44	5.4	Describe and discuss the epidemiology, microbiology, immunology and clinical evolution of infective (viral) hepatitis	Lecture	Path Micro
45	5.5	Describe and discuss the pathophysiology and clinical evolution of alcoholic liver disease	Lecture	Path
46	5.6	Describe and discuss the pathophysiology, clinical evolution and complications of cirrhosis and portal hypertension including ascites, spontaneous bacterial peritonitis, hepatorenal syndrome and hepatic encephalopathy	Lecture	Path
47	5.7	Enumerate and describe the causes and pathophysiology of drug induced liver injury	Small group	Path Pharma
48	5.13 5.14	Enumerate the indications for ultrasound and other imaging studies including MRCP and ERCP and describe the findings in liver Outline a diagnostic approach to liver disease based on hyperbilirubinemia, liver function changes and hepatitis serology	Small group	Radio Surg
49	5.16	Describe and discuss the management of hepatitis, cirrhosis, portal hypertension, ascites spontaneous, bacterial peritonitis and hepatic encephalopathy	Lecture	Pharma Surg
50	5.17 5.18	Enumerate the indications, precautions and counsel patients on vaccination for hepatitis Enumerate the indications for hepatic transplantation	Small group	Micro
51	5.8	Describe and discuss the pathophysiology, clinical evolution and complications cholelithiasis and cholecystitis	Lecture	Surg
	<b>IM1</b>	<b>Heart Failure</b>		
52	1.1	Epidemiology, pathogenesis clinical evolution and course of common causes of heart disease including: rheumatic/ valvular, ischemic, hypertrophic, inflammatory	Lecture	Path Physio

53	1.2	Describe and discuss the genetic basis of some forms of heart failure	SDL	
54	1.3	Describe and discuss the aetiology microbiology pathogenesis and clinical evolution of rheumatic fever, criteria, degree of rheumatic activity and rheumatic valvular heart disease and its complications including infective endocarditis	Lecture	Patho Physio Micro
55	1.5 1.6 1.4	Describe, discuss, differentiate the processes involved in R Vs L heart failure, systolic vs diastolic failure Describe, discuss the Compensatory mechanisms involved in heart failure including cardiac remodelling and neurohormonal adaptations Stage heart failure	Small group	Patho Physio
56	1.7 1.8	Enumerate, describe, discuss the factors that exacerbate heart failure including ischemia, arrhythmias, anaemia, thyrotoxicosis, dietary factors, drugs etc Describe, discuss the Pathogenesis, development of common arrhythmias involved in heart failure particularly atrial fibrillation	Lecture	Patho Physio
57	1.9	Describe and discuss the clinical presentation and features, diagnosis, recognition and management of acute rheumatic fever	Lecture	Patho Micro
58	1.20	Determine the severity of valvular heart disease based on the clinical and laboratory and imaging features and determine the level of intervention required including surgery	Lecture	
59	1.21 1.23	Describe and discuss and identify the clinical features of acute and subacute endocarditis, echocardiographic findings, blood culture and sensitivity and therapy Describe, prescribe and communicate non pharmacologic management of heart failure including sodium restriction, physical activity and limitations	Small group	
60	1.24 1.25	Describe, discuss the Pharmacology of drugs including indications, contraindications in the management of heart failure including diuretics, ACE inhibitors, Beta blockers, aldosterone antagonists and cardiac glycosides Enumerate the indications for valvuloplasty, valvotomy, coronary revascularization and cardiac transplantation	Lecture	Pharma
61	1.26 1.27	Develop document and present a management plan for patients with heart failure based on type of failure underlying aetiology Describe and discuss the role of penicillin prophylaxis in the prevention of rheumatic heart disease	Small group	Pharma Micro
62	1.28	Enumerate the causes of adult presentations of congenital heart disease and describe the distinguishing features between cyanotic and acyanotic heart disease	Small group	
	<b>IM11</b>	<b>Diabetes Mellitus</b>		
63	11.1 11.2	Define and classify diabetes Describe and discuss the epidemiology and pathogenesis and risk factors and clinical evolution of type 1 diabetes	Lecture	Patho
64	11.3	Describe and discuss the epidemiology and pathogenesis and risk factors economic impact and clinical evolution of type 2 diabetes	Lecture	Patho
65	11.4	Describe and discuss the genetic background and the influence of environment on diabetes	SDL	
66	11.5	Describe and discuss the pathogenesis and temporal evolution of	Lecture	Path

		microvascular and macrovascular complications of diabetes		
67	11.6 11.9 11.15	Describe and discuss the pathogenesis and precipitating factors, recognition and management of diabetic emergencies Describe and recognise the clinical features of patients who present with a diabetic emergency Recognise the presentation of diabetic emergencies and outline the principles of therapy	Lecture	
68	11.14 11.22	Recognise the presentation of hypoglycaemia and outline the principles on its therapy Enumerate the causes of hypoglycaemia and describe the counter hormone response and the initial approach and treatment	Lecture	
69	11.16	Discuss and describe the pharmacologic therapies for diabetes their indications, contraindications, adverse reactions and interactions	Lecture	Pharma
70	11.17	Outline a therapeutic approach to therapy of T2Diabetes based on presentation, severity and complications in a cost-effective manner	Small group	
71	11.18	Describe and discuss the pharmacology, indications, adverse reactions and interactions of drugs used in the prevention and treatment of target organ damage and complications of Type II Diabetes including neuropathy, nephropathy, retinopathy, hypertension, dyslipidemia and cardiovascular disease	Lecture	Pharma
72	11.23	Describe the precipitating causes, pathophysiology, recognition, clinical features, diagnosis, stabilisation and management of diabetic ketoacidosis	Lecture	
73	11.24	Describe the precipitating causes, pathophysiology, recognition, clinical features, diagnosis, stabilisation and management of Hyperosmolar non ketotic state	Lecture	

### THIRD PROFESSIONAL MBBS PART -II

Sl No	Topic Code	Topic	Learning Method	Integration
	<b>IM 2</b>	<b>Acute Myocardial Infarction/ IHD</b>		
1	2.1 2.2	Discuss and describe the epidemiology, antecedents and risk factors for atherosclerosis and ischemic heart disease Discuss the aetiology of risk factors both modifiable and non-modifiable of atherosclerosis and IHD	Integration	Patho Physio ComMed
2	2.3	Discuss and describe the lipid cycle and the role of dyslipidemia in the pathogenesis of atherosclerosis	Integration	Biochem Path
3	2.4	Discuss and describe the pathogenesis natural history, evolution and complications of atherosclerosis and IHD	Integration	Path Physio
4	2.5	Define the various acute coronary syndromes and describe their evolution, natural history and outcomes	Lecture	Path
5	2.13	Discuss and enumerate the indications for and findings on echocardiogram, stress testing and coronary angiogram	Small group	
6	2.14	Discuss and describe the indications for admission to a coronary care unit and supportive therapy for a patient with acute coronary syndrome	Small group	
7	2.15	Discuss and describe the medications used in patients with an acute coronary syndrome based on the clinical presentation	Lecture	Pharma

8	2.16	Discuss and describe the indications for acute thrombolysis, PTCA and CABG	Small group	
9	2.17	Discuss and describe the indications and methods of cardiac rehabilitation	Small group	
10	2.18	Discuss and describe the indications, formulations, doses, side effects and monitoring for drugs used in the management of dyslipidaemia	Small group	Pharma Biochem
11	2.19	Discuss and describe the pathogenesis, recognition and management of complications of acute coronary syndromes including arrhythmias, shock, LV dysfunction, papillary muscle rupture and pericarditis	Lecture	
12	2.20	Discuss and describe the assessment and relief of pain in acute coronary syndromes	Small group	Pharma
13	2.23	Describe and discuss the indications for nitrates, anti platelet agents, gpIIb IIIa inhibitors, beta blockers, ACE inhibitors etc in the management of coronary syndromes	Integration	Pharma
	<b>IM10</b>	<b>Acute Kidney Injury and Chronic renal failure</b>		
14	10.1	Define, describe and differentiate between acute and chronic renal failure	Lecture	Path
15	10.2	Classify, describe and differentiate the pathophysiologic causes of acute renal failure	Lecture	Path
16	10.3	Describe the pathophysiology and causes of pre renal ARF, renal and post renal ARF	Lecture	Path
17	10.4	Describe the evolution, natural history and treatment of ARF	Lecture	Path
18	10.5 10.6	Describe and discuss the aetiology of CRF Stage Chronic Kidney Disease	Lecture	Path
19	10.7	Describe and discuss the pathophysiology and clinical findings of uraemia	Lecture	Path
20	10.8 10.9	Classify, describe and discuss the significance of proteinuria in CKD Describe and discuss the pathophysiology of anemia and hyperparathyroidism in CKD	Lecture	Path
21	10.10	Describe, discuss the association between CKD glycemia and hypertension	Small group	Path
22	10.11	Describe and discuss the relationship between CAD risk factors and CKD and in dialysis	Small group	Path
23	10.14 10.15	Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology Describe the appropriate diagnostic work up based on the presumed aetiology	Small group	
24	10.16	Enumerate the indications for and interpret the results of : renal function tests, calcium, phosphorus, PTH, urine electrolytes, osmolality, Anion gap	Small group	Path
25	10.17	Describe and calculate indices of renal function based on available laboratories including FENa (Fractional Excretion of Sodium) and CrCl (Creatinine Clearance)	Small group	Path
26	10.18 10.19	Identify the ECG findings in hyperkalaemia Enumerate the indications and describe the findings in renal ultrasound	Small group	Raddiol
27	10.25	Identify and describe the priorities in the management of ARF including diet, volume management, alteration in doses of drugs, monitoring and indications for dialysis	Lecture	Pharma
28	10.26	Describe and discuss supportive therapy in CKD including	Lecture	

		diet, anti-hypertensives, glycaemic therapy, dyslipidaemia, anaemia, hyperkalaemia, hyperphosphatemia and secondary hyperparathyroidism		
29	10.27	Describe and discuss the indications for renal dialysis	Small group	
30	10.28 10.29	Describe and discuss the indications for renal replacement therapy Describe discuss and communicate the ethical and legal issues involved in renal replacement therapy	Lecture	
31	10.30 10.31	Recognise the impact of CKD on patient's quality of life wellbeing work and family Incorporate patient preferences in to the care of CKD	Small group	
	<b>IM12</b>	<b>Thyroid dysfunction</b>		
32	12.1	Describe the epidemiology and pathogenesis of hypothyroidism and hyperthyroidism including the influence of iodine deficiency and autoimmunity in the pathogenesis of thyroid disease	Seminar	Patho Physio
33	12.2	Describe and discuss the genetic basis of some forms of thyroid dysfunction	SDL	
34	12.3	Describe and discuss the physiology of the hypothalamopituitary - thyroid axis, principles of thyroid function testing and alterations in physiologic function	Integration	Patho Physio
35	12.4	Describe and discuss the principles of radio iodine uptake in the diagnosis of thyroid disorders	Small group	
36	12.8	Generate a differential diagnosis based on the clinical presentation and prioritise it based on the most likely diagnosis	Small group	Surg
37	12.13	Describe the pharmacology, indications, adverse reaction, interactions of thyroxine and antithyroid drugs	Lecture	Pharma Surg
38	12.15	Describe and discuss the indications of thionamide therapy, radio iodine therapy and surgery in the management of thyrotoxicosis	Small group	Pharma Surg
		<b>Endocrine disorders</b>		
39		Discuss the causes, clinical features, investigations and management of Cushing's Syndrome	Lecture	
40		Discuss the causes, clinical features, investigations and management of Adrenocortical insufficiency. Discuss the management of adrenal crisis	Lecture	
41		Enumerate and discuss the causes, clinical features, investigations and management of anterior pituitary hormone deficiency	Lecture	
42		Enumerate and discuss the causes, clinical features, investigations and management of Acromegaly	Small group	
	<b>IM17</b>	<b>Headache</b>		
43	17.1	Define and classify headache and describe the presenting features, precipitating factors, aggravating and relieving factors of various kinds of headache	Lecture	Anat
44	17.2	Elicit and document and present an appropriate history including aura, precipitating aggravating and relieving factors, associated symptoms that help identify the cause of headaches	Small group	

45	17.3	Classify migraine and describe the distinguishing features between classical and non-classical forms of migraine	Small group	
46	17.5	Generate document and present a differential diagnosis based on the clinical features and prioritise the diagnosis based on the presentation	Small group	
47	17.6	Choose and interpret diagnostic testing based on the clinical diagnosis including imaging	Small group	
48	17.7 17.9	Enumerate the indications and describe the findings in the CSF in patients with meningitis Interpret the CSF findings when presented with various parameters of CSF fluid analysis	Small group	
49	17.10	Enumerate the indications for emergency care admission and immediate supportive care in patients with headache	Small group	
50	17.11 17.12	Describe indications, pharmacology, dose, side effects of abortive therapy and prophylactic therapy in migraine Describe the indications, pharmacology, dose, side effects of prophylactic therapy in migraine	Lecture	Pharma
51		Discuss the causes, clinical features and investigations of different types of meningitis	Lecture	
52	17.13	Describe the pharmacology, dose, adverse reactions and regimens of drugs used in the treatment of bacterial, tubercular and viral meningitis	Lecture	Pharma
	<b>IM18</b>	<b>Cerebrovascular accident</b>		
53	18.1	Describe the functional and the vascular anatomy of the brain	Integration	Anatomy
54	18.2	Classify cerebrovascular accidents; describe the aetiology, predisposing genetic and risk factors pathogenesis of haemorrhagic and non-haemorrhagic stroke	Integration	Path
55	18.4	Identify the nature of the cerebrovascular accident based on the temporal evolution and resolution of the illness	Small group	
56	18.8	Describe and distinguish, based on the clinical presentation, the types of bladder dysfunction seen in CNS disease	Small group	Path
57	18.9	Choose, interpret appropriate diagnostic and imaging test for delineating the anatomy, underlying cause of lesion	Small group	
58	18.10	Choose, interpret appropriate diagnostic testing in young patients with a cerebrovascular accident (CVA)	Lecture	
59	18.11	Describe the initial supportive management of a patient presenting with a cerebrovascular accident (CVA)	Lecture	
60	18.12 18.13	Enumerate the indications for and describe acute therapy of non-haemorrhagic stroke including the use of thrombolytic agents Enumerate the indications for and describe the role of anti-platelet agents in non-haemorrhagic stroke	Lecture	
61	18.14 18.15	Describe the initial management of a haemorrhagic stroke Enumerate the indications for surgery in a haemorrhagic stroke	Lecture	
62	18.16	Enumerate the indications describe and observe the multidisciplinary rehabilitation of patients with a CVA	Small group	

	<b>IM19</b>	<b>Movement disorders</b>		
63	19.1 19.2	Describe functional anatomy of locomotor system of brain Classify movement disorders of brain based on distribution, rhythm, repetition, exacerbating and relieving factors	Lecture	Anat Physio
64	19.7	Choose and interpret diagnostic and imaging tests in the diagnosis of movement disorders	Small group	Radiol
65	19.8	Discuss, describe the pharmacology, dose, side effects and interactions of drug therapy of Parkinson's syndrome	Lecture	Pharma
66	19.9	Enumerate indications for use of surgery and botulinum toxin in the treatment of movement disorders	Small group	Pharma
		<b>Nervous System disorders</b>		
67		Enumerate the causes of generalized tonic-clonic seizures. Discuss the investigations and management of Epilepsy	Lecture	
68		Discuss the causes, clinical features, and management of raised intracranial pressure	Lecture	
69		Discuss the management of status epilepticus	Small group	
70		Enumerate the causes of compressive and non-compressive myelopathy. Describe and discuss the clinical features, investigations and management of compressive myelopathy	lecture	
71		Enumerate the causes of polyneuropathy. Describe and discuss the clinical features, investigations and management of Acute Inflammatory Demyelinating Polyneuropathy	Lecture	
72		Discuss the pathophysiology, clinical features, investigations and management of Myasthenia gravis	Small group	
	<b>IM 7</b>	<b>Rheumatologic problems</b>		
73	7.1	Describe the pathophysiology of autoimmune disease	Integration	Path
74	7.2	Describe the genetic basis of autoimmune disease	SDL	
75	7.3	Classify cause of joint pain based on the pathophysiology	Lecture	
76	7.4 7.5	Develop a systematic clinical approach to joint pain based on the pathophysiology Describe and discriminate acute, subacute and chronic causes of joint pain	Lecture	Ortho
77	7.6	Discriminate, describe and discuss arthralgia from arthritis and mechanical from inflammatory causes of joint pain	Lecture	Ortho
78	7.7 7.9	Discriminate, describe and discuss distinguishing articular from periarticular complaints Describe the common signs and symptoms of articular and periarticular diseases	Lecture	Ortho
79	7.8	Determine the potential causes of joint pain based on the presenting features of joint involvement	Lecture	Ortho
80	7.10	Describe systemic manifestations of rheumatologic disease	Lecture	
81	7.13	Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology	Small groups	
82	7.14	Describe the appropriate diagnostic work up based on the presumed aetiology	Small groups	Path

	7.15	Enumerate the indications for and interpret the results of : CBC, anti- CCP, RA, ANA, DNA, other tests of autoimmunity		
83	7.16 7.17	Enumerate the indications for arthrocentesis Enumerate the indications and interpret plain radiographs of joint	Small groups	Ortho Radiol
84	7.19	Develop an appropriate treatment plan for patients with rheumatologic diseases	Small groups	
85		Describe and discuss the pathophysiology, clinical features, investigations and management of Systemic lupus erythematosus	Lecture	
86		Describe and discuss the pathophysiology, clinical features, investigations and management of Systemic sclerosis Discuss Mixed connective tissue disease	Lecture	
87		Describe and discuss the pathophysiology, clinical features, investigations and management of Rheumatoid arthritis	Lecture	
88		Enumerate the different Spondyloarthropathies. Discuss the clinical features, investigations and management of Ankylosing spondylitis	Lecture	
89		Discuss the clinical features, investigations and management of Reactive arthritis	Small group	
	<b>IM13</b>	<b>Common malignancies</b>		
90	13.1	Describe the clinical epidemiology and inherited & modifiable risk factors for common malignancies in India	Lecture	Path
91	13.2	Describe the genetic basis of selected cancer	SDL	
92	13.3	Describe the relationship between infection and cancer	Lecture	Micro
93	13.4	Describe the natural history, presentation, course, complications and cause of death for common cancers	Lecture	Path
94	13.12	Indications, interpretation of results of Chest X Ray, mammogram, skin and tissue biopsies, tumour markers in common cancers	Small group	Radio Path
95	13.5 13.6	Describe the common issues encountered in patients at the end of life and principles of management Describe and distinguish the difference between curative and palliative care in patients with cancer	Small group	
96	13.13 13.17	Describe and assess pain and suffering objectively in a patient with cancer Describe and enumerate the indications, use, side effects of narcotics in pain alleviation in patients with cancer	Small group	Pharma Anaesth
97	13.14	Describe the indications for surgery, radiation and chemotherapy for common malignancies	Small group	Pharma Surg
98	13.15	Describe the need, tests involved, their utility in the prevention of common malignancies	Small group	
99	13.16	Demonstrate an understanding and needs and preferences of patients when choosing curative and palliative therapy	Small group	
100	13.18	Describe and discuss the ethical and the medico legal issues involved in end of life care	Small group	
101	13.19	Describe the therapies used in alleviating suffering in patients at the end of life	Small group	



	<b>IM24</b>	<b>Geriatrics</b>		
102	24.1	<b>Common diseases:</b> Describe and discuss the epidemiology, pathogenesis, clinical evolution, presentation and course of common diseases in the elderly	Lecture	
103	24.3	<b>Acute confusional states:</b> Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of acute confusional states	Lecture	
104	24.4	<b>Vascular events</b> - Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of vascular events in the elderly	Lecture	
105	24.5	<b>Depression</b> : Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of depression in the elderly	Lecture	Psychiat
106	24.6	<b>Dementia</b> in the elderly - Describe and discuss the aetiopathogenesis, causes, clinical presentation, difference in discussion presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of dementia in the elderly	Lecture	
107	24.7	<b>Personality Changes</b> : Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of personality changes in the elderly	Lecture	Psychiat
108	24.9	<b>CVA</b> : Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of CVA in the elderly	Lecture	
109	24.10	<b>COPD</b> - Describe and discuss the aetio-pathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of COPD in the elderly	Lecture	Resp Med
110	24.8	<b>Osteoporosis:</b> Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of osteoporosis in the elderly	Lecture	
111	24.12	<b>Degenerative joint disease:</b> Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of degenerative joint disease	Lecture	
112	24.13	<b>Falls:</b> Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of falls in the elderly	Small group	
113	24.14	<b>Common fractures:</b> Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of common fractures in the elderly	Lecture	Ortho
114	24.15	<b>Vision and visual loss:</b> Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of vision and visual loss in the elderly	Lecture	Optha
115	24.17	<b>Hearing loss</b> : Describe and discuss the aetiopathogenesis, clinical presentation, identification,	Small group	ENT

		functional changes, acute care, stabilization, management and rehabilitation of hearing loss in the elderly		
116	24.16	<b>Physiotherapy and occupational therapy</b> : Describe and discuss the principles of physical and social rehabilitation, functional assessment, role of physiotherapy and occupational therapy in the management of disability in the elderly	Small group	Ortho
117	24.22	<b>Nutritional disorders</b> : Describe and discuss the aetiopathogenesis, clinical presentation, complications, assessment and management of nutritional disorders in the elderly	Small group	Physio Biochem
118	22.11	Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of the elderly undergoing surgery	Lecture	Anaesth Surg
119	24.18	<b>Impact of demographic changes</b> : Describe the impact of the demographic changes in ageing on the population	Lecture	Com Med
120	24.19 24.20	<b>Social problems</b> : Enumerate and describe the social problems in the elderly including isolation, abuse, change in family structure and their impact on health <b>Social interventions</b> : Enumerate and describe social interventions in the care of elderly including domiciliary discussion services, rehabilitation facilities, old age homes and state interventions	Small group	Psychiat
121	24.21	<b>Ethical issues</b> : Enumerate and describe ethical issues in the care of the elderly	Lecture	
	<b>IM22</b>	<b>Mineral, Fluid Electrolyte and Acid base Disorder</b>		
122	22.1	Enumerate the causes of hypercalcemia and distinguish the features of PTH vs non PTH mediated	SDL	Patho Physio
123	22.2	Describe the aetiology, clinical manifestations, diagnosis and clinical approach to primary hyperparathyroidism	Small group	Patho
124	22.3	Describe the approach to the management of hypercalcemia	Lecture	Pharm
125	22.4	Enumerate the components and describe the genetic basis of the multiple endocrine neoplasia syndrome	SDL	Path
126	22.5	Enumerate the causes and describe the clinical features and the correct approach to the diagnosis and management of the patient with hyponatremia	Lecture	
127	22.6	Enumerate the causes and describe the clinical and laboratory features and the correct approach to the diagnosis and management of the patient with hyponatremia	Lecture	
127	22.7	Enumerate the causes and describe the clinical and laboratory features and the correct approach to the diagnosis and management of the patient with hypokalaemia	Lecture	
128	22.8	Enumerate the causes and describe the clinical and laboratory features and the correct approach to the diagnosis and management of the patient with hyperkalaemia	Lecture	
129	22.9	Enumerate the causes and describe the clinical and laboratory features of metabolic acidosis	Lecture	Physio
130	22.10	Enumerate the causes of describe the clinical and laboratory features of metabolic alkalosis	Lecture	Physio
131	22.11	Enumerate the causes and describe the clinical and laboratory features of respiratory acidosis	Lecture	Physio

132	22.12	Enumerate the causes and describe the clinical and laboratory features of respiratory alkalosis	Lecture	Physio
133	22.13	Identify the underlying acid-based disorder based on an ABG report and clinical situation	Small group	
	<b>IM26</b>	<b>The role of the physician in the community</b>		
134	26.1	Enumerate and describe professional qualities and roles of a physician	Small group	
135	26.2	Describe and discuss the commitment to lifelong learning as an important part of physician growth	Small group	
136	26.3	Describe and discuss the role of non-maleficence as a guiding principle in patient care	Small group	
137	26.4	Describe and discuss the role of autonomy and shared responsibility as a guiding principle in patient care	Small group	
138	26.5	Describe and discuss the role of beneficence of a guiding principle in patient care	Small group	
139	26.6	Describe, discuss the role of physician in health care system	Small group	
140	26.7	Describe and discuss the role of justice as a guiding principle in patient care	Small group	
141	26.17	Identify, discuss physician's role and responsibility to society and the community that she/ he serves	Small group	
142	26.8	Identify discuss medicolegal, socioeconomic and ethical issues as it pertains to organ donation	Small group	
143	26.9	Identify, discuss and defend medicolegal, sociocultural, economic and ethical issues as it pertains to rights, equity and justice in access to health care	Small group	
144	26.10	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to confidentiality in patient care	Small group	
145	26.11	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to patient autonomy, patient rights and shared responsibility in health care	Small group	
146	26.12	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to decision making in health care including advanced directives and surrogate decision making	Small group	
147	26.13	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to decision making in emergency care including situations where patients do not have the capability or capacity to give consent	Small group	
148	26.15	Identify, discuss and defend, medicolegal, socio-cultural and ethical issues as they pertain to consent for surgical procedures	Small group	
149	26.14	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as it pertains to research in human subjects	Small group	
150	26.16	Identify, discuss and defend medicolegal, socio-cultural, professional and ethical issues as it pertains to the physician patient relationship (including fiduciary duty)	Small group	
151	26.18	Identify, discuss and defend medicolegal, socio-cultural, professional and ethical issues in physician- industry relationships	Small group	
152	26.43	Identify, discuss and defend medicolegal, sociocultural, economic and ethical issues as they pertain to in vitro fertilisation donor insemination and surrogate motherhood	Small group	
153	26.44	Identify, discuss and defend medicolegal, socio-cultural professional and ethical issues pertaining to medical negligence	Small group	

154	26.45	Identify, discuss and defend medicolegal, socio-cultural professional and ethical issues pertaining to malpractice	Small group	
155	26.46	Identify, discuss and defend medicolegal, socio-cultural professional and ethical issues in dealing with impaired physicians	Small group	
156	26.47	Identify, discuss and defend medicolegal, socio-cultural and ethical issues as they pertain to refusal of care including do not resuscitate and withdrawal of life support	Small group	
157	26.48	Demonstrate altruism	Small group	

### Clinical /Bedside Classes

<b>II MBBS</b>	<b>4 weeks</b>
<b>Week 1</b>	History taking
<b>Week 2</b>	History taking
<b>Week 3</b>	General Examination
<b>Week 4</b>	Systemic Examination

<b>III MBBS Part 1</b>	<b>4 weeks</b>	
<b>Week 1</b>	<b>IM 4</b>	Elicit document and present a medical history that helps delineate the aetiology of fever that includes the evolution and pattern of fever, associated symptoms, immune status, comorbidities, risk factors, exposure through occupation, travel and environment and medication use Perform a systematic examination that establishes the diagnosis and severity of presentation that includes: general skin mucosal and lymph node examination, chest and abdominal examination(including examination of the liver and spleen) Generate a differential diagnosis and prioritise based on clinical features that help distinguish between infective, inflammatory, malignant and rheumatologic causes
<b>Week 2</b>	<b>IM 16</b> <b>IM 15</b>	Perform, document and demonstrate a physical examination based on the history that includes general examination, including an appropriate abdominal examination Elicit and document and present an appropriate history that identifies the route of bleeding, quantity, grade, volume loss, duration, etiology, comorbid illnesses and risk factors Perform, demonstrate and document a physical examination based on the history that includes general examination, volume assessment and appropriate abdominal examination
<b>Week 3</b>	<b>IM 9</b>	Elicit document and present a medical history that includes symptoms, risk factors including GI bleeding, prior history, medications, menstrual history, and family history for anemia Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology of anemia Describe the appropriate diagnostic work up based on the presumed aetiology of anemia
<b>Week 4</b>	<b>IM 8</b>	Elicit document and present a medical history that includes: duration and levels, symptoms, comorbidities, lifestyle, risk factors, family history, psychosocial and environmental factors, dietary assessment, previous and concomitant therapy for hypertension Perform a systematic examination that includes : an accurate measurement of blood pressure, fundus examination, examination of vasculature and heart

		Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology of hypertension Perform and interpret a 12 lead ECG
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<b>III MBBS Part 2</b>	<b>12 weeks</b>	
<b>Week 1</b>	<b>IM 21</b>  <b>IM 3</b>	Elicit and document and present an appropriate history, the circumstance, time, kind of snake, evolution of symptoms in a patient with snake bite Perform a systematic examination, document and present a physical examination that includes general examination, local examination, appropriate cardiac and neurologic examination Perform, document and demonstrate a physical examination including general examination and appropriate examination of the lungs that establishes the diagnosis, complications and severity of pneumonia Generate document and present a differential diagnosis based on the clinical features, and prioritise the diagnosis based on the presentation
<b>Week 2</b>	<b>IM 5</b>	Perform a systematic examination that establishes the diagnosis and severity that includes nutritional status, mental status, jaundice, abdominal distension ascites, features of portosystemic hypertension and hepatic encephalopathy Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology for the presenting symptom of liver disease Choose and interpret appropriate diagnostic tests including: CBC, bilirubin, function tests, Hepatitis serology and ascitic fluid examination in patient with liver diseases Outline a diagnostic approach to liver disease based on hyperbilirubinemia, liver function changes and hepatitis serology
<b>Week 3</b>	<b>IM 6</b>	Elicit document and present a medical history that helps delineate the aetiology of the current presentation and includes risk factors for HIV, mode of infection, other sexually transmitted diseases, risks for opportunistic infections and nutritional status Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology for the presenting symptom of HIV
<b>Week 4</b>	<b>IM 11</b>	Elicit document and present a medical history that will differentiate the aetiologies of diabetes including risk factors, precipitating factors, lifestyle, nutritional history, family history, medication history, co-morbidities and target organ disease Perform a systematic examination that establishes the diagnosis and severity of diabetes that includes skin, peripheral pulses, blood pressure measurement, fundus examination, detailed examination of the foot (pulses, nervous and deformities and injuries) Order and interpret laboratory tests to diagnose diabetes and its complications including: glucoses, glucose tolerance test, glycosylated hemoglobin, urinary micro albumin, ECG, electrolytes, ABG, ketones, renal function tests and lipid profile
<b>Week 5</b>	<b>IM 1</b>	Elicit document and present an appropriate history that will establish the diagnosis, cause and severity of heart failure including: presenting complaints, precipitating and exacerbating factors, risk factors exercise tolerance, changes in sleep patterns, features suggestive of infective endocarditis Perform and demonstrate a systematic examination based on the history that will help establish the diagnosis and estimate its severity

		<p>including: measurement of pulse, blood pressure and respiratory rate, jugular venous forms and pulses, peripheral pulses, conjunctiva and fundus, lung, cardiac examination including palpation and auscultation with identification of heart sounds and murmurs, abdominal distension and splenic palpation</p> <p>Demonstrate peripheral pulse, volume, character, quality and variation in various causes of heart failure</p> <p>Measure the blood pressure accurately, recognise and discuss alterations in blood pressure in valvular heart disease and other causes of heart failure and cardiac tamponade</p> <p>Identify and describe the timing, pitch quality conduction and significance of precordial murmurs and their variations</p> <p>Order and interpret diagnostic testing based on the clinical diagnosis including 12 lead ECG, Chest radiograph, blood culture</p> <p>Develop document and present a management plan for patients with heart failure based on type of failure, underlying aetiology</p>
<b>Week 6</b>	<b>IM 2</b>	<p>Elicit document and present an appropriate history that includes onset evolution, presentation risk factors, family history, comorbid conditions, complications, medication, history of atherosclerosis, IHD and coronary syndromes</p> <p>Perform, demonstrate and document a physical examination including a vascular and cardiac examination that is appropriate for the clinical presentation</p> <p>Distinguish and differentiate between stable and unstable angina and AMI based on the clinical presentation</p> <p>Order and interpret a Chest X-ray and markers of acute myocardial infarction</p> <p>Choose and interpret a lipid profile and identify the desirable lipid profile in the clinical context</p>
<b>Week 7</b>	<b>IM 10</b>	<p>Elicit document and present a medical history that will differentiate the aetiologies of disease, distinguish acute and chronic disease, identify predisposing conditions, nephrotoxic drugs and systemic causes</p> <p>Perform a systematic examination that establishes the diagnosis and severity including determination of volume status, presence of edema and heart failure, features of uraemia and associated systemic disease</p> <p>Describe and discuss the indications to perform arterial blood gas analysis: interpret the data</p>
<b>Week 8</b>	<b>IM 12</b>	<p>Elicit document and present an appropriate history that will establish the diagnosis cause of thyroid dysfunction and its severity</p> <p>Perform and demonstrate a systematic examination based on the history that will help establish the diagnosis and severity including systemic signs of thyrotoxicosis and hypothyroidism, palpation of the pulse for rate and rhythm abnormalities neck palpation of the thyroid and lymph nodes and cardiovascular findings</p> <p>Demonstrate the correct technique to palpate the thyroid</p> <p>Generate a differential diagnosis based on the clinical presentation and prioritise it based on the most likely diagnosis</p> <p>Order and interpret diagnostic testing based on the clinical diagnosis including CBC, thyroid function tests and ECG and radio iodine uptake and scan</p> <p>Identify atrial fibrillation, pericardial effusion and bradycardia on ECG</p> <p>Interpret thyroid function tests in hypo and hyperthyroidism</p>
<b>Week 9</b>	<b>IM 18</b>	<p>Elicit and document and present an appropriate history including onset, progression, precipitating and aggravating relieving factors,</p>

		<p>associated symptoms that help identify the cause of the cerebrovascular accident</p> <p>Identify the nature of the cerebrovascular accident based on the temporal evolution and resolution of the illness</p> <p>Perform, demonstrate &amp; document physical examination that includes general and a detailed neurologic examination as appropriate, based on the history</p> <p>Distinguish the lesion based on upper vs lower motor neuron, side, site and most probable nature of the lesion</p> <p>Describe the clinical features and distinguish, based on clinical examination, the various disorders of speech</p> <p>Describe and distinguish, based on the clinical presentation, the types of bladder dysfunction seen in CNS disease</p> <p>Choose and interpret the appropriate diagnostic and imaging test that will delineate the anatomy and underlying cause of the lesion</p>
<b>Week 10</b>	<b>IM 19</b>	<p>Elicit and document and present an appropriate history including onset, progression precipitating and aggravating relieving factors, associated symptoms that help identify the cause of the movement disorders</p> <p>Perform, demonstrate and document a physical examination that includes a general examination and a detailed neurologic examination using standard movement rating scales</p> <p>Generate document and present a differential diagnosis and prioritise based on the history and physical examination</p> <p>Make a clinical diagnosis regarding on the anatomical location, nature and cause of the lesion based on the clinical presentation and findings</p> <p>Choose and interpret diagnostic and imaging tests in the diagnosis of movement disorders</p>
<b>Week 11</b>	<b>IM 7</b>	<p>Elicit document and present a medical history that will differentiate the aetiologies of rheumatologic disease</p> <p>Perform a systematic examination of all joints, muscle and skin that will establish the diagnosis and severity of disease</p> <p>Generate a differential diagnosis and prioritise based on clinical features that suggest a specific aetiology</p> <p>Describe the appropriate diagnostic work up based on the presumed aetiology</p> <p>Enumerate the indications for and interpret the results of : CBC, anti-CCP, RA, ANA, DNA and other tests of autoimmunity</p> <p>Enumerate the indications and interpret plain radiographs of joint</p> <p>Develop an appropriate treatment plan for patients with rheumatologic diseases</p>
<b>Week 12</b>	<p><b>IM 13</b></p> <p><b>IM 24</b></p> <p><b>IM 26</b></p>	<p>Elicit document and present a history that will help establish the aetiology of cancer and includes the appropriate risk factors, duration and evolution of common malignancies</p> <p>Perform and demonstrate a physical examination that includes an appropriate general and local examination that excludes the diagnosis, extent spread and complications of cancer</p> <p>Generate a differential diagnosis based on the presenting symptoms and clinical features and prioritise based on the most likely diagnosis</p> <p>Order and interpret diagnostic testing based on the clinical diagnosis including CBC and stool occult blood and prostate specific antigen</p> <p>Perform multidimensional geriatric assessment that includes medical, psycho-social and functional components</p> <p>Demonstrate responsibility and work ethics while working in the health care team</p>

## Model Question

MBBS 3<sup>rd</sup> PROF. (PART-II)9<sup>th</sup> SEMESTAR EXAMINATION-2020

MEDICINE-1

Full Marks: 100

Time: 3hrs

Answer all Questions.

Maintain the sequence of answers as per the questions.

*(Draw the diagram where ever necessary)*

### Section- A

1. Define heart failure. Discuss the common causes, clinical feature and management of Heart Failure. [2+3+3+2]
2. Discuss the aetiology, classification, clinical features and general management of anaemia. [3+2+2+3]
3. Write short note on: [4×5]
  - a) Haemochromatosis.
  - b) Nephrotic syndrome.
  - c) Gastroesophageal reflux disease.
  - d) Hypervitaminosis D.
4. Explain with reasons: [5 x 2]
  - a) Myocardial infarction is more common in early mornings in winter season
  - b) Pain in epigastrium and left shoulder could be due to myocardial ischemia
  - c) Statins to be taken preferably after dinner
  - d) Osteoporosis is common in post-menopausal women
  - e) Opportunistic infections are common in immunocompromised patients

### Section – B

1. Enumerate the causes of Jaundice. How will you arrive at the aetiology of jaundice? Discuss the points of differentiation in clinical feature and investigation. [2+2+3+3]
2. Describe the pathogenesis, evolution and clinical features of common HIV related opportunistic infections. [3+3+4]
3. Write short note on: [4×5]
  - a) Management of Organophosphorus poisoning
  - b) Aetiopathogenesis of ascitis.
  - c) Sepsis.
  - d) Cardiac tamponade.
4. Explain with reasons: [5 x 2]
  - a) Venous thromboembolism can occur in pregnancy or puerperium
  - b) Melena occurs in upper gastrointestinal bleeding
  - c) Atropine should be given along with neostigmine in neurotoxic snake bite
  - d) Iron therapy is not helpful in sickle cell anaemia
  - e) Fever may not be a manifestation of infection in the elderly patients



MEDICINE-II

Full Marks: 100

Time: 3hrs

Answer all Questions.

Maintain the sequence of answers as per the questions.

*(Draw the diagram where ever necessary)*

**Section - A**

1. Classify epilepsy. Discuss the aetiology, clinical features, diagnosis of idiopathic epilepsy. Describe the aetiology and management of Status Epilepticus. [2+4+4]
2. Discuss the aetiology, clinical feature, investigation of bronchial asthma. Write the clinical feature and management of Status Asthmaticus. [5+5]
3. Write short note on: [4×5]
  - a) Disease Modifying Anti-Rheumatic Drugs
  - b) Paraneoplastic syndrome.
  - c) Norwegian Scabies.
  - d) Anxiety
4. Explain with reasons: [5 x 2]
  - a) Insulin is the drug of choice in Type 1 diabetes patients
  - b) Tuberculosis is more common in upper lobes of the lung
  - c) Antiplatelet agents should be used carefully in a patient of cerebrovascular agent
  - d) Rheumatoid arthritis is a systemic disease
  - e) An elderly patient presenting with an acute confusional state does not necessarily indicate cerebrovascular accident

**Section – B**

1. Discuss the aetiopathogenesis, clinical features, investigations and management of Graves' disease. Describe the thyrotoxic crisis. [2+2+2+2+2]
2. Enumerate the causes of hypoglycaemia and describe the counter hormone response and the initial approach and treatment [5+5]
3. Write short note on any three: [4×5]
  - a) Chronic complications of diabetes mellitus.
  - b) Miliary tuberculosis
  - c) Granulomatosis with polyangitis
  - d) Parkinson-plus syndrome
4. Explain with reasons: [5 x 2]
  - a) Hypertension is a side effect of long-term steroid therapy
  - b) Foot infections are common presentations in diabetic patients
  - c) Aspiration pneumonia is commonly seen in unconscious patients
  - d) Pruritus can be an important presentation of liver disease
  - e) Lepromatous leprosy is a progressive condition with high morbidity if untreated

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## Reference Book

- Davidsion's Principles and Practice of Medicine, ELBS-Livingstone publications
- Kumar & Clark' Clinical Medicine – A textbook for medical students and doctors, ELBS publications
- Harrison's Principles of Internal Medicine, McGraw Hill publications (Reference book)
- Oxford Textbook of Medicine Vol I & II, ELBS publication (Reference book)
- Hutchison's Clinical Methods, ELBS publications
- Macleod's Clinical Examination, ELBS publications
- API textbook of Medicine

## XIV: Dermatology, Venereology & Leprosy

(a) **Competencies:** The undergraduate student must demonstrate:

1. Understanding of the principles of diagnosis of diseases of the skin, hair, nail and mucosa,
2. Ability to recognize, diagnose, order appropriate investigations and treat common diseases of the skin including leprosy in the primary care setting and refer as appropriate,
3. A syndromic approach to the recognition, diagnosis, prevention, counseling, testing and management of common sexually transmitted diseases including HIV based on national health priorities,
4. Ability to recognize and treat emergencies including drug reactions and refer as appropriate.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to emphasize the biologic basis of diseases of the skin, sexually transmitted diseases and leprosy and to provide an understanding that skin diseases may be a manifestation of systemic disease.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2 <sup>nd</sup> Prof Year	-	-	-	-	-	2week
3 <sup>rd</sup> part 1	20hours	5hours	5hours		30hours	2week
Total	20hours	5hours	5 hours		30hours	2 week

### Skin & VD

Sl. No.		Topic	Hr	Class	
1	AN4.3	Describe structure & function of skin with its appendages	1hr	LGT	
		Diffentiate between Primary and Secondary lesions of Skin		LGT	
2	DR5.1	Describe the etiology, microbiology, pathogenesis, natural history, clinical features, presentations and complications of scabies in adults and children	1 hr	LGT	
	DR5.3	Enumerate and describe the pharmacology, administration and adverse reaction of pharmacotherapies for scabies		LGT	
	DR5.2	Identify and differentiate scabies from other lesions in adults and children		SGT	
3	DR6.1	Describe the etiology pathogenesis and diagnostic features of pediculosis in adults and children		LGT	
4	DR15.1	Identify and distinguish folliculitis impetigo and carbuncle from other skin lesions		SGT	
	DR15.3	Enumerate the indications and describe the pharmacology, indications and adverse reactions of topical and systemic drugs used in treatment of pyoderma		LGT	
	DR15.1	Identify and distinguish folliculitis impetigo and carbuncle from other skin lesions		SGT	
5	DR7.1	Describe the etiology, microbiology,		LGT	

		pathogenesis and clinical presentations and diagnostic features of dermatophytes in adults and children			
	DR7.3	Describe the pharmacology and action of antifungal (systemic and topical) agents. Enumerate side effects of antifungal therapy		LGT	
6	DR8.1	Describe the etiology, microbiology, pathogenesis and clinical presentations and diagnostic features of common viral infections of the skin in adults and children		LGT	
	DR8.7	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for common viral illnesses of the skin		LGT	
7	DR3.1	Identify and distinguish psoriatic lesions from other causes		SGT	
	DR3.3	Enumerate the indications for and describe the various modalities of treatment of psoriasis including topical, systemic and phototherapy		LGT	
8	DR4.2	Enumerate and describe the treatment modalities for lichen planus		LGT	
9	DR2.2	Describe the treatment of vitiligo		LGT	
10	DR1.1	Enumerate the causative and risk factors of acne		LGT	
	DR1.3	Describe the treatment and preventive measures for various kinds of acne		LGT	
11	DR9.1	Classify, describe the epidemiology, etiology, microbiology, pathogenesis, clinical presentations and diagnostic features of Leprosy		LGT	
	DR9.4	Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions		LGT	
12	PH1.46	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs		LGT	
13	DR9.5	Enumerate the indications and describe the pharmacology, administration and adverse reaction of pharmacotherapies for various classes of leprosy based on national guidelines		LGT	
	DR9.7	Enumerate and describe the complications of leprosy and its management, including understanding disability and stigma.		LGT	
14	DR10.1	Identify and classify syphilis based on the presentation and clinical manifestations		LGT	
	DR10.4	Describe the prevention of congenital syphilis			
15	DR10.5	Counsel in a non-judgemental and empathetic manner patients on prevention of sexually transmitted disease		SGT	
17	DR10.6	Describe the etiology, diagnostic and clinical features of non- syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)		LGT	
18	DR10.8	Enumerate the indications and describe the		LGT	

		pharmacology, indications and adverse reactions of drugs used in the non- syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)			
	DR10.9	Describe the syndromic approach to ulcerative sexually transmitted disease		LGT	
	DR10.10	Describe the etiology, diagnostic and clinical features and management of gonococcal and non-gonococcal urethritis		LGT	
	DR10.11	Describe the etiology, diagnostic and clinical features and management of vaginal discharge		LGT	
19	DR11.1	Describe the etiology, pathogenesis and clinical features of the dermatologic manifestations of HIV and its complications including opportunistic infections		LGT	
	DR11.2	Identify and distinguish the dermatologic manifestations of HIV, its complications, opportunistic infections and adverse reactions		LGT	
20	DR12.1	Describe the aetiopathogenesis of eczema		SGT	
	DR12.2	Identify eczema and differentiate it from lichenification and changes of aging			
	DR12.3	Classify and grade eczema			
	DR12.4	Enumerate the indications and describe the pharmacology, indications and adverse reactions of drugs used in the treatment of eczema			
21	DR18.1	Enumerate the cutaneous features of Type 2 diabetes		SGT	
	DR18.2	Enumerate the cutaneous features of hypo/hyper-thyroidism			
22	DR16.1	Identify and distinguish skin lesions of SLE		SGT	
23	DR12.5	Define erythroderma. Enumerate and identify the causes of erythroderma. Discuss the treatment		LGT	
	DR12.6	Identify and distinguish exfoliative dermatitis from other skin lesions			
	DR12.7	Identify and distinguish fixed drug eruptions and Steven Johnson syndrome from other skin lesions		LGT	
	PA34.4	Identify, distinguish and describe common tumors of the skin		SGT	
<b>SDL</b>					
3hr	DR17.1	Enumerate and identify the cutaneous findings in vitamin A deficiency			
	DR17.2	Enumerate and describe the various skin changes in Vitamin B complex deficiency			
	DR17.3	Enumerate and describe the various changes in Vitamin C deficiency			
	DR17.4	Enumerate and describe the various changes in Zinc deficiency			
2 hrs	DR14.1	Describe the etiology, pathogenesis and clinical precipitating features and classification of Urticaria and angioedema			
	DR14.5	Enumerate the indications and describe the			

		pharmacology indications and adverse reactions of drugs used in the urticaria and angioedema			
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### Clinical Posting

Sl. No	Competency			
<b>2<sup>nd</sup> Year 2 weeks</b>				
1	DR9.2	Demonstrate (and classify based on) the clinical features of leprosy including an appropriate neurologic examination		
2	DR9.3	Enumerate the indications and observe the performance of a slit skin smear in patients with leprosy		
3	DR9.4	Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions		
4	DR6.2	Identify and differentiate pediculosis from other skin lesions in adults and children		
5	DR5.2	Identify and differentiate scabies from other lesions in adults and children		
6	DR8.2	Identify and distinguish herpes simplex and herpes labialis from other skin lesions		
7	DR8.3	Identify and distinguish herpes zoster and varicella from other skin lesions		
8	DR8.4	Identify and distinguish viral warts from other skin lesions		
9	DR8.5	Identify and distinguish molluscum contagiosum from other skin lesions		
10	DR8.6	Enumerate the indications, describe the procedure and perform a Tzanck smear		
11	DR10.7	Identify and differentiate based on the clinical features non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)		
<b>3<sup>rd</sup> year Posting 2 weeks</b>				
12	DR2.1	Identify and differentiate vitiligo from other causes of hypopigmented lesions		
13	DR1.2	Identify and grade the various common types of acne		
14	DR3.2	Demonstrate the grattage test		
15	DR4.1	Identify and distinguish lichen planus lesions from other causes		
16	DR7.2	Identify Candida species in fungal scrapings and KOH mount		
17	DR9.2	Demonstrate (and classify based		

		on) the clinical features of leprosy including an appropriate neurologic examination		
18	DR9.3	Enumerate the indications and observe the performance of a slit skin smear in patients with leprosy		
19	DR10.7	Identify and differentiate based on the clinical features non-syphilitic sexually transmitted diseases (chancroid, donovanosis and LGV)		
20	DR12.2	Identify eczema and differentiate it from lichenification and changes of aging		
21	DR13.1	Distinguish bulla from vesicles	In first posting	
22	DR13.2	Demonstrate the Tzanck test, nikolsky sign and bulla spread sign		
23	DR13.3	Calculate the body surface area of involvement of vesiculobullous lesions		
<b>4th year Posting 2 weeks</b>				
24	PA34.3	Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors, morphology, clinical features and metastases of melanoma		
25	PA34.4	Identify, distinguish and describe common tumors of the skin		
26	DR11.2	Identify and distinguish the dermatologic manifestations of HIV, its complications, opportunistic infections and adverse reactions		
27	DR14.2	Identify and distinguish urticarial from other skin lesions		
28	DR14.3	Demonstrate dermographism		
29	DR14.4	Identify and distinguish angioedema from other skin lesions		
30	PE31.4	Identify Atopic dermatitis and manage		
31	DR9.2	Demonstrate (and classify based on) the clinical features of leprosy including an appropriate neurologic examination		
32	DR9.3	Enumerate the indications and observe the performance of a slit skin smear in patients with leprosy		
33	DR9.4	Enumerate, describe and identify lepra reactions and supportive measures and therapy of lepra reactions		
34	DR17.1	Enumerate and identify the cutaneous findings in vitamin A deficiency		
35	DR13.3	Calculate the body surface area of		

		involvement of vesiculobullous lesions		
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**Reference Books:-**

1. Treatment of skin diseases – J.S. Pasricha
2. Illustrated Text Book of Dermatology - J.S. Pasricha
3. Text Book of Dermatology and Venereology – Neena Khanna
4. Atlas of Dermatology – L.K. Bhutani
5. Atlas of Sexually Transmitted Disease - L.K. Bhutani



## XV:Psychiatry

(a) **Competencies:** The student must demonstrate:

1. Ability to promote mental health and mental hygiene,
2. Knowledge of etiology (bio-psycho-social-environmental interactions), clinical features, diagnosis and management of common psychiatric disorders across all ages,
3. Ability to recognize and manage common psychological and psychiatric disorders in a primary care setting, institute preliminary treatment in disorders difficult to manage, and refer appropriately,
4. Ability to recognize alcohol/ substance abuse disorders and refer them to appropriate centers,
5. Ability to assess risk for suicide and refer appropriately,
6. Ability to recognize temperamental difficulties and personality disorders,
7. Assess mental disability and rehabilitate appropriately,
8. Understanding of National and State programmes that address mental health and welfare of patients and community.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to allow the student to understand bio-psycho-social-environmental interactions that lead to diseases/ disorders for preventive, promotive, curative, rehabilitative services and medico-legal implications in the care of patients both in family and community.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2nd	--	--	--	--	--	2 weeks
3 <sup>rd</sup> Part I	25 hours	10 hours	5 hours	--	40 hours	2 weeks
Total	25 hours	10 hours	5 hours	--	40 hours	4 weeks

### MBBS CURRICULUM PSYCHIATRY

Sl No	Competency		Mode of Teaching	Hour	Integration
1	PS1.1	Establish rapport and empathy with patients A/C Describe the components of communication Demonstrate breaking of bad news in a simulated environment A/C Describe and demonstrate the importance of confidentiality in patient encounters	LGT	1	
	PS1.2				
	PS1.3				
	PS1.4				
2	PS2.1	Define stress and describe its components and causes Describe the role of time management,	LGT	1	
	PS2.2				

	PS2.3 PS2.4 PS2.5	study skills, balanced diet Define and describe the principles and components of learning memory and emotions Describe the principles of personality development and motivation Define and distinguish normality and abnormality discussion			
<b>3</b>	PS3.1 PS3.6 PS3.7	Describe the growth of psychiatry as a medical specialty, its history and contribution to society Describe and discuss biological, psychological & social factors & their interactions in the causation of mental disorders Enumerate and describe common organic psychiatric disorders, magnitude, etiology and clinical features PS3.8 Enumerate and describe essential investigations in patients with organic psychiatric disorders	<b>LGT</b>	<b>1</b>	
<b>4</b>	PS3.10.1	Describe the pharmacologic basis of drugs used in psychiatric disorders	<b>LGT</b>	<b>1</b>	<b>Pharmacology</b>
<b>5</b>	PS3.10.2	Enumerate side effects of drugs used in psychiatric disorders	<b>LGT</b>	<b>1</b>	<b>Pharmacology</b>
<b>6</b>	PS3.12	Describe, discuss and distinguish psychotic & non-psychotic group	<b>LGT</b>	<b>1</b>	
<b>7</b>	PS4.1 PS4.2 PS4.3	Describe the magnitude and etiology of alcohol and substance use disorders Elicit, describe and document clinical features of alcohol and substance use disorders Enumerate and describe the indications and interpret laboratory and other tests used in alcohol and substance abuse disorders	<b>LGT</b>	<b>1</b>	<b>FMT, General Medicine</b>
<b>8</b>	PS4.4	Describe the treatment of alcohol and substance abuse disorders including behavioural and pharmacologic therapy	<b>LGT</b>	<b>1</b>	<b>FMT, General Medicine</b>
<b>9</b>	PS4.6 PS4.7	Enumerate and describe the pharmacologic basis and side effects of drugs used in alcohol and substance abuse Enumerate the appropriate conditions for specialist referral in patients with alcohol and substance abuse disorders	<b>LGT</b>	<b>2</b>	<b>Ph1.19,PH1.20,Ph1.22,PH1.33 PH5.5,Ph5.6</b>
<b>10</b>	PS5.1	Classify and describe the magnitude	<b>LGT</b>	<b>2</b>	<b>FMT,</b>

	PS5.3 PS5.5 PS5.6	and etiology of schizophrenia & other psychotic disorders Describe the treatment of schizophrenia including behavioural and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in schizophrenia Enumerate the appropriate conditions for specialist referral in patients with psychotic disorders			<b>Pharmacology</b>
<b>11</b>	PS6.1 PS6.4 PS6.6 PS6.7	Classify and describe the magnitude and etiology of depression Enumerate and describe the indications and interpret laboratory and other tests used in depression Describe the treatment of depression including behavioural and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in depression Enumerate the appropriate conditions for specialist referral in patients with depression	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology</b>
<b>12</b>	PS7.1 PS7.4 PS7.6 PS7.7	Classify and describe the magnitude and etiology of bipolar disorders Describe the treatment of bipolar disorders including behavioural and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in bipolar disorders Enumerate the appropriate conditions for specialist referral in patients with bipolar disorders	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology</b>
<b>13</b>	PS8.1 PS8.4 PS8.6 PS8.7	Enumerate and describe the magnitude and etiology of anxiety disorders Describe the treatment of anxiety disorders including behavioural and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in anxiety disorders Enumerate the appropriate conditions for specialist referral in anxiety disorders	<b>LGT</b>	<b>1</b>	<b>Pharmacology</b>
<b>14</b>	PS9.1 PS9.4	Enumerate and describe the magnitude and etiology of stress related disorders Describe the treatment of stress related disorders including	<b>LGT</b>	<b>1</b>	<b>Pharmacology</b>

	PS9.6 PS9.7	behavioural and psychosocial therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in stress related disorders Enumerate the appropriate conditions for specialist referral in stress disorders			
<b>15</b>	PS10.1 PS10.4 PS10.6 PS10.7	Enumerate and describe the magnitude and etiology of somatoform, dissociative and conversion disorders Describe the treatment of <b>somatoform</b> disorders including behavioural, psychosocial and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in somatoform, dissociative and conversion disorders Enumerate the appropriate conditions for specialist referral in patients with somato form dissociative and conversion disorders	<b>LGT</b>	<b>1</b>	<b>Pharmacology, General Medicine</b>
<b>16</b>	PS11.1 PS11.4 PS11.6 PS11.7	Enumerate and describe the magnitude and etiology of personality disorders Describe the treatment of <b>personality</b> disorders including behavioural, psychosocial and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in personality disorders discussion Enumerate the appropriate conditions for specialist referral	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology</b>
<b>17</b>	PS12.1 PS12.4 PS12.6 PS12.7	Enumerate and describe the magnitude and etiology of psychosomatic disorders Describe the treatment of <b>psychosomatic</b> disorders including behavioural, psychosocial and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in psychosomatic disorders Enumerate the appropriate conditions for specialist referral	<b>LGT</b>	<b>1</b>	<b>General Medicine, Pharmacology</b>
<b>18</b>	PS13.1 PS13.4	Enumerate and describe the magnitude and etiology of psychosexual and gender identity disorders Describe the treatment of psychosexual and gender identity	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology</b>

	PS13.6	disorders including behavioural, psychosocial and pharmacologic therapy Enumerate and describe the pharmacologic basis and side effects of drugs used in psychosexual and gender identity disorders			
	PS13.7	Enumerate the appropriate conditions for specialist referral			
<b>19</b>	PS14.1	Enumerate and describe the magnitude and etiology of psychiatric disorders occurring in childhood and adolescence	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology, Paediatric</b>
	PS14.3	Describe the treatment of stress related disorders including behavioural, psychosocial and pharmacologic therapy			
	PS14.5	Enumerate and describe the pharmacologic basis and side effects of drugs used in psychiatric disorders occurring in childhood and adolescence			
	PS14.6	Enumerate the appropriate conditions for specialist referral in children and adolescents with psychiatric disorders			
<b>20</b>	PS15.1	Describe the aetiology and magnitude of mental retardation	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology</b>
	PS15.2	Describe and discuss intelligence quotient and its measurement			
	PS15.4	Describe the psychosocial interventions and treatment used in mental retardation			
<b>21</b>	PS16.1	Enumerate and describe common psychiatric disorders in the elderly including dementia, depression and psychosis	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology General Medicine</b>
	PS16.2	Describe the aetiology and magnitude of psychiatric illness in the elderly			
	PS16.3	Describe the therapy of psychiatric illness in elderly including psychosocial and behavioural therapy			
	PS16.5	Enumerate the appropriate conditions for specialist referral in psychiatric disorders in the elderly			
<b>22</b>	PS17.1	Enumerate and describe the recognition and clinical presentation in psychiatric emergencies (Suicide, Deliberate Self Harm, Violent behaviour)	<b>LGT</b>	<b>1</b>	<b>FMT, Pharmacology General Medicine</b>
	PS17.2	Describe the initial stabilisation and management of psychiatric Emergencies			
	PS17.3	Enumerate the appropriate conditions for specialist referral in			

		patients with psychiatric emergencies			
23	PS18.1	Enumerate the indications and describe the pharmacology, dose and side effects of commonly use drugs in psychiatric disorders	LGT	3	Pharmacology
24	PS18.2	Enumerate the indications for modified electroconvulsive therapy	LGT	1	
25	PS18.3	Enumerate and describe the principles and role of psychosocial interventions in psychiatric illness including psychotherapy, behavioural therapy and rehabilitation	LGT	1	
26		PS19.1 Describe the relevance, role and status of community psychiatry	LGT	1	CM 15.1, CM15.2
27	PS19.2	Describe the objectives strategies and contents of the National Mental Health Programme	LGT	1	CM 15.3 ,FM5.6
28	PS19.3 PS19.4	Describe and discuss the basic legal and ethical issues in psychiatry Enumerate and describe the salient features of the prevalent mental health laws in India	LGT	1	FM 5.3. 5.3,5.4,5.5
29	19.5 PS19.6	Describe the concept and principles of preventive psychiatry and mental health promotion (positive mental health); and community education) Enumerate and describe the identifying features and the principles of participatory management of mental illness occurring during and after disasters	LGT	1	
30	PY10.7	Describe and discuss functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, cerebellum and limbic system and their abnormalities	LGT	1	Anatomy
31	PY10.8 PY10.9 PY10.12	Describe and discuss behavioural and EEG characteristics during sleep and mechanism responsible for its Describe and discuss the physiological basis of memory, learning and speech production Identify normal EEG forms	LGT	1	Physiology

## Clinical Teaching

II MBBS -2 weeks				
PS3.2	Enumerate, describe and discuss important signs & symptoms of common mental disorders	SGT/Bedside clinic	2	
PS3.3	Elicit, present and document a history in patients presenting with a mental disorder			
PS3.4	Describe the importance of			

	establishing rapport with patients PS3.5 Perform, demonstrate and document a minimal examination			
PS5.2 PS5.4	Enumerate, elicit, describe and document clinical features, positive symptoms in psychotic disorder Demonstrate family education in a patient with schizophrenia in a simulated environment	<b>SGT/Bedside clinic</b>	<b>3</b>	
PS6.2 PS6.5	Enumerate, elicit, describe and document clinical features in patients with depression Demonstrate family education in a patient with depression in a simulated environment	<b>SGT/Bedside clinic</b>	<b>2</b>	
PS4.5	Written/ Viva voce Pharmacology General Medicine Demonstrate family education in a patient with alcohol and substance abuse in a simulated environment	<b>SGT/Bedside clinic</b>	<b>3</b>	
PS7.2 PS7.3 PS7.5	Enumerate, elicit, describe and document clinical features in patients with bipolar disorders Enumerate and describe the indications and interpret laboratory and Other test used in bipolar disorder Demonstrate family education in a patient with bipolar disorders in a simulated environment	<b>SGT/Bedside clinic</b>	<b>2</b>	
PS8.2 PS8.3 PS8.5	Enumerate, elicit, describe and document clinical features in patients with anxiety disorders Enumerate and describe the indications and interpret laboratory and other tests used in anxiety disorders Demonstrate family education in a patient with anxiety disorders in a simulated environment	<b>SGT/Bedside clinic</b>	<b>1</b>	
PS3.9, PS 3.11	Describe the steps and demonstrate in a simulated environment family education in patients with organic psychiatric disorder Enumerate the appropriate conditions for specialist referral in patients with psychiatric disorders	<b>SGT/Bedside clinic</b>	<b>1</b>	
<b>III MBBS Part 1 -2 weeks</b>				

PS9.2	Enumerate elicit, describe and document clinical features in patients with stress related	<b>SGT/Bedside clinic</b>	<b>2 weeks</b>	
PS9.3	Enumerate and describe the indications and interpret laboratory and			
PS9.5	other tests used in stress related disorders Demonstrate family education in a patient with stress related disorders in a simulated environment			
PS10.2	Enumerate, elicit, describe and document clinical features in patients with somatoform, dissociative and conversion disorders	<b>SGT/Bedside clinic</b>	<b>1</b>	
PS10.3	Enumerate and describe the indications and interpret laboratory and			
PS10.5	other tests used in somatoform, dissociative and conversion disorders Demonstrate family education in a patient with somatoform, dissociative and conversion disorders in a simulated environment			
PS11.2	Enumerate, elicit, describe and document clinical features in patients with personality disorders	<b>SGT/Bedside clinic</b>	<b>2</b>	
PS11.3	Enumerate and describe the indications and interpret laboratory and			
PS11.5	other tests used in personality disorders Demonstrate family education in a patient with personality disorders in a simulated environment			
PS12.2	Enumerate, elicit, describe and document clinical features in patients with magnitude and etiology of psychosomatic disorders	<b>SGT/Bedside clinic</b>	<b>2</b>	
PS12.3	Enumerate and describe the indications and interpret laboratory and			
PS12.5	other tests of psychosomatic disorders Demonstrate family education in a patient with psychosomatic disorders in a simulated environment			
PS13.2	Enumerate, elicit, describe and document clinical features in patients with magnitude and etiology of psychosexual and gender identity disorders	<b>SGT/Bedside clinic</b>	<b>2</b>	
PS13.3	Enumerate and describe the indications and interpret laboratory and			
PS13.5	other tests used in psychosexual and gender identity disorders Demonstrate family education in a patient with psychosexual and gender identity disorders in a simulated environment			
PS14.2	Enumerate, elicit, describe and document clinical features in patients with psychiatric disorders occurring in childhood and adolescence	<b>SGT/Bedside clinic</b>	<b>3</b>	



PS14.4	Demonstrate family education in a patient with psychiatric disorders occurring in childhood and adolescence in a simulated environment			
PS15.3	Elicit and document a history and clinical examination and choose appropriate investigations in a patient with mental retardation	<b>SGT/Bedside clinic</b>	<b>1</b>	
PS16.4	Demonstrate family education in a patient with psychiatric disorders. occurring in the elderly in a simulated environment	<b>SGT/Bedside clinic</b>	<b>1</b>	
<b>Total -4 weeks</b>				

### Reference Books

1. Verghese. A and Abraham. A (1987) Introduction to Psychiatry; Chennai, Christian Literature Society.
2. Rao. A.V, Kuruvilla.K (1997) Psychiatry; New Delhi, B.I Churchill Livingstone.
3. Abuja .N (2002) Short text book of psychiatry, 5th Ed., New Delhi, Jaypee Medical Publishers.
4. Swash .M (2002) Hutchison's Clinical Methods, 21 st Ed. London, Saunders Publication.
5. Boon.N.A, Colledge.N.R, and Walker.B.R (Editors) Davidson's Principles of Medicine-20th Edn. Oxford, ELBS with Churchill Livingstone and Elsevier.
6. Namboodiri.V.M.D & John.C.J(1984) A Guide to Clinical Psychiatry; Kolenchery, M.M.M. Hospital.
7. Kumar .K.A (1992) Facets of Substance Abuse—An Update; Trivandrum, Trivandrum Medical College.
8. Nair.M.K.C (Author), Pejaver .R.K (Editor) Child Development 2000 and Beyond; Bangalore, Prism Books Pvt. Ltd.
9. Kakar.S (1997) Culture & Psyche—Selected Essays; Delhi, Oxford Institute Press.

## XVI:Respiratory Medicine

(a) **Competencies:** The student must demonstrate:

1. Knowledge of common chest diseases, their clinical manifestations, diagnosis and management,
2. Ability to recognize, diagnose and manage pulmonary tuberculosis as contemplated in National Tuberculosis Control programme,
3. Ability to manage common respiratory emergencies in primary care setting and refer appropriately.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to allow the student to recognize diagnose and treat TB in the context of the society, national health priorities, drug resistance and co-morbid conditions like HIV.

### TEACHING METHODS & HOURS

Duration	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2nd						2 week
3rdpart 1	10 hours	8hours	2 hours			
Total	10 hours	10 hours	3 hours			2 week

### Ug curriculum for Large group teaching total no . of classes in hour 10

SL NO	Number	Number of competencies: (19)TB	Suggested Teaching Learning method	hour	Vertical Integration Horizontal Integration
1	CT1.1	Describe and discuss the epidemiology of tuberculosis and its impact on the work, life and economy of India	Large group teachings	1	Community Medicine
2	CT1.2	Describe and discuss the microbiology of tubercle bacillus, mode of transmission, pathogenesis, clinical evolution and natural history of pulmonary and extra pulmonary forms (including lymph node, bone and CNS)			Microbiology
3	CT1.4	Describe the epidemiology, the predisposing factors and microbial and therapeutic factors that determine resistance to drugs		1	Community Medicine, Microbiology, Pharmacology
4	CT1.17	Define criteria for the cure of Tuberculosis; describe and recognize the features of drug resistant tuberculosis, prevention and therapeutic regimens	LARGE GROUP TEACHING,		
5	CT1.13	Describe and discuss the origin, indications, technique of administration, efficacy and complications of the BCG vaccine	LARGE GROUP TEACHING,	1	Microbiology
6	CT1.14	Describe and discuss the pharmacology of various anti-tuberculous agents, their indications,	LARGE GROUP TEACHING,	1	Pharmacology, Microbiology

		contraindications, interactions and adverse reactions			
7	CT2.1	Define and classify obstructive airway disease	LARGE GROUP TEACHING,	1	Physiology, Pathology Respiratory Medicine
8	CT2.2	Describe and discuss the epidemiology, risk factors and evolution of obstructive airway disease	LARGE GROUP TEACHING,	1	
9	CT2.4	Describe and discuss the physiology and pathophysiology of hypoxia and hypercapnea			
10	CT2.5	Describe and discuss the genetics of alpha 1 antitrypsin deficiency in emphysema			
11	CT2.6	Describe the role of the environment in the cause and exacerbation of obstructive airway disease	LARGE GROUP TEACHING		Community Medicine
12	CT2.7	Describe and discuss allergic and non-allergic precipitants of obstructive airway disease			
13	CT2.16	Discuss and describe therapies for OAD including bronchodilators, leukotriene inhibitors, mast cell stabilisers, theophylline, inhaled and systemic steroids, oxygen and immunotherapy , antimicrobial therapy	LARGE GROUP TEACHING	1	Pharmacology Respiratory Medicine
14	CT2.24	Recognise the impact of OAD on patient's quality of life, well being, work and family			
15	CT2.25	Discuss and describe the impact of OAD on the society and workplace			
16	CT2.27	Demonstrate an understanding of patient's inability to change working, living and environmental factors that influence progression of airway disease			
		Integration class			
17	PH1.45	. Describe the drugs used in MDR and XDR Tuberculosis	LARGE GROUP TEACHING	1	Respiratory Medicine
18	IM24.10	Describe and discuss the aetiopathogenesis ,clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of COPD in the elderly			
19	PE34.1	Discuss the epidemiology, clinical features, clinical types, complications of Tuberculosis in Children and Adolescents	LARGE GROUP TEACHING	1	
20	PE34	Discuss the various diagnostic tools for childhood tuberculosis			

21	PE34.3	Discuss the various regimens for management of Tuberculosis as per National Guidelines			Microbiology, Community Medicine, Pharmacology Respiratory Medicine
22	PE34.5	Able to elicit, document and present history of contact with tuberculosis in every patient encounter	LARGE GROUP TEACHING	1	Respiratory Medicine

10/20

### Ug curriculum for small group teaching total no . of classes in hour 10

SL NO.	Number	Number of competencies: (19)TB	Suggested Teaching Learning method	hour	Vertical Integration Horizontal Integration
1	CT1.12	Enumerate the indications for tests including: serology, special cultures and polymerase chain reaction and sensitivity testing	Small group discussion,	1	Microbiology Respiratory Medicine
2	CT1.3	Discuss and describe the impact of co-infection with HIV and other co-morbid conditions. Like diabetes on the natural history of tuberculosis		1	Respiratory Medicine
3	CT1.15	Prescribe an appropriate antituberculosis regimen based on the location of disease, smear positivity and negativity and comorbidities based on current national guidelines including directly observed tuberculosis therapy (DOTS	, Small group discussion,	1	Pharmacology , Community Medicine Respiratory Medicine
Obstructive airway disease Number of competencies: (28) Number of procedures that require certification : (01)					
4	CT2.3	Enumerate and describe the causes of acute episodes in patients with obstructive airway disease	Small group discussion	1	Respiratory Medicine
5	CT2.17	Describe and discuss the indications for vaccinations in OAD	Small group discussion		
6	CT2.14	Enumerate the indications for and interpret the results of : pulse oximetry, ABG, Chest Radiograph	Small group discussion,	1	Respiratory Medicine
7	CT2.20	Describe and discuss the principles and use of oxygen therapy in the hospital and at home	Small group discussion,	1	Respiratory Medicine
8	CT2.28	Demonstrate an understanding for the difficulties faced by patients during smoking cessation A		1	Respiratory Medicine
		Integration class			
9	PE28.19	Describe the etio-pathogenesis, clinical features, diagnosis, management and prevention of	, Small group discussion,	1	Medicine Physiology General

		asthma in children				Medicine Pediatrics Pharmacology
10	PE28.20	Counsel the child with asthma on the correct use of inhalers in a simulated environment	Small group discussion,		1	Respiratory Medicine
11	PE34.12	Enumerate the indications and discuss the limitations of methods of culturing M.Tuberculi			1	

10/ 20

### Ug curriculum Bed side clinic 12hour +3 HOUR /12day+3 hour DOAP SESSION/ 2 wk

SL NO	Number	Number of competencies: (19)	Suggested Teaching Learning method	Hour	Vertical Integration Horizontal Integration
1	CT1.15	Prescribe an appropriate antituberculosis regimen based on the location of disease, smear positivity and negativity and comorbidities based on current national guidelines including directly observed tuberculosis therapy (DOTS	Bedside clinic,	1	Pharmacology, Community Medicine
2	CT1.5	Elicit, document and present an appropriate medical history that includes risk factor, contacts, symptoms including cough and fever CNS and other manifestations	Bed side clinic,	1	RESPIRATOR Y MEDICINE
3	CT1.6	Demonstrate and perform a systematic examination that establishes the diagnosis based on the clinical presentation that includes a a) general examination, b) examination of the chest and lung including loss of volume, mediastinal shift, percussion and auscultation (including DOAP session of lung sounds and added sounds) c) examination of the lymphatic system and d) relevant CNS examination		1	
4	CT1.8	Generate a differential diagnosis and based on the clinical history evolution of the disease that priorities the most likely diagnosis	Bedside clinic,		
5	CT1.9	Order and interpret diagnostic tests based on the clinical presentation including: CBC, Chest X ray PA view, Mantoux, sputum culture and sensitivity, pleural fluid examination and culture, HIV testing	Bedside clinic,	1	RESPIRATOR Y MEDICINE Microbiology
6	CT2.10	Generate a differential diagnosis and priorities based on clinical features that suggest a specific etiology	Bed side clinic,	1	
7	CT2.8	Elicit document and present a medical history that will differentiate the aetiologies of obstructive airway disease, severity and precipitants	Bed side clinic,		RESPIRATOR Y MEDICINE

8	CT2.9	Perform a systematic examination that establishes the diagnosis and severity that includes measurement of respiratory rate, level of respiratory distress, effort tolerance, breath sounds, added sounds, identification of signs of consolidation, pleural effusion and pneumothorax		1	RESPIRATORY MEDICINE
9	CT2.11	Describe, discuss and interpret pulmonary function tests	Bed side clinic	1	RESPIRATORY MEDICINE physiology
11	CT2.14	Enumerate the indications for and interpret the results of : pulse oximetry, ABG, Chest Radiograph	Bedside clinics,	1	RESPIRATORY MEDICINE
13	CT2.24	Recognize the impact of OAD on patient's quality of life, well being, work and family	, Bedside clinics	1	RESPIRATORY MEDICINE
15	CT2.26	Describe the role of the environment in the cause and exacerbation of obstructive airway disease			
16	CT2.27	Demonstrate an understanding of patient's inability to change working, living and environmental factors that influence progression of airway disease			
		Integration class			
17	PH1.32	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthma and COPD		1	RESPIRATORY PHARMACOLOGY
18	PH1.33	Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussives, expectorants/ mucolytics)			
21	PE28.20	Counsel the child with asthma on the correct use of inhalers in a simulated environment	Bedside clinics,	1	Respiratory Medicine
23	PE34.5	Able to elicit, document and present history of contact with tuberculosis in every patient encounter			
24	PE34.6 PE34.7	Identify a Interpret BCG scar Mantoux test	Bed side clinics		Microbiology Respiratory Medicine
25	PE34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis			
26	PE34.10	Discuss the various samples for demonstraing the organism eg Gastric Aspirate, Sputum , CSF, FNAC	Bed side clinics,	1	Microbiolgy Respiratory Medicine
27	PE34.11	Perform AFB staining	Bed side clinics,		Microbiology Respiratory Medicine
28	PE34.12	Enumerate the indications and discuss the limitations of methods of culturing M.Tuberculi			

### Ug curriculum DOAP SESSION 6 COMPETENCIES 3 HOUR

CT1.10	Perform and interpret an AFB stain	DOAP session		1	
CT1.19	Communicate with patients and family in an empathetic manner about the diagnosis, therapy .	DOAP session		1	AETCOM
CT2.22	Demonstrate and counsel patient on the correct use of inhalers				
py6.8	Demonstrate the correct technique to perform & interpret Spirometry	DOAP sessions		1	Physiology Respiratory Medicine
PH1.32	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthma and COPD				
PH1.33	Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussives, expectorants/ mucolytics)				

#### Reference Books

- 1-Fishman's Pulmonary diseases and disorder
- 2 - MURRAY AND ADAL" TEST BOOK OF PULMONARY MEDICINE
- 3- CROFTON ABD DOUGLAS
- 4- TEXT BOOK OF TUBERCULOSIS MOHAN SHARMA

## XVII:General Surgery

(a) **Competencies:** The student must demonstrate:

1. Understanding of the structural and functional basis, principles of diagnosis and management of common surgical problems in adults and children,
2. Ability to choose, calculate and administer appropriately intravenous fluids, electrolytes, blood and blood products based on the clinical condition,
3. Ability to apply the principles of asepsis, sterilization, disinfection, rational use of prophylaxis, therapeutic utilities of antibiotics and universal precautions in surgical practice,
4. Knowledge of common malignancies in India and their prevention, early detection and therapy,
5. Ability to perform common diagnostic and surgical procedures at the primary care level,
6. Ability to recognize, resuscitate, stabilize and provide Basic & Advanced Life Support to patients following trauma,
7. Ability to administer informed consent and counsel patient prior to surgical procedures,
8. Commitment to advancement of quality and patient safety in surgical practice.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to provide a sound biologic basis and a holistic approach to the care of the surgical patient.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2nd	25hours				25hours	4 week
3rdpart 1	25hours	35hours	5hours		65hours	4 week
3rdpart2	71hours	126hours	15hours		212hours	12week
Total	121hours	161hours	20hours		302hours	20 week

Total marks	University Examination Marks			Internal Assessment	
	Theory	clinical	Viva	Theory	Practical + Viva
Theory=200 Practical =100 Oral 100	Paper 1=100 Paper 2=100	L:ong Case & Short case-120 Practical =30 Log Book & Record =10	40 One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

### Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	-----	-----
3 <sup>rd</sup> Professional Year part I	January	100	100
	August	100	100
3 <sup>rd</sup> Professional Year part II	June	100	100
	December	100	100



## SYLABUS FOR GENERAL SURGERY

Course contents	Paper I	Paper II
	Metabolic response to injury Shock Blood and blood components Burns Wound healing and wound care Surgical infections Surgical audit and research Ethics Investigation of surgical patient Pre, intra and post- operative management Nutrition and fluid therapy Transplantation Basic surgical skill Biohazard disposal Trauma Skin and subcutaneous tissue Disorders of salivary gland Oropharyngeal cancer Endocrine General Surgery: Thyroid and parathyroid Developmental anomalies of face, mouth and jaws	Anaesthesia and pain management Minimally invasive general surgery Adrenal glands Pancreas Breast Cardio-thoracic General Surgery- Chest - Heart and Lungs Vascular diseases Abdomen Urinary System Penis, Testis and

**COMPETENCY BASED UNDERGRADUATE CURRICULUM**  
**DEPARTMENT OF GENERAL SURGERY BHIMA BHOI MEDICAL COLLEGE**

2 <sup>nd</sup> Professional Curriculum							
Sl. No	Topics	Numbers	Competency	Teaching method and time			Integration
				LGT	SGT	SDL	
1	Metabolic response to injury	SU1.1	Describe Basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators.	3 hr			Biochemistry (BI 6.1)
		SU1.2	Describe the factors that affect the metabolic response to injury	1 hr			
2	Shock	SU2.1	Describe Pathophysiology of shock, types of shock & principles of resuscitation including fluid replacement and monitoring	3 hr			
		SU2.2	Describe the clinical features of shock and its appropriate treatment	1 hr			
3	Blood and blood	SU3.1	Describe the Indications and appropriate use of blood and blood products and complications of blood transfusion	3 hr			

	components						
4	Burns	SU4.1	Describe Pathophysiology of Burns	1 hr			
		SU4.2	Describe Clinical features, Diagnose type and extent of burns and plan appropriate treatment	2 hr			
5	Wound Healing and wound care	SU5.1	Describe normal wound healing and factors affecting healing.	1 hr			
		SU5.3	Differentiate the various types of wounds, plan and observe management of wounds	1 hr			
		SU5.4	Discuss medico legal aspects of wounds	1 hr			FMT (FM 3.3)
6	Surgical Infections	SU6.1	Define and describe the aetiology and pathogenesis of surgical Infections	1 hr			Microbiology (MI 1.1)
		SU6.2	Enumerate Prophylactic and therapeutic antibiotics Plan appropriate management	1 hr			
7	Investigation of surgical patient	SU9.1	Choose appropriate biochemical, microbiological, pathological, imaging investigations and interpret the investigative data in a surgical patient	1 hr			
		SU9.2	Biological basis for early detection of cancer and multidisciplinary approach in management of cancer	1 hr			
8	Pre, intra and post-operative management.	SU10.1	Describe the principles of perioperative management of common surgical procedures	1 hr			
9	Nutrition and fluid therapy	SU12.1	Enumerate the causes and consequences of malnutrition in the surgical patient	1 hr			
		SU12.2	Describe and discuss the methods of estimation and replacement of the fluid and electrolyte requirements in the surgical patient	1 hr			
		SU12.3	Discuss the nutritional requirements of surgical patients, the methods of providing nutritional support and their complications	2 hr			
			<b>TOAL DURATION</b>	<b>25 hrs</b>			

### 3<sup>rd</sup> Professional Part I

1	Metabolic response to injury	SU1.3	Discuss on basic concepts of perioperative care of surgical patients		3hr		
2	Shock	SU2.2	Clinical feature of different types of shock and their management		3hr		
3	Blood and blood	SU3.1	Complications of blood transfusion and its management	2 hr			

	components					
4	Burns	SU4.3	Discuss the Medicolegal aspects in burn injuries		2hr	FM & T FM2.25
		SU4.4	Communicate and counsel patients and families on the outcome and rehabilitation demonstrating empathy and care of Burn patients		3hr	AETCOM
5	Wound healing and wound care	SU5.3	Classify different types of wound and their management		1hr	
		SU5.4	Discuss medico legal aspects of wounds		2hr	
6	Surgical Audit and Research	SU7.1	Describe the Planning and conduct of Surgical audit		2 hr	Community Medicine
		SU7.2	Describe the principles and steps of clinical research in General Surgery		2 hr	Community Medicine
7	Ethics	SU8.1	Describe the principles of Ethics as it pertains to General Surgery		1 hr	FMT AETCOM
		SU8.2	Demonstrate Professionalism and empathy to the patient undergoing General Surgery		1 hr	FMT AETCOM
		SU8.3	Discuss Medico-legal issues in surgical practice		1 hr	FMT AETCOM
8	Nutrition and fluid therapy	SU12.2	Methods of estimation and requirement of fluid, Electrolyte in a surgical patient		2 hr	
9	Transplantation	SU13.1	Describe the immunological basis of organ transplantation	1 hr		
		SU13.2	Discuss the Principles of immunosuppressive therapy.Enumerate Indications, describe surgical principles, management of organ transplantation	2 hr		
		SU13.3	Discuss the legal and ethical issues concerning organ donation		2 hr	
10	Basic Surgical Skills	SU14.1	Describe Aseptic techniques, sterilization and disinfection.		2 hr	
		SU14.2	Describe Surgical approaches, incisions and the use of appropriate instruments in Surgery in general		3 hr	

		SU14.3	Describe the materials and methods used for surgical wound closure and anastomosis (sutures, knots and needles)		3 hr		
11	Biohazard disposal	SU15.1	Describe classification of hospital waste and appropriate methods of disposal.			1hr	
12	Minimally invasive General Surgery	SU16.1	Minimally invasive General Surgery: Describe indications advantages and disadvantages of Minimally invasive General Surgery		2 hr		
13	Trauma	SU17.1	Describe the Principles of FIRST AID	1 hr			
		SU17.3	Describe the Principles in management of mass casualties	2 hr			
		SU17.4	Describe Pathophysiology, mechanism of head injuries	2 hr			
		SU17.5	Describe clinical features for neurological assessment and GCS in head injuries	1 hr			
		SU17.6	Chose appropriate investigations and discuss the principles of management of head injuries		2hr		
		SU17.7	Describe the clinical features of soft tissue injuries. Chose appropriate investigations and discuss the principles of management.	1 hr	1hr		
		SU17.8	Describe the pathophysiology of chest injuries	2 hr			
14	Skin and subcutaneous tissue	SU18.1	Describe the pathogenesis, clinical features and management of various cutaneous and subcutaneous infections	2 hr			
		SU18.2	Classify skin tumours Differentiate different skin tumours and discuss their management	2 hr			
15	Oropharyngeal cancer	SU20.1	Describe etiopathogenesis of oral cancer symptoms and signs of oropharyngeal	1 hr	1hr		ENT

			cancer.				
		SU20.2	Enumerate the appropriate investigations and discuss the Principles of treatment.	1 hr			
16	Disorders of salivary glands	SU21.1	Describe surgical anatomy of the salivary glands, pathology, and clinical presentation of disorders of salivary glands	2 hr			Anatomy
		SU21.2	Enumerate the appropriate investigations and describe the Principles of treatment of disorders of salivary glands	2 hr			
			<b>TOTAL DURATION</b>	<b>25hrs</b>	<b>35 hrs</b>	<b>5hrs</b>	

### 3<sup>rd</sup> Professional Part II

Sl. No	Topic	No	Competency	Teaching method and time			Integration
				LGT	SGT	SDL CLINICAL/BEDSIDE	
1	Surgical infections	SU6.1	Define and describe the aetiology and pathogenesis of surgical infection		2hr		
		SU6.2	Enumerate Prophylactic and therapeutic antibiotics Plan appropriate management		2hr		
2	Anaesthesia and pain management	SU11.1	Describe principles of Preoperative assessment		4hr		AS3.1,AS3.2, AS 3.5, AS9.3
		SU11.2	Enumerate the principles of general, regional, and local Anaesthesia		3hr		Anaesthesia

		SU11.4	Enumerate the indications and principles of day care General Surgery		2hr		
		SU11.5	Describe principles of providing post-operative pain relief and management of chronic pain		2hr		Anaesthesia
		SU11.6	Describe Principles of safe General Surgery		2hr		
3	Developmental anomalies of face, mouth and jaws	SU19.1	Describe the aetiology and classification of cleft lip and palate	1hr	2hr		Anatomy(N36.1)
		SU19.2	Describe the Principles of reconstruction of cleft lip and palate		1hr		
4	Endocrine General Surgery: Thyroid and parathyroid	SU22.1	Describe the applied anatomy and physiology of thyroid		2hr		Anatomy (AN 35,2 &AN35.8)
		SU22.2	Describe the etiopathogenesis of thyroidal swellings	1 h	2hr		Pathology PA32.1
		SU22.4	Describe the clinical features, classification and principles of management of thyroid cancer	2 hr	3hr		
		SU22.5	Describe the applied anatomy of parathyroid	1hr	1hr		
		SU22.6	Describe and discuss the clinical features of hypo and hyperparathyroidism and the principles of their management	1hr	2hr		
5	Adrenal glands	SU23.1	Describe the applied anatomy of adrenal glands		1hr		
		SU23.2	Describe the etiology, clinical features and principles of management of disorders of adrenal gland	1 hr	1hr		
		SU23.3	Describe the clinical features, principles of investigation and management of Adrenal tumors	1 hr	1hr		
6	Pancreas	SU24.1	Describe the clinical features, principles of investigation, prognosis and	2hr	3hr	2hr	Anatomy

			management of pancreatitis				
		SU24.2	Describe the clinical features, principles of investigation, prognosis and management of pancreatic endocrine tumours		3hr		
		SU24.3	Describe the clinical feature, investigation and management of benign and malignant condition of the pancreas	2	2hr		
7	Breast	SU25.1	Describe applied anatomy and appropriate investigations for breast disease	3hr	3hr		Anatomy AN9.2 and AN10.4
		SU25.2	Describe the etiopathogenesis, clinical features and principles of management of benign breast disease including infections of the breast	1 hr	2hr		Pathology PA.31.1
		SU25.3	Describe the etiopathogenesis, clinical features, Investigations and principles of treatment of benign and malignant tumours of breast	2hr	4hr		Pathology (PA31.2)
8	Cardio-thoracic General Surgery- Chest - Heart and Lungs	SU26.1	Outline the role of surgery in the management of coronary heart disease, valvular heart diseases and congenital heart diseases	1hr	1hr		
		SU26.3	Describe the clinical features of mediastinal diseases and the principles of management	1hr	1hr		
		SU26.4	Describe the etiology, pathogenesis, clinical features of tumors of lung and the principles of management		3hr		
9	Vascular diseases	SU27.1	Describe the etiopathogenesis, clinical features, investigations and principles of treatment of occlusive arterial disease	1hr	2hr	1hr	
		SU27.3	Describe clinical features, investigations and principles of management of vasospastic disorders	2hr	2hr		

		SU27.4	Describe the types of gangrene and principles of amputation	1 hr	1hr		
		SU27.5	Describe the applied anatomy of venous system of lower limb		2hr		
		SU27.6	Describe pathophysiology, clinical features, Investigations and principles of management of DVT and Varicose veins	2hr	2hr	1hr	
		SU27.7	Describe pathophysiology, clinical features, investigations and principles of management of Lymphedema, lymphangitis and Lymphomas		3hr	2hr	
10	Abdomen	SU28.1	Describe pathophysiology, clinical features, Investigations and principles of management of Hernias	3hr	2hr		Anatomy AN44.4
		SU28.3	Describe causes, clinical features, complications and principles of mangament of peritonitis	1hr			
		SU28.4	Describe pathophysiology, clinical features, investigations and principles of management of Intra-abdominal abscess, mesenteric cyst, and retroperitoneal tumors	2hr	2hr		
		SU28.5	Describe the applied Anatomy and physiology of esophagus	1hr	2hr		Anatomy AN23.1
		SU28.6	Describe the clinical features, investigations and principles of management of benign and malignant disorders of esophagus	3hr	4 hr		
		SU28.7	Describe the applied anatomy and physiology of stomach	1hr			
		SU28.8	Describe and discuss the aetiology, the clinical features, investigations and principles of management of congenital hypertrophic pyloric stenosis, Peptic ulcer disease, Carcinoma stomach	4hr	3hr	2hr	Pathology PA24.4



		SU28.10	Describe the applied anatomy of liver. Describe the clinical features, Investigations and principles of management of liver abscess, hydatid disease, injuries and tumors of the liver	3hr	4hr		Anatomy AN47.4,AN47.6 ,AN47.7
		SU28.11	Describe the applied anatomy of spleen. Describe the clinical features, investigations and principles of management of splenic injuries. Describe the post-splenectomy sepsis – prophylaxis	2hr	2hr		PA19.6
		SU28.12	Describe the applied anatomy of biliary system. Describe the clinical features, investigations and principles of management of diseases of biliary system	3hr	2hr		
		SU28.13	Describe the applied anatomy of small and large intestine		2 hr		Anatomy
		SU28.14	Describe the clinical features, investigations and principles of management of disorders of small and large intestine including neonatal obstruction and Short gut syndrome	4hr	4hr		
		SU28.15	Describe the clinical features, investigations and principles of management of diseases of Appendix including appendicitis and its complications	1hr	2hr	1hr	
		SU28.16	Describe applied anatomy including congenital anomalies of the rectum and anal canal	2hr	3hr		Anatomy AN48.8
		SU28.17	Describe the clinical features, investigations and principles of management of common anorectal diseases	2hr	2hr		Anatomy AN49.4
11	Urinary System	SU29.1	Describe the causes, investigations and principles of management of Haematuria		2hr		

		SU29.2	Describe the clinical features, investigations and principles of management of congenital anomalies of genitourinary system		2hr		
		SU29.3	Describe the Clinical features, Investigations and principles of management of urinary tract infections		3hr	1hr	
		SU29.4	Describe the clinical features, investigations and principles of management of hydronephrosis	1hr			
		SU29.5	Describe the clinical features, investigations and principles of management of renal calculi	1hr	1 hr		
		SU29.6	Describe the clinical features, investigations and principles of management of renal tumours	1hr	1hr		
		SU29.7	Describe the principles of management of acute and chronic retention of urine	1hr	2hr	1hr	
		SU29.8	Describe the clinical features, investigations and principles of management of bladder cancer	1hr	1hr		
		SU29.9	Describe the clinical features, investigations and principles of management of disorders of prostate	1hr	2hr		Anatomy AN48.7
		SU29.11	Describe clinical features, investigations and management of urethral strictures		2hr		
11 2	Penis, Testis and scrotum	SU30.1	Describe the clinical features, investigations and principles of management of phimosis, paraphimosis and carcinoma penis	2hr	3hr	1hr	
		SU30.2	Describe the applied anatomy clinical features, investigations and principles of management of undescended testis	1hr	1hr		Anatomy AN46.1
		SU30.3	Describe the applied anatomy clinical features, investigations and principles of management of epididymo-orchitis	1hr	1hr		
		SU30.4	Describe the applied anatomy clinical features, investigations and principles of management of varicocele		2hr		Anatomy AN46.4

		SU30.5	Describe the applied anatomy, clinical features, investigations and principles of management of Hydrocele	1hr	2hr	1hr	
		SU30.6	Describe classification, clinical features, investigations and principles of management of tumours of testis	2hr			Pathology PA29.1
			<b>TOTAL DURATION</b>	<b>71hr</b>	<b>126 hr</b>	<b>15hr</b>	

### **CLINICAL/ BED SIDE TEACHING**

PROFESSIONAL	DURATION	NUMBER	TOPIC	TEACHING METHOD
<b>2<sup>nd</sup> Prof</b>	4 Weeks	SU5.2	Elicit, document and present a history in a patient presenting with wounds.	Clinical demonstration/ Bed side teaching
<b>3<sup>rd</sup> Prof Part I</b>	4 weeks	SU2.3	Communicate and counsel patients and families about the treatment and prognosis of shock demonstrating empathy and care (AETCOM)	
		SU4.1	Elicit document and present history in a case of Burns and perform physical examination.	
		SU11.3	Demonstrate maintenance of an airway in a mannequin or equivalent	
		SU13.4	Counsel patients and relatives on organ donation in a simulated environment	
		SU17.2	Demonstrate the steps in Basic Life Support. Transport of injured patient in a simulated environment	
		SU18.3	Describe and demonstrate the clinical examination of surgical patient including swelling and order relevant investigation for diagnosis. Describe and discuss appropriate treatment plan.	
		SU28.2	Demonstrate the correct technique to examine the patient with hernia and identify different types of hernias	
		AN20.9	Identify & demonstrate palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), Mid inguinal point, Surface projection of:	

			femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, great and small saphenous veins	
		AN35.5	Describe & demonstrate extent, drainage & applied anatomy of cervical lymph nodes	
<b>3<sup>RD</sup>Prof Part II</b>	12 weeks	SU3.2	Observe blood transfusions.	
		SU3.3	Counsel patients and family/ friends for blood transfusion and blood donation ATCOM	
		SU9.3	Communicate the results of surgical investigations and counsel the patient appropriately	
		SU10.3	Observe common surgical procedures and assist in minor surgical procedures; Observe emergency lifesaving surgical procedures	
		SU10.4	Perform basic surgical Skills such as First aid including suturing and minor surgical procedures in simulated environment	
		SU11.3	Demonstrate maintenance of an airway in a mannequin or Equivalent	
		SU14.2	Describe Surgical approaches, incisions and the use of appropriate instruments in Surgery in general.	
		SU17.10	Demonstrate Airway maintenance. Recognize and manage tension pneumothorax, hemothorax and flail chest in simulated environment	
		SU22.3	Demonstrate and document the correct clinical examination of thyroid swellings and discuss the differential diagnosis and their management	
		SU25.4	Counsel the patient and obtain informed consent for treatment of malignant conditions of the breast	
SU25.5	Demonstrate the correct technique to palpate the breast for breast swelling in a mannequin or equivalent			

		SU27.2	Demonstrate the correct examination of the vascular system and enumerate and describe the investigation of vascular disease	
		SU27.8	Demonstrate the correct examination of the lymphatic system	
		SU28.9	Demonstrate the correct technique of examination of a patient with disorders of the stomach	
		SU28.18	Describe and demonstrate clinical examination of abdomen. Order relevant investigations. Describe and discuss appropriate treatment plan	
		SU29.10	Demonstrate a digital rectal examination of the prostate in a mannequin or equivalent	
		AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	

### **SAMPLE QUESTION PAPER**

**Subject: GENERAL SURGERY,  
Paper -1 ( Section A and section B)**

**Total Marks: 100**

**Time: 3 Hours**

**Answer all questions**

**Use separate answer sheets for each section**

**Figures in right-hand denote marks**

**No negative marking**

### **SECTION A**

1. A 56year male patient have Road traffic accident with Crushed and lacerated wound onright leg with profuse bleeding, no past history of DM and hypertension. on examinationpatient semiconscious, pulse is 136/min, BP- 140/89mm Hg and other system are normal. (2x5=10)

- a. What is your provisional diagnosis and describe pathophysiology of your diagnosis.
- b. Enumerate principle of management as per your diagnosis

**2. Write short notes on the following:**

**( 4x5 =20 )**

- e. Hyper acute rejection of allograft
- f. Skin and sub cutaneous infection
- g. Systemic inflammatory response syndrome
- h. Complication of Total parenteral nutrition.

**3. Answer the following**

**(2x5=10 )**

- a. Is there any role to use of prophylactic antibiotic for surgical patient
  - b. A critical patient on parenteral nutrition and having continuous fever for 3 day, how you will diagnose intravenous catheter related infection
  - c. Differentiate between deep second degree burn and third degree burn injury.
  - d. A new born 1day old female baby diagnose as capillary angioma, what advice you will give to parent.
  - e. Explain why severe hypotension occur in severe shock.
4. A male patient of age 66 year presented with hard swelling of size 5 cm x 4cm at left parotid region surrounding the Pina with left side Facial palsy, he is addicted to tobacco chewing continuously for 40 year.

**(2x5=10)**

- a. what is your provisional diagnosis and What other condition need to be considered?
- d. Enumerate principle of management of diagnosed diseases.

**SECTION B**

5. A 1day old male baby born and presented with unable to suck mothers breast milk. On examination there is complete defect of upper lip, alveolus, hard palate and soft palate.

**( 10 )**

- a. what will be provisional diagnosis and what advice you will give to parent for diagnosed diseases?
- b. Enumerate principle of management of diagnosed disease.

**6. Write short notes on the following.**

**(4x5)**

- a. Keloid
- b. Branchial cyst
- c. Triage
- d. Trophic ulcer foot

**7. Answer the following.**

**(2X5)**

- a. Explain in which condition, Marjolin's ulcer occurs.
- b. Explain why Hypocalcaemia occurs in massive whole blood transfusion..
- c. Explain why Adrenaline is the preferred medication in Anaphylactic shock.
- d. Why ringers lactate solution is ideal Intravenous fluid than 0.9% normal saline for resuscitation of acute burn patient.
- e. explain why Basal cell carcinoma mostly occurs in face.

8. A 46 year female patient presented with a swelling on neck and hoarseness of voice for 1 month. on examination hard swelling size 10cm x 8cm, on anterior part of neck at midline fixed to trachea, normal thyroid profile other systems are normal.

**(10)**

- a. what is your probable diagnosis and pathophysiology of diagnosed disease
- b. Enumerate principle of management of your line of diagnosis

## SAMPLE QUESTION PAPER

**Subject: GENERAL SURGERY and ALLIED**

**Paper -2(section A and section B)**

**Total Marks: 100**

**Time: 3 Hours**

**Answer all questions**

**Use separate answer sheets for each section**

**Figures in right-hand denote marks**

**(No negative marking)**

### SECTION – A

1.A 62year male patient presented with swelling on right side of groin for 1 year, on examination swelling on right inguinal region and swelling has impulse on coughing positive and reducible. **(10)**

- a. what is your provisional diagnosis and what are the differential diagnosis of your line of diagnosis.
- b. Describe principle of management of your line of diagnosis.

**2. Write Short notes on the followings.**

**(4x5=20)**

- a. Achalasia of oesophagus
- b. Malena
- c. Liver abscess
- d. Varicocele testis
- e. Pseudo cyst of pancreas

**3. Answer the followings**

**(2X5=10)**

- a. If elective splenectomy is planned for 12year child, consideration should be given to vaccinating against pneumococcus.so vaccine to be given how many days before planed surgery?
- b. Why hypoglossal cysts move on deglutition?
- c. Mention What are the drug use for H. Pylori eradication therapy of peptic ulcer.
- d. what are the structures you will feel during per rectal digital examination.
- e. In long standing duodenal ulcer which type of Diverticula will form?

4. A 55year fatty female patient presented with yellow discoloration of conjunctiva, pain right hypochondrium and fever for 5days. Diagnosed as Common bile duct stone. **(5+5=10)**

- a. Describe pathophysiology of biliary stone
- b. Enumerate principle of management of CBD stone

## SECTION B

5.A 12 year male child presented with pain, swelling and discharging sinus over right leg for last 4 month, with history of fever and discharge of bony spicule through the sinus. (5X2=10)

- a. What is your provisional diagnosis and discuss different investigation require to patient.
- b. Enumerate management of diagnosed diseases

6. Write short notes on (4x5=20)

- a. Precancerous lesion of oral cavity
- b. Giant cell tumour of bone
- c. Dentigerous cyst
- d. Imaging in acute abdomen

7.A 58year male old hypertensive patient suffered from umbilical hernia and going to be operate shortly under general anaesthesia Describe preoperative evaluation of above mention patient. (10)

8. Answer the following (2X5=10)

- a. What is the sensible upper dose limits for the Lignocaine with adrenaline for local infiltration in an adult patient?
- b. What dye are used in intravenous xylography?
- c. Describe characteristic position of foot in congenital club foot deformity.
- d. A 11year male patient suffered from chronic osteomyelitis of Tibia bone, what will be radiological (Plain X-Ray of Right leg) finding?
- e. A 26year male patient sustained injury over right arm and he is unable to extend the wrist joint. Which nerve is involved?

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### Reference Books:

1. Bailey & Love's short practice of surgery recent edition
2. Schwartz's Principles of Surgery recent edition
3. Sabiston's Textbook of Surgery: The Biological Basis of Modern Surgical Practice recent Edition
4. Pye's Surgical Handicraft: A Manual of Surgical Manipulations, Minor Surgery
5. A manual of clinical surgery by S.Das recent edition
6. Hamilton bailey's demonstrations of physical signs in clinical surgery recent edition



## XVIII: ORTHOPEDICS

### Orthopaedics (including Trauma)

(a) **Competencies:** The student must demonstrate:

1. Ability to recognize and assess bone injuries, dislocation and poly-trauma and provide first contact care prior to appropriate referral,
2. Knowledge of the medico-legal aspects of trauma,
3. Ability to recognize and manage common infections of bone and joints in the primary care setting,
4. Recognize common congenital, metabolic, neoplastic, degenerative and inflammatory bone diseases and refer appropriately,
5. Ability to perform simple orthopaedic techniques as applicable to a primary care setting,
6. Ability to recommend rehabilitative services for common orthopaedic problems across all ages.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to allow the student to understand the structural basis of orthopaedic problems, their management and correlation with function, rehabilitation and quality of life.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2nd						2 weeks
3rdpart 1	10 hours	20 hours			30 hours	4 weeks
3rdpart2	20 hours	25 hours			45 hours	2 weeks
Total	30 hours	45 hours			75 hours	8 weeks

### 3rd Professional Part I MBBS Routine (Theory) for the Dept. of Orthopaedics

#### Large group teaching (LGT)

<u>Topic code</u>	<u>Topic</u>	<u>No. of Hours (15)</u>	<u>Method of Teaching</u>
	<b>Skeletal Trauma, Poly trauma</b>	<b>5 hrs</b>	
OR1.1	Describe and discuss the Principles of pre-hospital care and Casualty management of a trauma victim including principles of triage.	<b>1</b>	LGT
OR1.2	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of shock	<b>1</b>	LGT
OR1.3	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of soft tissue injuries	1	LGT
OR1.4.1	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of major joints, shoulder dislocation	1	LGT
OR1.4.2	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of knee, hip	1	LGT
	<b>Fractures</b>	<b>10 hrs</b>	
OR2.1	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle	1	LGT

OR2.2	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fractures of proximal humerus	1	LGT
OR2.4.1	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus with emphasis on neurovascular deficit	1	LGT
OR2.4.2	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of Supracondylar fracture humerus and intercondylar fracture humerus with emphasis on neurovascular deficit	1	LGT
OR2.5	Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury	1	LGT
OR2.6	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius	1	LGT
OR2.7	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of pelvic injuries with emphasis on hemodynamic instability	1	LGT
OR2.8	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of spine injuries with emphasis on mobilisation of the patient	1	LGT
OR2.15	Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome	1	LGT
OR2.16	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management	1	LGT

### **3rd Professional Part II MBBS Routine (Theory) for the Dept. of Orthopaedics**

<b><u>Topic code</u></b>	<b><u>Topic</u></b>	<b><u>No. of Hours (20)</u></b>	<b><u>Method of Teaching</u></b>
	<b>Fractures</b>	<b><u>6 hrs</u></b>	
OR2.10.1	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur(Fracture Neck of Femur)	<b><u>1</u></b>	<b><u>LGT</u></b>
OR2.10.2	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur(Fracture Trochanter and Subtrochanter)	<b><u>1</u></b>	<b><u>LGT</u></b>
OR2.11	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome	<b><u>1</u></b>	<b><u>LGT</u></b>
OR2.12	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication	<b><u>1</u></b>	<b><u>LGT</u></b>
OR2.13	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of: Fracture both bones leg, Calcaneus and Small bones of foot	<b><u>1</u></b>	<b><u>LGT</u></b>

OR2.14	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of ankle fractures	<u>1</u>	<u>LGT</u>
	<b>Musculoskeletal Infection</b>	<u>2 hrs</u>	
OR3.1.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections Acute Osteomyelitis, Subacute osteomyelitis and Chronic Osteomyelitis	<u>1</u>	<u>LGT</u>
OR3.1.2	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections Acute Suppurative arthritis, Septic arthritis, Skeletal Tuberculosis	<u>1</u>	<u>LGT</u>
	<b>Skeletal Tuberculosis</b>	<u>2 hrs</u>	
OR4.1.1	Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess	<u>1</u>	<u>LGT</u>
OR4.1.2	Describe and discuss the clinical features, Investigation and principles of management of , caries spine and cold abscess	<u>1</u>	<u>LGT</u>
	<b>Rheumatoid Arthritis and associated inflammatory disorders</b>	<u>1 hr</u>	
OR5.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of various inflammatory disorder of joints	<u>1</u>	<u>LGT</u>
	<b>Degenerative disorders</b>	<u>1 hr</u>	
OR6.1	Describe and discuss the clinical features, investigations and principles of management of degenerative condition of spine (Cervical Spondylosis, Lumbar Spondylosis, PID)	<u>1</u>	<u>LGT</u>
	<b>Metabolic bone disorders</b>	<u>2 hrs</u>	
OR7.1.1	Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteoporosis, Paget's disease	<u>1</u>	<u>LGT</u>
OR7.1.2	Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteomalacia, rickets,	<u>1</u>	<u>LGT</u>
	<b>Bone Tumors</b>	<u>2 hrs</u>	
OR10.1.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of benign bone tumours	<u>1</u>	<u>LGT</u>
OR10.1.2	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of malignant bone tumours and pathological fractures	<u>1</u>	<u>LGT</u>
	<b>Peripheral nerve injuries</b>	<u>2 hrs</u>	
OR11.1.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like , wrist drop, claw hand, palsies of Radial, Ulnar, Median Nerves	<u>1</u>	<u>LGT</u>
OR11.1.2	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like foot drop, palsies of Lateral Popliteal and Sciatic Nerves	<u>1</u>	<u>LGT</u>
	<b>Congenital lesions</b>	<u>2 hrs</u>	
OR12.1.1	Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of: limbs and spine - Scoliosis and spinal	<u>1</u>	<u>LGT</u>

	bifida Congenital Torticollis,		
OR12.1.2	Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of: Congenital dislocation of Hip and congenital talipes equino varus	<u>1</u>	<u>LGT</u>

### **3rd Professional Part I MBBS Routine (Theory) for the Dept. of Orthopaedics**

#### **Small group teaching (SGT)**

<b><u>Topic code</u></b>	<b><u>Topic</u></b>	<b><u>No. of Hours (20 hrs)</u></b>	<b><u>Method of Teaching</u></b>
	<b>Skeletal Trauma, Poly trauma</b>	<b><u>3 hrs</u></b>	
OR1.4	Describe and discuss the Principles of management of soft tissue injuries	<u>1</u>	<u>SGT</u>
OR1.5	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of major joints, shoulder, knee, hip	<u>1</u>	<u>SGT</u>
OR1.6	Participate as a member in the team for closed reduction of shoulder dislocation / hip dislocation / knee dislocation	<u>1</u>	<u>SGT</u>
	<b>Fractures</b>	<b><u>14 hrs</u></b>	
OR2.1	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle	<u>1</u>	<u>SGT</u>
OR2.3	Select, prescribe and communicate appropriate medications for relief of joint pain	<u>1</u>	<u>SGT</u>
OR2.4	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus and intercondylar fracture humerus with emphasis on neurovascular deficit	<u>1</u>	<u>SGT</u>
OR2.5	Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury	<u>1</u>	<u>SGT</u>
OR2.6	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius	<u>1</u>	<u>SGT</u>
OR2.8	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of spine injuries with emphasis on mobilisation of the patient	<u>1</u>	<u>SGT</u>
OR2.9	Describe and discuss the mechanism of injury, Clinical features, investigations and principle of management of acetabular fracture	<u>1</u>	<u>SGT</u>
OR2.10	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur	<u>1</u>	<u>SGT</u>
OR2.11	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome	<u>1</u>	<u>SGT</u>
OR2.12	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat	<u>1</u>	<u>SGT</u>

	embolism as a complication		
OR2.13	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of: (a) Fracture both bones leg (b) Calcaneus (c) Small bones of foot	<u>1</u>	<u>SGT</u>
OR2.14	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of ankle fractures	<u>1</u>	<u>SGT</u>
OR2.15	Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome	<u>1</u>	<u>SGT</u>
OR2.16	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management	<u>1</u>	<u>SGT</u>
	<b>Musculoskeletal Infection</b>	<u>3 hrs</u>	
OR3.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections a) Acute Osteomyelitis b) Subacute osteomyelitis & Chronic osteomyelitis c) Acute Suppurative arthritis d) Septic arthritis	<u>2</u>	<u>SGT</u>
OR3.2 & OR3.3	Participate as a member in team for aspiration of joints under Supervision Participate as a member in team for procedures like drainage of abscess, sequestrectomy/ saucerisation and arthrotomy	<u>1</u>	<u>SGT</u>

### **3rd Professional Part II MBBS Routine (Theory) for the Dept. of Orthopaedics**

<b><u>Topic code</u></b>	<b><u>Topic</u></b>	<b><u>No. of Hours (25)</u></b>	<b><u>Method of Teaching</u></b>
	<b>Skeletal Tuberculosis</b>	<u>2 hrs</u>	
OR4.1	Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess and caries spine	<u>2</u>	<u>SGT</u>
	<b>Rheumatoid Arthritis and associated inflammatory disorders</b>	<u>3 hrs</u>	
OR5.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of various inflammatory disorder of joints	<u>3</u>	<u>SGT</u>
	<b>Degenerative disorders</b>	<u>2 hrs</u>	
OR6.1	Describe and discuss the clinical features, investigations and principles of management of degenerative condition of spine (Cervical Spondylosis, Lumbar Spondylosis, PID)	<u>2</u>	<u>SGT</u>
	<b>Metabolic bone disorders</b>	<u>2 hrs</u>	
OR7.1	Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteoporosis, osteomalacia, rickets, Paget's disease	<u>2</u>	<u>SGT</u>
	<b>Poliomyelitis</b>	<u>1 hr</u>	
OR8.1	Describe and discuss the aetiopathogenesis, clinical features,	<u>1</u>	<u>SGT</u>

	assessment and principles of management a patient with Post Polio Residual Paralysis		
	<b>Cerebral Palsy</b>	<b><u>1 hr</u></b>	
OR9.1	Describe and discuss the aetiopathogenesis, clinical features, assessment and principles of management of Cerebral palsy patient	<b><u>1</u></b>	<b><u>SGT</u></b>
	<b>Bone Tumors</b>	<b><u>3 hrs</u></b>	
OR10.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of benign and malignant bone tumours and pathological fractures	<b><u>3</u></b>	<b><u>SGT</u></b>
	<b>Peripheral nerve injuries</b>	<b><u>2 hrs</u></b>	
OR11.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like foot drop, wrist drop, claw hand, palsies of Radial, Ulnar, Median, Lateral Popliteal and Sciatic Nerves	<b><u>2</u></b>	<b><u>SGT</u></b>
	<b>Congenital lesions</b>	<b><u>2 hrs</u></b>	
OR12.1	Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of: a. limbs and spine - Scoliosis and spinal bifida b. Congenital dislocation of Hip, Torticollis, c. congenital talipes equino varus	<b><u>2</u></b>	<b><u>SGT</u></b>
	<b>Procedural Skills</b>	<b><u>4 hrs</u></b>	
OR13.1	Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins / simulated patients in the following: i. Above elbow plaster ii. Below knee plaster iii. Above knee plaster iv. Thomas splint v. splinting for long bone fractures vi. Strapping for shoulder and clavicle trauma	<b><u>2</u></b>	<b><u>SGT</u></b>
OR13.2	Participate as a member in team for Resuscitation of Polytrauma victim by doing all of the following : (a) I.V. access central - peripheral (b) Bladder catheterization (c) Endotracheal intubation (d) Splintage	<b><u>2</u></b>	<b><u>SGT</u></b>
	<b>Counselling Skills</b>	<b><u>3 hrs</u></b>	
OR14.1	Demonstrate the ability to counsel patients regarding prognosis in patients with various orthopedic illnesses like a. fractures with disabilities b. fractures that require prolonged bed stay c. bone tumours d. congenital disabilities	<b><u>1</u></b>	<b><u>SGT</u></b>
OR14.2	Demonstrate the ability to counsel patients to obtain consent for various orthopedic procedures like limp amputation, permanent fixations etc..	<b><u>1</u></b>	<b><u>SGT</u></b>
OR14.3	Demonstrate the ability to convince the patient for referral to a higher centre in various orthopedic illnesses, based on the detection of warning signals and need for sophisticated management	<b><u>1</u></b>	<b><u>SGT</u></b>

## II MBBS Clinical Posting(CP) for the Dept. of Orthopaedics

<u>Topic code</u>	<u>Topic</u>	<u>No. of Hours (10 Days)</u>	<u>Method of Teaching</u>
	<b>Skeletal Trauma, Poly trauma</b>		
OR1.5	Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of major joints, shoulder, knee, hip	<u>2 days</u>	<u>CP</u>
OR1.6	Participate as a member in the team for closed reduction of shoulder dislocation / hip dislocation / knee dislocation	<u>2 days</u>	<u>CP</u>
	<b>Fractures</b>		
OR2.1	Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle	<u>1 day</u>	<u>CP</u>
OR2.4	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus and intercondylar fracture humerus with emphasis on neurovascular deficit	<u>2 days</u>	<u>CP</u>
OR2.5	Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury	<u>2 days</u>	<u>CP</u>
OR2.6	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius	<u>1 day</u>	<u>CP</u>

## III MBBS(Part I) Clinical posting(CP) for the Dept. of Orthopaedics

<u>Topic code</u>	<u>Topic</u>	<u>No. of Hours (24 Days)</u>	<u>Method of Teaching</u>
	<b>Fractures</b>		
OR2.10	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur	<u>1 day</u>	<u>CP</u>
OR2.11	Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome	<u>1 day</u>	<u>CP</u>
OR2.12	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication	<u>1 day</u>	<u>CP</u>
OR2.13	Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of: (a) Fracture both bones leg (b) Calcaneus (c) Small bones of foot	<u>1 day</u>	<u>CP</u>
OR2.14	Describe and discuss the aetiopathogenesis, clinical features,	<u>1 day</u>	<u>CP</u>

	Investigation and principles of management of ankle fractures		
OR2.15	Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome	<u>2 days</u>	<u>CP</u>
OR2.16	Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management	<u>1 day</u>	<u>CP</u>
	<b>Musculoskeletal Infection</b>		
OR3.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections a) Acute Osteomyelitis b) Subacute osteomyelitis & Chronic osteomyelitis c) Acute Suppurative arthritis & Septic arthritis	<u>3 days</u>	<u>CP</u>
OR3.2	Participate as a member in team for aspiration of joints under Supervision	<u>2 days</u>	<u>CP</u>
OR3.3	Participate as a member in team for procedures like drainage of abscess, sequestrectomy/ saucerisation and arthrotomy	<u>2 days</u>	<u>CP</u>
	<b>Skeletal Tuberculosis</b>		
OR4.1	Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess and caries spine	<u>2 days</u>	<u>CP</u>
	<b>Rheumatoid Arthritis and associated inflammatory disorders</b>		
OR5.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of various inflammatory disorder of joints	<u>2 days</u>	<u>CP</u>
	<b>Degenerative disorders</b>		
OR6.1	Describe and discuss the clinical features, investigations and principles of management of degenerative condition of spine (Cervical Spondylosis, Lumbar Spondylosis, PID)	<u>2 days</u>	<u>CP</u>
	<b>Bone Tumors</b>		
OR10.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of benign and malignant bone tumours and pathological fractures	<u>3 days</u>	<u>CP</u>

### III MBBS(Part II) Clinical posting(CP) for the Dept. of Orthopaedics

<u>Topic code</u>	<u>Topic</u>	<u>No. of Hours (12 Days)</u>	<u>Method of Teaching</u>
	<b>Metabolic bone disorders</b>		
OR7.1	Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteoporosis, osteomalacia, rickets, Paget's disease	<u>2 days</u>	<u>CP</u>



	<b>Peripheral nerve injuries</b>		
OR11.1	Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like foot drop, wrist drop, claw hand, palsies of Radial, Ulnar, Median, Lateral Popliteal and Sciatic Nerves	<b><u>3 days</u></b>	<b><u>CP</u></b>
	<b>Congenital lesions</b>		
OR12.1	Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of: a. limbs and spine - Scoliosis and spinal bifida b. Congenital dislocation of Hip, Torticollis, c. congenital talipes equino varus	<b><u>2 days</u></b>	<b><u>CP</u></b>
	<b>Procedural Skills</b>		
OR13.1	Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins / simulated patients in the following: i. Above elbow plaster ii. Below knee plaster iii. Above knee plaster iv. Thomas splint v. splinting for long bone fractures vi. Strapping for shoulder and clavicle trauma	<b><u>3 days</u></b>	<b><u>CP</u></b>
OR13.2	Participate as a member in team for Resuscitation of Polytrauma victim by doing all of the following : (a) I.V. access central - peripheral (b) Bladder catheterization (c) Endotracheal intubation (d) Splintage	<b><u>2 days</u></b>	<b><u>CP</u></b>

### Reference Books –

1. Essential of Orthopedics, 6<sup>th</sup> edition, Maheswari & Mhaskar, Jaypee Publication.
2. Adam's Outline of Orthopedics, 14<sup>th</sup> edition, David L. Hamblen, A. Hamish R.W. Simpon; Elsevier Publications
3. Adma's Outline of fractures, 12<sup>th</sup> edition:: David L. Hamblen, A. Hamish R.W. Simpon; Elsevier publication
4. Apley & Solomon's System of Orthopedics & Trauma, 10<sup>th</sup> edition ::Ashley Bloom, David Wrwick, Michael R. Whitehouse ; CRC Press.

# XIX:Radiodiagnosis & Radiotherapy

## Radiodiagnosis

(a) **Competencies:** The student must demonstrate:

1. Understanding of indications for various radiological investigations in common clinical practice,
2. Awareness of the ill effects of radiation and various radiation protective measures to be employed,
3. Ability to identify abnormalities in common radiological investigations.

(b) **Integration:** Horizontal and vertical integration to understand the fundamental principles of radiologic imaging, anatomic correlation and their application in diagnosis and therapy.

## Radiotherapy

(a) **Competencies:** The student must demonstrate understanding of:

1. Clinical presentations of various cancers,
2. Appropriate treatment modalities for various types of malignancies,
3. Principles of radiotherapy and techniques.

(b) **Integration:** Horizontal and vertical integration to enable basic understanding of fundamental principles of radio-therapeutic procedures.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2 <sup>nd</sup> Year						2 weeks
3rdpart 1	10hours	8hours	2 hours		20 hours	-
Total	25 hours	40 hours	5 hours		70 hours	144 hours

<b>Radiodiagnosis - Theory (3<sup>rd</sup> Professional Part I)</b>					
		LGT-10, SGT-8, SDL-2			
Sl No	Number	Competency	Mode of teaching	Hour	Integration
1	RD1.1	Define radiation and the interaction of radiation and importance of radiation protection	LGT	1	
	RD1.9	Describe the role of Interventional Radiology in common clinical conditions	LGT		
	RD1.10	Describe the role of Emergency Radiology, miscellaneous & applied aspects, interaction with clinical departments	LGT		
2	RD1.4	Enumerate indications for various common radiological investigations, choose the most appropriate and cost effective method and interpret findings in common conditions pertaining to disorder in Ob & Gy	LGT	1	
	OG9.4	Discuss radiological findings of trophoblastic neoplasms			
	RD1.12	Describe the effects of radiation in pregnancy and the methods of prevention/ minimization of radiation exposure			
	RD1.13	Describe the components of the PC & PNDT Act and its medicolegal implications.			
3	RD1.5	Enumerate indications for various common radiological investigations, choose the most appropriate and cost effective method and interpret findings in common conditions pertaining to disorder in internal medicine	LGT	1	
4	RD1.6	Enumerate indications for various common radiological investigations, choose the most appropriate and cost effective method and interpret findings in common conditions pertaining to disorders in surgery	LGT	1	
5	RD1.7	Enumerate indications for various common radiological investigations, choose the most appropriate and cost effective method and interpret findings in common conditions pertaining to	LGT	1	
6	RD1.3	Enumerate indications for various common radiological investigations, choose the most appropriate and cost effective method and interpret findings in common conditions pertaining to disorder of ENT	LGT	1	
7	RD1.8	Enumerate indications for various common radiological investigations, choose the most appropriate and cost effective method and interpret findings in common conditions pertaining to common malignancies	LGT	1	

8	AN13.4	Identify the bones and joints of upper limb seen in antero-posterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand	SGT	1	
	AN20.6	Identify the bones and joints of lower limb seen in antero-posterior and lateral view radiographs of various regions of lower limb	SGT		
9	AN25.7	Identify structures seen on a plain x-ray chest (PA view)	SGT	1	Anatomy
	IM13.12	Describe the indications and interpret the results of Chest X Ray, mammogram, skin and tissue biopsies and tumor markers used in common cancers			Medicine
	IM6.12	Enumerate the indications and describe the findings for CT of the chest and brain and MRI			Medicine
10	AN43.7	Identify the anatomical structures in 1) Plain x ray skull, 2) AP view and lateral view 3) Plain x ray cervical spine - AP and lateral view 4) Plain x ray of paranasal sinuses	SGT	1	Anatomy
11	AN51.1	Describe & identify the cross-section at the level of T8, T10 and L1(transpyloric plane)	SGT	1	Anatomy
	AN541	Describe & identify features of plain X ray abdomen			
	AN54.2	Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography)			
	IM5.13	Enumerate the indications for ultrasound and other imaging studies including MRCP and ERCP and describe the findings in liver disease			Medicine
12	AN51.2	Describe & identify the mid-sagittal section of male and female pelvis	SGT	1	
13	IM7.18	Enumerate the indications and interpret plain radiographs of joints	SGT	1	Medicine
	IM19.7	Choose and interpret diagnostic and imaging tests in the diagnosis of movement disorders	SGT		
14	FM1.9	Describe the importance of documentation in medical practice in regard to medico-legal examinations, Medical Certificates and medicolegal reports especially: -maintenance of patient case records, discharge summary,prescribed registers to be maintained in Health Centres. -- maintenance of medico-legal register like accident register. -- documents of issuance of wound certificate -- documents of issuance of drunkenness certificate. -- documents of issuance of sickness and fitness certificate. -- documents for issuance of death certificate. -- documents of Medical Certification of Cause of Death – Form Number4 and 4A	SDL	2 hour	FMT

		-- documents for estimation of age by physical, dental and radiological examination and issuance of certificate			
					<b>Total -15 hours</b>

## II MBBS –Clinical Posting-10 days

Sl No	Number	Competency
1	RD1.2	Describe the evolution of Radiodiagnosis. Identify various radiological equipments In the current era
	RD1.11	Describe preparation of patient for common imaging procedures
2	PE21.12	Interpret report of Plain radiograph of KUB
3	IM18.9	Choose and interpret the appropriate diagnostic and imaging test that will delineate the anatomy and underlying cause of the lesion
4	PE23.13	Interpret a chest radiograph and recognize Cardiomegaly
5	PE23.16	Use the ECHO reports in management of cases
6	PE28.17	Interpret X-ray of the paranasal sinuses and mastoid; and /or use written report in case of management Interpret CXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in Pediatric chest X-rays
7	PE30.23	Interpret the reports of EEG, CT, MRI
8	PE34.8	Interpret a Chest radiograph
9	PE21.13	Enumerate the indications for and Interpret the written report of Ultra sonogram of KUB
10	SU25.3	Describe the radiological Investigations of benign and malignant tumours of breast.
11	PE21.13	Interpret the written report of Ultra sonogram of KUB
	Maintain Log Book	

### Curriculum Radiotherapy (3<sup>rd</sup> Professional Part I)

Sl No	Number	Competency	Mode of teaching	Hour	Integration
1	RT1.1	Describe and discuss definition of radiation, mechanism of action of radiation, types of radiation	LGT	1	
	RT1.2	Describe and discuss interaction of radiation with matter & measurement of radiation			
	RT2.1	Describe and discuss radiation protection and personnel monitoring during radiation treatment			
2	RT3.1	Describe and discuss cell cycle and cell survival curve, principles of radiobiology.	LGT	1	

	RT1.3	Enumerate, describe and discuss classification and staging of cancer (AJCC, FIGO etc.)			
	RT3.2	Describe and discuss synergism of radiation and chemotherapy			
	RT4.2	Enumerate, describe and discuss types of treatment plan, basic workflow of 2D/3DCRT/IMRT/IGRT			
3	RT4.4	Describe and discuss different radioactive isotopes and their use in cancer patients	LGT	1	
	RT4.1	Describe and discuss teletherapy machine (Co60/LINAC)			
	RT4.3	Describe and discuss Brachytherapy machine (remote after loading)			
4	RT4.5	Describe and discuss role of radiation in management of common malignancies in India (region specific)	LGT	1	
	RT4.6	Describe and discuss radiotherapy for benign disease			
	RT4.8	Describe oncological emergencies and palliative care			
5	RT4.7	Counsel patients regarding acute and late effects of radiation and supportive care	LGT	1	
	RT5.1	Describe and discuss cancer prevention, screening, vaccination, cancer registry			
<b>Clinical Posting II MBBS (4 days)</b>					
	RT 4.1 & 4.3	Visit to the Radiotherapy Unit			
	RT4.9	Display empathy in the care of patients with cancer			
	Maintain Log Book in Log Book of Radiodiagnosis				

## XX:Anaesthesiology

**(a) Competencies in Anaesthesiology:** The student must demonstrate ability to:

1. Describe and discuss the pre-operative evaluation, assessing fitness for surgery and the modifications in medications in relation to anaesthesia / surgery,
2. Describe and discuss the roles of Anaesthesiologist as a peri-operative physician including pre-medication, endotracheal intubation, general anaesthesia and recovery (including variations in recovery from anaesthesia and anaesthetic complications),
3. Describe and discuss the management of acute and chronic pain, including labour analgesia,
4. Demonstrate awareness about the maintenance of airway in children and adults in various situations,
5. Demonstrate the awareness about the indications, selection of cases and execution of cardio- pulmonary resuscitation in emergencies and in the intensive care and high dependency units,
6. Choose cases for local / regional anaesthesia and demonstrate the ability to administer the same,
7. Discuss the implications and obtain informed consent for various procedures and to maintain the documents.

**(b) Integration:** The teaching should be aligned and integrated horizontally and vertically in order to provide comprehensive care for patients undergoing various surgeries, in patients with pain, in intensive care and in cardio respiratory emergencies. Integration with the preclinical department of Anatomy, para- clinical department of Pharmacology and horizontal integration with any/all surgical specialities is proposed.

Duration	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
3 <sup>rd</sup> Part I	8 hours	10 hours	2 hours	-	20 hours	1 weeks
3 <sup>rd</sup> Part II						
Total	8hours	10 hours	2hours		20 hours	1 weeks

Sl No	Competency	Competency description	Mode of teaching	Hour	Integration
1	AS3.1, SU11.1	Describe the principles of preoperative evaluation	LGT	1	Surgery
	PH1.18	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of general anaesthetics, and preanaesthetic medication			
	AS4.2	Describe the anatomy of the airway and its implications for general anaesthesia			

2	AS4.1,SU11.2	Describe and discuss the pharmacology of drugs used in induction and maintenance of general anaesthesia (including intravenous and inhalation induction agents, opiate and non-opiate analgesics,depolarising and non depolarising muscle relaxants, anticholinesterases)	LGT	1	Surgery
	SU11.2	Enumerate the principles of general, regional and local Anaesthesia.			
	PY3.4	Describe the structure of neuro-muscular junction and transmission of impulses			Physiology
	PH1.15	Describe mechanism/s of action, types, doses, side effects,indications and contraindications of skeletal muscle relaxants			Pharmacology
	PY3.5	Discuss the action of neuro-muscular blocking agents			
3	AS4.3	Observe and describe the principles and the practical aspects of induction and maintenance of anesthesia	LGT	1	
	AS4.4	Observe and describe the principles and the steps/ techniques in maintenance of vital organ functions in patients undergoing surgical procedures			
	AS4.5	Observe and describe the principles and the steps/ techniques in monitoring patients during anaesthesia			
4	AS4.6	Observe and describe the principles and the steps/ techniques involved in day care anesthesia			
	AS4.7	Observe and describe the principles and the steps/ techniques involved in anaesthesia outside the operating room			
5	AS5.1	Enumerate the indications for and describe the principles of regional anaesthesia (including spinal, epidural and combined)	LGT	1	
	AS5.5	Observe and describe the principles and steps/ techniques involved in caudal epidural in adults and children			
	AS5.2	Describe the correlative anatomy of the brachial plexus,subarachnoid and epidural spaces			
	AS5.6	Observe and describe the principles and steps/ techniques involved in common blocks used in surgery (including brachial plexus			



6	AS5.3	Observe and describe the principles and steps/ techniques involved in peripheral nerve blocks	LGT	1	
	AS5.4	Observe and describe the pharmacology and correct use of commonly used drugs and adjuvant agents in regional anesthesia			
7	AS6.1	Describe the principles of monitoring and resuscitation in the recovery room			
	AS6.3	Describe the common complications encountered by patients in the recovery room, their recognition and principles of management			
	AS6.2	Observe and enumerate the contents of the crash cart and describe the equipment used in the recovery room			
8	AS7.4	Observe and describe the basic setup process of a ventilator	LGT	1	
	AS7.5	Observe and describe the principles of monitoring in an ICU			
9	AS8.1	Describe the anatomical correlates and physiologic principles of pain	SGT	1	
10	AS8.2	Elicit and determine the level, quality and quantity of pain and its tolerance in patient or surrogate	SGT	1	
11	AS8.3	Describe the pharmacology and use of drugs in the management of pain	SGT	1	
	AS8.4	Describe the principles of pain management in palliative care			
	AS8.5	Describe the principles of pain management in the terminally			
12	AS9.3	Describe the principles of fluid therapy in the preoperative period	SGT	1	
	AS9.4	Enumerate blood products and describe the use of blood products in the preoperative period			
13	AS10.1	Enumerate the hazards of incorrect patient positioning	SGT	1	
	AS10.2	Enumerate the hazards encountered in the perioperative period and steps/techniques taken to prevent them			
	AS10.3	Describe the role of communication in patient safety			

	AS10.4	Define and describe common medical and medication errors in anaesthesia			
14	PH1.17	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of local anaesthetics	SGT	1	
15	FM2.19	Investigation of anaesthetic, operative deaths: Describe and discuss special protocols for conduction of autopsy and for collection, preservation and dispatch of related material evidences	SDL	2	
16	SU11.1	Describe principles of Preoperative assessment	SGT Skill Lab	1	
	SU11.3	Demonstrate maintenance of an airway in a mannequin or equivalent			
	SU17.2	Demonstrate the steps in Basic Life Support. Transport of injured patient in a simulated environment			
17	SU11.5	Describe principles of providing post-operative pain relief and management of chronic pain	SGT	1	
18	SU17.10	Demonstrate Airway maintenance and recognize and management of tension pneumothorax, hemothorax and flail chest in simulated environment	SGT		
	OR1.1	Describe and discuss the Principles of Pre hospital care and Casualty management of a trauma victim including principles of triage			
19		Class test			

### Clinical Posting (3rd Semester Phase I)-1 week

Day 1	AS3.2 Elicit, present and document an appropriate history including medication history in a patient undergoing Surgery as it pertains to a preoperative anaesthetic evaluation AS3.3 Demonstrate and document an appropriate clinical examination in a patient undergoing General Surgery AS3.4 Choose and interpret appropriate testing for patients undergoing Surgery AS3.5 Determine the readiness for General Surgery in a patient based on
Day 2	AS6.2 Observe and enumerate the contents of the crash cart and describe the equipment used in the recovery room
Day 3	AS7.1 Visit, enumerate and describe the functions of an Intensive Care Unit AS7.2 Enumerate and describe the criteria for admission and discharge of a patient to an ICU AS7.3 Observe and describe the management of an unconscious patient
Day 4	AS2.1 Enumerate the indications, describe the steps and demonstrate in a simulated environment, Basic Life Support in adults, children and neonates
Day 5	AS2.2 Enumerate the indications, describe the steps and demonstrate in a simulated environment, Advanced Life Support in adults and children
Day 6	AS9.1 Establish intravenous access in a simulated environment AS9.2 Establish central venous

	access in a simulated environment
	PY11.14 Demonstrate Basic Life Support in a simulated environment
	OR13.2 Participate as a member in team for Resuscitation of Polytrauma victim by doing all of the following : (a) IV. access central - peripheral (b) Bladder catheterization (c) Endotracheal intubation (d) Splintage
Day 7	Submission of Log book and end of posting Clinical assessment

## XXI: Dentistry

### Clinical Posting III MBBS Part I (One week)

<b>Dental caries</b>	
DE1.1	Enumerate the parts of the tooth.
DE1.2	Discuss the role of causative microorganisms in the aetiopathogenesis of dental caries.
DE1.3	Identify Dental caries.
DE1.4	Discuss the role of dental caries as a focus of sepsis.
DE1.5	Counsel patients with respect to oral hygiene, diet and the direct bearing on systemic health.
<b>Edentulous state</b>	
DE2.1	Discuss the various causes for partial /complete loss of teeth and associated structures.
DE2.2	Discuss the local and systemic sequelae of the above
DE2.3	Identify complete complement of teeth and identify missing teeth
DE2.4	Enumerate common ways of restoring the edentulous state
DE2.5	Counsel patients on the importance of restoring missing teeth/tissues with respect to the benefits on oral and systemic health
<b>Malocclusion</b>	
DE3.1	Aware of malocclusion and the tissues that cause it
DE3.2	Enumerate the impact of malocclusion on aesthetics, health
DE3.3	Identify malocclusion
DE3.4	Counsel patients with respect to correction of malocclusion and the role it might have on oral health specifically on the TMJ
<b>Oral cancer</b>	
DE4.1	Discuss the prevalence of oral cancer and enumerate the common types of cancer that can affect tissues of the oral cavity.
DE4.2	Discuss the role of etiological factors in the formation of precancerous /cancerous lesions.
DE4.3	Identify potential pre-cancerous /cancerous lesions.
PA24.1	Describe the clinical features of oral cancers.
DE4.4	Counsel patients to risks of oral cancer with respect to tobacco, smoking, alcohol and other causative factors.
<b>Periodontal disease</b>	
DE5.1	Enumerate the parts of the tooth and supporting structures factors Identify.
DE5.2	Enumerate the common diseases that affect the periodontium and identify local and systemic causative.
DE5.3	Periodontal disease.
DE5.4	Discuss the role of Periodontal disease as a focus of sepsis.
DE5.5	Counsel patients with respect to oral hygiene, diet and the direct bearing on systemic health and vice versa.
	Submission of Log book and end of posting Clinical assessment

## XXII:Obstetrics and Gynaecology

(a) **Competencies in Obstetrics:** The student must demonstrate ability to:

1. Provide peri-conceptional counseling and antenatal care,
2. Identify high-risk pregnancies and refer appropriately,
3. Conduct normal deliveries, using safe delivery practices in the primary and secondary care settings,
4. Prescribe drugs safely and appropriately in pregnancy and lactation,
5. Diagnose complications of labor, institute primary care and refer in a timely manner,
6. Perform early neonatal resuscitation,
7. Provide postnatal care, including education in breast-feeding,
8. Counsel and support couples in the correct choice of contraception
9. Interpret test results of laboratory and radiological investigations as they apply to the care of the obstetric patient,
10. Apply medico-legal principles as they apply to tubectomy, Medical Termination of Pregnancy (MTP), Pre-conception and Prenatal Diagnostic Techniques (PC PNDT Act) and other related Acts.

**Competencies in Gynecology:** The student must demonstrate ability to:

1. Elicit a gynecologic history, perform appropriate physical and pelvic examinations and PAP smear in the primary care setting,
2. Recognize, diagnose and manage common reproductive tract infections in the primary care setting,
3. Recognize and diagnose common genital cancers and refer them appropriately.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to provide comprehensive care for women in their reproductive years and beyond, based on a sound knowledge of structure, functions and disease and their clinical, social, emotional, psychological correlates in the context of national health priorities.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2nd	25 hours	--	--	--	--	4 weeks
3 <sup>rd</sup> Part I	25 hours	35 hours	5 hours		65 hours	4 weeks
3 <sup>rd</sup> Part II	70 hours	125 hours	15 hours		210 hours	12weeks
Total	120hours	160 hours	20 hours		275 hours	20 weeks

## Marks Distribution

Total marks	University Examination Marks			Internal Assessment	
	Theory	clinical	Viva	Theory	Practical + Viva
Theory=200 Practical =100 OPral =100	Paper 1=100 Paper 2=100	Obs long case = 20 Short case = 10 Gyn long case =20 Short case = 10 Spotter = 20 Record & Log Book=20	Obs viva 50 Gyn viva 50 One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical= Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

## Scheme of Internal assessment

Timing	Month	Theory	Practical & Viva
2 <sup>nd</sup> Professional Year	January	100	100
	April	100	100
	August	-----	-----
3 <sup>rd</sup> Professional Year part I	January	100	100
	August	100	100
3 <sup>rd</sup> Professional Year part II	June	100	100
	December	100	100

## Course contents

<b>Course contents</b>	<p><b>Paper I ( Obstetrics )</b></p> <p>Anatomy of female reproductive organs, fundamentals of reproduction, placenta and membranes, the fetus, physiological changes in pregnancy, diagnosis of pregnancy, fetus in utero, fetal skull and maternal pelvis, antenatal care preconceptional counseling and care, antenatal assessment of fetal well being, prenatal genetic counseling, normal labour, normal puerperium, vomiting in pregnancy, hemorrhage in early pregnancy, multiple pregnancy, amniotic fluid disorders, medical and surgical illness complicating pregnancy, pre term labour, PROM, Post maturity, IUFD, Complicated pregnancy, contracted pelvis, malpresentation, obstructed labour, complications of third stage, induction of labour, operative obstetrics, the new born infant, disease of newborn</p>
	<p><b>Paper II ( Gynaecology )</b></p> <p>Examination of a Gynaecological patient, Congenital malformation of female genital organs, puberty, menopause, menstruation, pelvic infection, sexually transmitted infections, dysmenorrhoea, AUB, Pelvic organ prolapse, Infertility, Benign lesions of cervix, Benign lesions of uterus and ovary, Endometriosis and adenomyosis, premalignant lesions, genital malignancy, Amenorrhoea, Contraception, disorders of sexual development, genital tract injury and fistula, urinary problems in gynaecology</p>

## 2<sup>nd</sup> Professional

Sl. No		Topic	Method of Teaching	Integration
		<b>Topic – Anatomy of female genital tract 1Hr</b>		
1	OG2.1	Describe and discuss the development and anatomy of the female reproductive tract	LGT	
		<b>TOPIC – Physiology of conception 2Hr</b>		
2	OG3.1	Describe the physiology of ovulation, fertilization, implantation and gametogenesis.	LGT	
3	OG3.1.1	Physiology of menstruation	LGT	
		<b>Topic – Development of fetus &amp; placenta 2Hr</b>		
4	OG4.1	Describe and discuss the basic embryology of fetus, factors influencing fetal growth and development and teratogenesis	LGT	
5	OG4.1.1	Anatomy and physiology of placenta & fetal membranes, Amniotic fluid	LGT	
		<b>TOPIC – Preconception Counselling 1Hr</b>		
6	OG5.1	Describe, discuss and identify pre-existing medical disorders and discuss their management; discuss evidence-based intrapartum care.	LGT	
7	OG5.2	Determine maternal high risk factors and verify immunization status.		
		<b>TOPIC – Diagnosis of pregnancy 2 Hr</b>		
8	OG6.1	Describe, discuss and demonstrate the clinical features of pregnancy,	LGT	
9	OG6.1.1	Derive and discuss its differential diagnosis, elaborate the principles underlying and interpret pregnancy tests.	LGT	
		<b>TOPIC – MATERNAL CHANGES IN PREGNANCY 2Hr</b>		
10	OG7.1	Describe and discuss the changes in the genital tract, Cardiovascular system, respiratory system in pregnancy.	LGT	
11	OG7.1.1	Describe and discuss the changes IN haematology, renal and gastrointestinal system in pregnancy.	LGT	
		<b>TOPIC - Antenatal care 2Hr</b>		
12	OG8.1 OG8.2	Enumerate, describe and discuss the objectives of antenatal care, assessment of period of gestation; screening for high-risk factors. Elicit document and present an obstetric history including menstrual history, last menstrual period, previous obstetric history, comorbid conditions, past medical history and surgical history.	LGT	
13	OG8.7 OG8.8	Enumerate the indications for and types of vaccination in Pregnancy. Enumerate the indications and describe the investigations including the use of ultrasound in the initial assessment and monitoring in pregnancy.		
		<b>Revision</b>		
		<b>1<sup>st</sup> Internal Assessment</b>		
		<b>Feedback on Assessment</b>		

<b>TOPIC – Complications in early pregnancy 7Hr</b>				
14	OG9.1	Classify, define and discuss the aetiology and management of abortions including threatened, incomplete, inevitable, missed and septic.	LGT	
15	OG9.1.1	Recurrent pregnancy Loss	LGT	
16	OG20.1 OG20.3	Enumerate the indications and describe and discuss the legal aspects, indications, methods for first and second trimester MTP; complications and management of complications of Medical Termination of Pregnancy. MTP & PCPNDT ACT	<b>LGT</b>	
17	OG9.3	Discuss the aetiology, clinical features, differential diagnosis of acute abdomen in early pregnancy (with a focus on ectopic pregnancy).	LGT	
18	OG9.3.1	Enumerate the principles of medical and surgical management.	LGT	
19	OG9.4	Discuss the clinical features, laboratory investigations, ultrasonography, differential diagnosis, principles of management and follow up of Molar pregnancy.	LGT	
20	OG9.5	Describe the etiopathology, impact on maternal and fetal health and principles of management of hyperemesis gravidarum	LGT	
<b>TOPIC – VAGINAL DISCHARGE 2Hr</b>				
21	OG22.1	Describe the clinical characteristics of physiological vaginal discharge.	LGT	
22	OG22.2	Describe and discuss the etiology (with special emphasis on Candida, T. vaginalis, bacterial vaginosis), characteristics, clinical diagnosis, investigations, genital hygiene, management of common causes and the syndromic management	LGT	
<b>TOPIC – Genital Infections 3Hr</b>				
23	OG27.1	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of sexually transmitted infections.	LGT	
24	OG27.2 OG27.4	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of genital tuberculosis.  Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of Pelvic Inflammatory Disease.	LGT	
25	OG27.3	Describe and discuss the etiology, pathology, clinical features, differential diagnosis, investigations, management and long term implications of HIV.	LGT	
LGT- 25 hours			Total=25hrs	
<b>2<sup>nd</sup> Internal assessment examination</b>				
<b>2<sup>nd</sup> Professional MBBS Examination</b>				

**3<sup>rd</sup> PROFESSIONAL PART 1**

Sl. No.		3 <sup>RD</sup> Professional Year	TL Method	Integration
		<b>TOPIC - Demographic and Vital Statistics 1Hr</b>		
1	OG1.1 OG1.2 OG1.3	Define and discuss birth rate, maternal mortality and morbidity Define and discuss perinatal mortality and morbidity including perinatal and neonatal mortality and morbidity audit. Define and discuss still birth and abortion	LGT	
2	OG1.1 OG1.2	Define and discuss birth rate, maternal mortality and morbidity Define and discuss perinatal mortality and morbidity including perinatal and neonatal mortality and morbidity audit.	SGT	
4	OG1.3	Define and discuss still birth and abortion	SGT	
		<b>TOPIC Antepartum Hemorrhage 3Hr + 2Hr</b>		
5	OG10.1	Define, classify and describe the aetiology, pathogenesis, clinical features, ultrasonography, differential diagnosis and management of antepartum haemorrhage in pregnancy. ( Placenta previa )	LGT	
6	OG10.1.1	Define, classify and describe the aetiology, pathogenesis, clinical features, ultrasonography, differential diagnosis and management of antepartum haemorrhage in pregnancy. ( Abruptio Placenta )		
7	OG10.1.2	Placenta previa	SGT	
8	OG10.1.3	Abruptio Placenta	SGT	
9	OG10.2.1	Enumerate the indications and describe the appropriate use of blood and blood products, their complications and management.	SGT	
		<b>TOPIC – Multiple Pregnancies 2Hr + 2Hr</b>		
10	OG11.1	Describe the etiopathology, clinical features; diagnosis and investigations, complications, principles of management of multiple pregnancies	LGT	
11	OG11.1.1	Multiple Pregnancy	SGT	
12	OG11.1.2	Amniotic fluid disorder	LGT	
13	OG11.1.3	Amniotic fluid disorder	SGT	
		<b>TOPIC–Medical disorders in Pregnancy 14Hr+14Hr</b>		
14	OG12.1	Define, classify and describe the etiology and pathophysiology, early detection OF Hypertensive disorders in pregnancy.	LGT	
15	OG12.1.1	Investigations; principles of management of hypertensive disorders of pregnancy and eclampsia, complications of eclampsia.	LGT	
14	OG12.1	Define, classify and describe the etiology and pathophysiology, early detection OF Hypertensive disorders in pregnancy.	SGT	
15	OG12.1.1	Investigations; principles of management of hypertensive disorders of pregnancy and eclampsia, complications of eclampsia.	SGT	
16	OG12.1.2	Discuss the etiology ,risk factors, prevention and management of Hypertensive disorders in pregnancy.	SDL	
17	OG12.2	Define, classify and describe the etiology, pathophysiology, diagnosis, investigations of anemia in pregnancy.	LGT	
19	OG12.2.1	Adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of anemia in pregnancy.	LGT	



20	OG12.2	Define, classify and describe the etiology, pathophysiology, diagnosis, investigations of anemia in pregnancy.	SGT	
21	OG12.2.1	Adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of anemia in pregnancy.	SGT	
22	OG12.2.2	Discuss the etiology, types, complications, prevention and management of anemia in pregnancy.	SDL	
23	OG12.3	Define, classify and describe the etiology, pathophysiology, diagnosis, investigations of diabetes in pregnancy.	LGT	
24	OG12.3.1	Criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of diabetes in pregnancy.	LGT	
25	OG12.3	Define, classify and describe the etiology, pathophysiology, diagnosis, investigations of diabetes in pregnancy.	SGT	
26	OG12.3.1	Criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of diabetes in pregnancy.	SGT	
27	OG12.3.2	Discuss the risk factors, diagnosis, fetomaternal complications and management of GDM.	SDL	
28	OG12.4	Define, classify and describe the etiology, pathophysiology, diagnosis, investigations of heart diseases in pregnancy.	LGT	
29	OG12.4.1	Criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of heart diseases in pregnancy.	LGT	
30	OG12.4	Define, classify and describe the etiology, pathophysiology, diagnosis, investigations of heart diseases in pregnancy.	SGT	
31	OG12.4.1	Criteria, adverse effects on the mother and foetus and the management during pregnancy and labor, and complications of heart diseases in pregnancy.	SGT	
32	OG12.4.2	Discuss the fetomaternal complications and management of heart disease in pregnancy.	SDL	
33	OG12.5	Describe the clinical features, detection, effect of pregnancy on the disease and impact of the disease on pregnancy complications and management of urinary tract infections in pregnancy	LGT	
34	OG12.5.1	Describe the clinical features, detection, effect of pregnancy on the disease and impact of the disease on pregnancy complications and management of urinary tract infections in pregnancy	SGT	
35	OG12.6	Describe the clinical features, detection, effect of pregnancy on the disease and impact of the disease on pregnancy complications and management of liver disease in pregnancy	LGT	
36	OG12.6.1	Describe the clinical features, detection, effect of pregnancy on the disease and impact of the disease on pregnancy complications and management of liver disease in pregnancy	SGT	
37	OG12.7	Describe and discuss screening, risk factors, management of mother and newborn with HIV	LGT	
38	OG12.7.1	Describe and discuss screening, risk factors, management of mother and newborn with HIV	SGT	
39	OG12.8	Describe the mechanism, prophylaxis, fetal complications of isoimmunization in pregnancy.	LGT	
40	OG12.8.1	Diagnosis and management of isoimmunization in pregnancy.	LGT	

41	OG12.8.2	Describe the mechanism, prophylaxis, fetal complications of isoimmunization in pregnancy	SGT	
42	OG12.8.3	Diagnosis and management of isoimmunization in pregnancy	SGT	
43	OG12.8.4	Discuss Malaria,Thyroid disorders,TORCH in pregnancy	LGT	
44	OG12.8.4.1	Discuss Malaria,Thyroid disorders,TORCH & STD in pregnancy	SGT	
		<b>1<sup>st</sup> Internal assessment examination</b>		
		<b>Feedback on internal assessment</b>		
		<b>TOPIC – Contraception 4Hr+4Hr</b>		
45	OG21.1	Describe and discuss the temporary and permanent methods of contraception	LGT	Integration
46	OG21.1.1	Indications, technique and complications; selection of Patients	LGT	
47	OG21.1.2	Side effects and failure rate including Oral contraceptives, male contraception, emergency contraception and IUCD.	LGT	
48	OG21.1.3	Describe and discuss the temporary and permanent methods of contraception	SGT	
49	OG21.1.4	Indications, technique and complications; selection of Patients	SGT	
50	OG21.1.5	Side effects and failure rate including Ocs, male contraception, emergency contraception and IUCD	SGT	
51	OG21.2	Describe & discuss PPIUCD programme	LGT	
52	OG21.2.1	Describe & discuss PPIUCD programme	SGT	
53	OG21.2.2	Discuss the basket of choices of contraceptives for a woman of 32 years age with two living children considering its advantages and disadvantages.	SDL	
		<b>TOPIC – Genital injuries and fistula 2Hr+2Hr</b>		
54	OG26.2	Describe the causes, prevention, clinical features, principles of management of genital fistulae.	LGT	
55	OG26.2.1	Discuss the urinary problems in Gynaecology ( Stress urinary incontinence etc )	LGT	
56	OG26.2.3	Describe the causes, prevention, clinical features, principles of management of genital injuries and fistulae	SGT	
57	OG26.2.4	Discuss the urinary problems in Gynaecology	SGT	
58	OG2.1.1	Malformations of female genital tract	SGT	
59	OG3.1	Describe the physiology of ovulation, fertilization, implantation and gametogenesis.	SGT	
60	OG3.1.1	Physiology of Ovulation and menstruation	SGT	
61	OG5.1 OG5.2	Describe, discuss and identify pre-existing medical disorders and discuss their management; discuss evidence-based intrapartum care. Determine maternal high risk factors and verify immunization	SGT	
62	OG6.1	Describe, discuss and demonstrate the clinical features of pregnancy, derive and discuss its differential diagnosis, elaborate the principles underlying and interpret pregnancy tests.	SGT	
63	OG7.1	Describe and discuss the changes in the genital tract, cardiovascular system, respiratory, haematology, renal and gastrointestinal system in pregnancy	SGT	

64	OG8.1 OG8.2	Enumerate, describe and discuss the objectives of antenatal care, assessment of period of gestation; screening for high-risk factors. Elicit document and present an obstetric history including menstrual history, last menstrual period, previous obstetric history, comorbid conditions, past medical history and surgical	SGT	
65	OG8.7 OG8.8	Enumerate the indications for and types of vaccination in Pregnancy. Enumerate the indications and describe the investigations including the use of ultrasound in the initial assessment and monitoring in pregnancy	SGT	
		<b>LGT=25Hr      SGT=35Hr      SDL=5Hr</b>	<b>TOTAL</b>	<b>65Hr</b>
		<b>SECOND INTERNAL ASSESSMENT</b>		
		<b>FEEDBACK ON INTERNAL ASSESSMENT</b>		
		<b>THIRD PROFESSIONAL PART 1 MBBS EXAMINATION</b>		

### 3<sup>rd</sup> Professional Part- II

		Epidemiology of Communicable & Non-communicable diseases		Integration
<b>TOPIC - MATERIAL</b>				
1	OG14.1	Enumerate and discuss the diameters of maternal pelvis and types	<b>LGT</b>	
2	OG14.1.1	Discuss the diameters of maternal pelvis and types	<b>SGT</b>	
3	OG14.1.2	Contracted Pelvis	<b>LGT</b>	
4	OG14.1.3	Discussion on contracted pelvis.	<b>SGT</b>	
5	OG14.1.4	Discuss features of Contracted pelvis and pelvic assessment	<b>SGT</b>	
6	OG14.1.5	Maternal pelvis clinical anatomy, fetal skull, pelvic assessment	<b>SDL</b>	
7	OG14.1.6	Fetal skull	<b>LGT</b>	
8	OG14.1.7	Demonstration of Fetal skull	<b>SGT</b>	
9	OG14.1.8	Fetal circulation	<b>LGT</b>	
10	OG14.1.9	Discussion of Fetal circulation	<b>SGT</b>	
<b>TOPIC - LABOUR</b>				
11	OG13.1	Enumerate and discuss the physiology of normal labor	<b>LGT</b>	
12	OG13.1.1	Discuss the physiology of normal labor	<b>SGT</b>	
13	OG13.1.2	Mechanism of labor in occipito-anterior presentation	<b>LGT</b>	
14	OG13.1.3	Mechanism of labor in occipito-anterior presentation	<b>SGT</b>	
15	OG13.1.4	Mechanism of labor in occipito-anterior presentation continuation	<b>SGT</b>	
16	OG13.1.5	Mechanism of labor in occipito-anterior presentation continuation	<b>SGT</b>	
17	OG13.1.6	Mechanism of labour in OA Position	<b>SDL</b>	
18	OG13.1.7	Monitoring of labor including partogram	<b>LGT</b>	
19	OG13.1.8	Partograph	<b>SGT</b>	
20	OG13.1.9	Ante natal assessment of fetal well being	<b>LGT</b>	
21	OG13.1.10	Ante natal assessment of fetal well being	<b>SGT</b>	
22	OG13.1.11	Conduct of labor, pain relief, management of third stage of labor.	<b>LGT</b>	
23	OG13.1.12	Conduct of labor,	<b>SGT</b>	
24	OG13.1.13	Management of third stage of labour	<b>SGT</b>	
25	OG13.1.14	Conduct of labor and active Management of third stage of labour.	<b>SDL</b>	
26	OG13.1.15	Principles of induction and acceleration of labor.	<b>LGT</b>	

27	OG13.1.16	Induction of labour	<b>SGT</b>	
28	OG13.2	Define, describe the causes, pathophysiology, diagnosis, investigations and management of preterm labor.	<b>LGT</b>	
29	OG13.2.1	Discuss Preterm labour its pathophysiology, diagnosis	<b>SGT</b>	
30	OG13.2.2	Tests for assessing fetal lung maturity and role of ante natal steroids.	<b>SGT</b>	
31	OG13.2.3	Investigations and management of preterm labor.	<b>SGT</b>	
32	OG13.2.4	Discuss the management of a Primigravida at 31 weeks of gestation with signs and symptoms of Preterm labour.	<b>SDL</b>	
33	OG13.2.5	Define, describe the causes, pathophysiology, diagnosis, investigations and management of PROM/PPROM.	<b>LGT</b>	
34	OG13.2.6	PROM/PPROM	<b>SGT</b>	
35	OG13.2.7	Define, describe the causes, pathophysiology, diagnosis, investigations and management of Post dated pregnancy.	<b>LGT</b>	
36	OG13.2.8	Post dated pregnancy	<b>SGT</b>	
37	OG13.2.8	Feto maternal outcome in Elderly pregnancy,Grand multi, BOH	<b>LGT</b>	
38	OG13.2.9	Elderly pregnancy,Grand multi, BOH	<b>SGT</b>	
39	OG14.2	Discuss the mechanism of normal labor, Define and describe obstructed labor, its clinical features; prevention; and management	<b>LGT</b>	
40	OG14.2.1	Discuss obstructed labor and management.	<b>SGT</b>	
41	OG14.3	Describe and discuss rupture uterus, causes, diagnosis and management.	<b>LGT</b>	
42	OG14.3.1	Discuss rupture uterus, causes, diagnosis and management.	<b>SGT</b>	
43	OG14.4	Describe and d Mechanism of labor in occipito-posterior presentation .	<b>LGT</b>	
44	OG14.4.1	Mechanism of labor in occipito-posterior presentation	<b>SGT</b>	
45	OG14.4.2	Deep Transverse Arrest	<b>SGT</b>	
46	OG14.4.3	Discuss Abnormal uterine action	<b>SGT</b>	
47	OG14.4.4	Breech Presentation-causes,diagnosis,fetomaternal outcome and management	<b>LGT</b>	
48	OG14.4.5	Describe and discuss steps of assisted breech delivery and possible complications.	<b>LGT</b>	
49	OG14.4.6	Breech presentation – Mechanism of labour.	<b>SGT</b>	
50	OG14.4.7	Assisted breech delivery steps	<b>SGT</b>	
51	OG14.4.8	Discuss the management of a primigravida at 39weeks of gestation with Breech presentation having severe anemia.	<b>SDL</b>	
52	OG14.4.9	Transverse lie and Brow presentation-causes,diagnosis,fetomaternal outcome and management	<b>LGT</b>	
53	OG14.4.10	Transverse lie and Brow presentation	<b>SGT</b>	
54	OG14.4.11	Compound presentation and cord prolapsed causes,diagnosis,fetomaternal outcome and management	<b>LGT</b>	
55	OG14.4.12	Compound presentation and cord prolapse-	<b>SGT</b>	
56	OG14.4.13	IUFD - causes,diagnosis,complications and management	<b>LGT</b>	
57	OG14.4.14	IUFD	<b>SGT</b>	
58	OG14.4.15	Congenital anomalies of fetus	<b>SGT</b>	

59	OG14.4.16	Discuss the various congenital anomalies of fetus and its prevention.	<b>SDL</b>	
		<b>TOPIC – Operative Obstetrics</b>		
61	OG15.1.1	Episiotomy	<b>SGT</b>	
62	OG15.1.2	Prineal injuries	<b>SGT</b>	
63	OG15.1.3	Vacuum extraction	<b>SGT</b>	
64	OG15.1.4	Enumerate and describe the indications and steps of common obstetric procedures, technique and complications:- Low forceps	<b>LGT</b>	
65	OG15.1.5	Low forceps	<b>SGT</b>	
66	OG15.1.6	Discuss the prerequisites, indications, techniques and complications of instrumental delivery.	<b>SDL</b>	
67	OG15.1.7	Enumerate and describe the indications and steps of common obstetric procedures, technique and complications:- assisted breech delivery	<b>LGT</b>	
68	OG15.1.8	Assisted breech delivery	<b>SGT</b>	
69	OG15.1.9	Enumerate and describe the indications and steps, technique and complications:-; Caesarean section	<b>LGT</b>	
70	OG15.1.10	Caesraean section	<b>SGT</b>	
71	OG15.1.11	VBAC	<b>LGT</b>	
72	OG15.1.12	Pregnancy with prior CS	<b>SGT</b>	
73	OG15.1.13	VBAC	<b>SGT</b>	
74	OG15.1.14	Enumerate and describe the indications and steps of common obstetric procedures, technique and complications: External cephalic version.	<b>LGT</b>	
75	OG15.1.15	External cephalic version	<b>SGT</b>	
76	OG15.1.16	Enumerate and describe the indications and steps of common obstetric procedures, technique and complications: cervical cerclage	<b>LGT</b>	
77	OG15.1.17	Cervical incompetence & Cervical cerclage	<b>SGT</b>	
		<b>TOPIC – Complications of the third stage</b>		
78	OG16.1	Enumerate and discuss causes, prevention, diagnosis, management, appropriate use of blood and blood products in postpartum haemorrhage.	<b>LGT</b>	
79	OG16.1.1	Post partum hemorrhage – Causes and types	<b>SGT</b>	
80	OG16.1.2	Management of PPH	<b>SGT</b>	
81	OG16.1.3	Obstetric shock	<b>SGT</b>	
82	OG16.1.4	,Appropriate use of blood and blood products in obstetrics	<b>SGT</b>	
83	OG16.1.5	Discuss the management of a patient having atonic PPH.	<b>SDL</b>	83
84	OG16.2	Describe and discuss uterine inversion – causes, prevention, diagnosis and management.	<b>LGT</b>	84
85	OG16.2.1	Uterine inversion	<b>SGT</b>	85
86	OG16.2.2	Enumerate and discuss causes, prevention, diagnosis, Management of Retained Placenta.	<b>LGT</b>	86
87	OG16.2.3	Retained Placenta.	<b>SGT</b>	87
88	OG16.3	Describe and discuss causes, clinical features, diagnosis, investigations; monitoring of fetal well-being, including ultrasound and fetal Doppler; principles of management; prevention and counselling in intrauterine growth retardation	<b>LGT</b>	88

89	OG16.3.1	Discuss causes, clinical features, diagnosis of intrauterine growth retardation.	SGT	89
90	OG16.3.2	Investigations; monitoring of fetal well-being, including ultrasound and fetal Doppler; principles of management; prevention and counselling in intrauterine growth retardation.	SGT	90
91	OG16.3.3	USG in Obstetrics	SGT	
92	OG16.3.4	TIFA Scan	SGT	
		<b>TOPIC - LACTATION</b>		
93	OG17.1	Describe and discuss the physiology of lactation	LGT	
94	OG17.1.1	physiology of lactation	SGT	
95	OG17.3	Describe and discuss the clinical features, diagnosis and management of mastitis and breast abscess	LGT	
96	OG17.3.1	Clinical features, diagnosis and management of mastitis and breast abscess	SGT	
		<b>TOPIC – Care of the newborn</b>		
97	OG18.1	Describe and discuss the assessment of maturity of the newborn, diagnosis of birth asphyxia, principles of resuscitation, common problems.	LGT	
98	OG18.1.1	Assessment of maturity of the newborn diagnosis of birth asphyxia.	SGT	
99	OG18.4	Describe the principles of resuscitation of the newborn and enumerate the common problems encountered.	LGT	
100	OG18.4.1	Common problems encountered in newborns	SGT	
101	OG18.4.2	Principles of resuscitation of the newborn.	SGT	
102	OG18.4.3	Discuss the common neonatal problems and steps of neonatal resuscitation.	SDL	
		<b>TOPIC – Normal and abnormal puerperium</b>		
103	OG19.1	Describe and discuss the physiology of puerperium, its complications, diagnosis and management; counselling for contraception, puerperal sterilization	LGT	103
104	OG19.1.1	Physiology of puerperium, its complications, diagnosis and management;	SGT	104
105	OG19.1.2	Puerperal sepsis	SGT	105
106	OG19.1.3	Counselling for contraception, puerperal sterilization	SGT	106
107	19.1.4	Discuss the normal and abnormal puerperium.	SDL	107
		<b>TOPIC – Normal and Abnormal Puberty</b>		
108	OG23.1	Describe and discuss the physiology of puberty, features of abnormal puberty, common problems and their management	LGT	
109	OG23.1.1	the physiology of puberty, features of abnormal puberty	SGT	
110	OG23.2	Enumerate the causes of delayed puberty. Describe the Investigation and management of common causes.	LGT	
111	OG23.2.1	Causes of delayed puberty its investigation and management.	SGT	
112	OG23.3	Enumerate the causes of precocious puberty	LGT	
113	OG23.3.1	Precocious puberty	SGT	

		<b>TOPIC – Abnormal uterine bleeding</b>		
114	OG24.1	Define, classify and discuss abnormal uterine bleeding, its aetiology, clinical features	LGT	
115	OG24.1.1	Describe and discuss investigations, diagnosis and Management of AUB.	LGT	
116	OG24.1.2	AUB _ Classification and clinical features	SGT	
117	OG24.1.3	Investigations for AUB	SGT	
118	OG24.1.4	Medical management of AUB	SGT	
119	OG24.1.5	Surgical management of AUB	SGT	
120	OG24.1.6	Discuss the management of a 42year old P2L2 woman having menorrhagic cycles.	SDL	
		<b>TOPIC – Amenorrhoea</b>		
121	OG25.1	Describe and discuss the causes of primary amenorrhea, its investigation and the principles of management.	LGT	
122	OG25.1.1	Primary amenorrhea - , its investigation and the principles of management	SGT	
123	OG25.1.2	Discuss the possible etiology, investigations and management of a girl of 19 years having primary amenorrhoea.	SDL	
124	OG25.1.3	Describe and discuss the causes of Secondary amenorrhea, its investigation and the principles of management.	LGT	
125	OG25.1.4	Secondary amenorrhea, its investigation and the principles of management.	SGT	
		<b>TOPIC - ENDOMETRIOSIS</b>		
126	OG26.1	Describe and discuss the etiopathogenesis, clinical features; investigation and implications on health and fertility and management of endometriosis and adenomyosis.	LGT	
127	OG26.1.1	Endometriosis - etiology and clinical features.	SGT	
128	OG26.1.2	Investigations and management of Endometriosis.	SGT	
129	OG26.1.3	Adenomyosis.	SGT	
		<b>TOPIC - INFERTILITY</b>		
130	OG28.1	Describe and discuss the common causes, pathogenesis, clinical features, differential diagnosis; investigations; principles of management of infertility – methods of tubal patency, ovulation induction, assisted reproductive techniques	LGT	
131	OG28.1.1	Male infertility	SGT	
132	OG28.1.2	Female infertility	SGT	

133	OG28.2	Enumerate the assessment and restoration of tubal patency.	LGT	
134	OG28.2.1	Assessment and restoration of tubal patency	SGT	
135	OG28.2.2	Discuss how to approach a 31 year old woman having primary infertility of 5 years .	SDL	
136	OG28.3	Describe the principles of ovulation induction	LGT	
137	OG28.3.1	Ovulation Induction	SGT	
138	OG28.3.2	OHSS	SGT	
139	OG28.4	Enumerate the various Assisted Reproduction Techniques	LGT	
140	OG28.4.1	Assisted Reproduction Techniques	SGT	
141	OG28.4.2	Secondary Infertility	SGT	
		<b>TOPIC – UTERINE FIBROID</b>		
142	OG29.1	Describe and discuss the etiology; pathology; clinical features; differential diagnosis of fibroid uterus.	LGT	
143	OG29.1.1	Etiology; pathology; clinical features;differential diagnosis of fibroid uterus.	SGT	
144	OG29.1.2	Describe and discuss investigations; principles of management, complications of fibroid uterus.	LGT	
145	OG29.1.3	Investigations; principles of management, complications of fibroid uterus.	SGT	
146	OG29.1.4	Fibroids and Infertility	SGT	
		<b>TOPIC – UTERINE FIBROID</b>		
147	OG29.1.5	Myomectomy – Indication,steps and complications	SGT	
		<b>TOPIC – PCOS and Hirsutism</b>		
148	OG30.1	Describe and discuss the etiopathogenesis; clinical features of PCOS.	LGT	
149	OG30.1.1	Describe and discuss the differential diagnosis; investigations; management, complications of PCOS.	LGT	
150	OG30.1.2	PCOS - etiopathogenesis; clinical features	SGT	
151	OG30.1.3	PCOS Management	SGT	
152	OG30.1.4	Discuss how to approach a 22 year old girl having acne, facial hair and irregular cycles.	SDL	152
153	OG30.2	Enumerate the causes and describe the investigations and management of hyperandrogenism	LGT	153
154	OG30.2.1	Hyperandrogenism	SGT	154



		<b>TOPIC – UTERINE PROLAPSE</b>		
155	OG31.1	Describe and discuss the etiology, classification, clinical features, diagnosis, investigations prolapse of uterus.	LGT	155
156	OG31.1.1	Principles of management and preventive aspects of prolapse of uterus	LGT	156
157	OG31.1.2	Surgical treatment for prolapsed uterus	LGT	157
158	OG31.1.3	Discuss the etiology, classification, clinical features of prolapse of uterus.	SGT	
159	OG31.1.4	Discuss the diagnosis, investigations of prolapse of uterus.	SGT	
160	OG31.1.5	Principles of management and preventive aspects of prolapse of uterus.	SGT	
		<b>TOPIC - Menopause</b>		
161	OG32.1	Describe and discuss the physiology of menopause, symptoms, prevention, management and the role of hormone replacement therapy.	LGT	
162	OG32.1.1	Menopause	SGT	
163	OG32.1.2	Hormone Replacement Therapy	SGT	
164	OG32.2	Enumerate the causes of postmenopausal bleeding and describe its Management.	LGT	
165	OG32.2.1	Post menopausal bleeding	SGT	
166	OG32.2.1	Dand C & Endometrial aspiration	SGT	
		<b>TOPIC – Benign,Pre malignant(CIN) and Malignant lesions of the Cervix</b>		
167	OG33.1	Classify, describe and discuss the etiology, pathology, clinical features, differential diagnosis of Cervical cancer.	LGT	
168	OG33.1.1	Discuss investigations and staging of cervical Cancer and its management.	LGT	
169	OG33.1.2	Classify, describe and discuss the etiology, pathology, clinical features, differential diagnosis of Cervical cancer.	SGT	
170	OG33.1.3	Discuss investigations and staging of cervical Cancer and its management.	SGT	
171	OG33.2	Describe the principles of management including surgery and radiotherapy of Benign, Pre-malignant (CIN) Lesions of the Cervix	LGT	
172	OG33.2.1	Benign, Pre-malignant (CIN) Lesions of the Cervix	SGT	

173	OG33.2.2	principles of management including surgery and radiotherapy of Benign, Pre-malignant (CIN) Lesions of the Cervix	SGT	
174	OG33.4	Enumerate the methods to prevent cancer of cervix including visual inspection with acetic acid (VIA), visual inspection of cervix with Lugol's iodine (VILI), pap smear and colposcopy	LGT	
175	OG33.4.1	Prevention of Cervical cancer and HPV Vaccine.	SGT	
176	OG33.4.2	Enumerate the methods to prevent cancer of cervix including visual inspection with acetic acid (VIA), visual inspection of cervix with Lugol's iodine (VILI), pap smear and colposcopy	SGT	
177	OG33.4.3	VILI and VIA	SGT	
178	OG33.4.4	PAP Smear, Liquid based cytology ,	SGT	
179	OG33.4.5	Colposcopy	SGT	
		<b>TOPIC - Benign and malignant diseases of the uterus and the ovaries</b>		
180	OG34.1	Describe and discuss aetiology, pathology, staging clinical features, differential diagnosis of endometrial cancer.	LGT	
181	OG34.1.1	Describe and discuss investigations, staging laparotomy and principles of management of endometrial cancer.	LGT	
182	OG34.1.2	Discussion on Endometrial Hyperplasia	SGT	
183	OG34.1.3	Discussion on Endometrial carcinoma	SGT	
184	OG34.2	Describe and discuss the etiology, pathology, classification of ovarian tumor.	LGT	
185	OG34.2.1	Describe and discuss the etiology, pathology, classification , investigations and management of benign ovarian tumor.	LGT	
186	OG34.2.2	Discussion on Benign ovarian tumor	SGT	
187	OG34.2.3	Describe and discuss the staging clinical features, differential diagnosis of ovarian cancer.	LGT	
188	OG34.2.4	Describe and discuss the investigations, principal of management including staging laparotomy of ovarian tumor.	LGT	
189	OG34.2.5	Staging laparotomy	SGT	
190	OG34.2.6	Chemotherapy for Ovarian carcinoma	SGT	
191	OG34.3.1	Describe and discuss the etiology, pathology, classification, staging, clinical features, differential diagnosis, investigations and	<b>LGT</b>	

		management of gestational trophoblastic disease.		
192	OG34.3.2	Discussion on GTN.	SGT	
193	OG34.3.3	Chemotherapy for GTN	SGT	
		<b>TOPIC - Obstetrics &amp; Gynecological skills - I</b>		
194	OG35.1	Obtain a logical sequence of history, and perform thorough obstetric clinical examination, excluding internal examinations (perrectal and per-vaginal)	SGT	
195	OG35.2	Obtain a logical sequence of history, and perform thorough gynaecological clinical examination, excluding internal examinations (perrectal	SGT	
		<b>TOPIC - Obstetrics &amp; Gynecological skills - II</b>		
196	OG36.1	Plan and institute a line of treatment, which is need based, cost effective and appropriate for common conditions taking into consideration (a) Patient (b) Disease (c) Socio-economic status (d) Institution/ Governmental guidelines.	SGT	
		<b>TOPIC - Obstetrics &amp; Gynecological skills - III</b>		
197	OG37.1	Caesarean section	SGT	
198	OG37.2	Laparotomy	SGT	
199	OG37.3	Hysterectomy – abdominal	SGT	
200	OG37.3.1	Hysterectomy – vaginal	SGT	
201	OG37.3.2	Types of radical hysterectomy	SGT	
202	OG37.4.1	Obstetric Instruments	SGT	
203	OG37.4.2	Obstetric Specimens	SGT	
204	OG37.4.3	Gynaecological Instruments	SGT	
205	OG37.4.4	Gynaecological Specimens	SGT	
206	OG37.4.4	Instruments and specimens in O&G	SDL	
		<b>Topic: Should observe</b>		

207	OG38.1	Laparoscopy	SGT	
208	OG38.2	Hysteroscopy	SGT	
209	OG38.3	Lap sterilization	SGT	
210	OG38.4	Assess the need for and issue proper medical certificates to patients for various purposes	SGT	
		<b>LGT= 70 hours SGT- = 125 hours SDL= 15 hours</b>	<b>Total= 210 hours</b>	
		<b>2<sup>nd</sup> INTERNAL ASSESSMENT</b>		
		<b>FEEDBACK ON INTERNAL ASSESSMENT</b>		
		<b>THIRD MBBS PART II FINAL EXAMINATION</b>		

**Clinical Posting (20 weeks): ( O&G OPD, Ultrasound, Labour Room, Ward,OT, PPC,Chemotherapy )**

<b>SECOND PROFESSIONAL 4 WEEKS</b>				
	<b>OPD</b>	<b>WARD</b>	<b>LR</b>	<b>OT</b>
	OG 35.1 to OG 35.8  History taking (O & G) Clinical examination Routine ANC Protocol for ANC Arriving at a diagnosis Differential diagnosis of a clinical symptoms Identify various tools and instruments require Various STD Vaginal discharge <b>OBSERVE:</b> p/s exam, p/v exam, obtaining of a PAP smear	<b>Obst:</b> Bed side clinic Examination of antenatal mother and case study Observe post natal care Immunization points Encourage breast feeding Puerperal hygiene Maintain asepsis BMW management <b>GYN:</b> History and clinical examination of cases	<b>OG35.6</b> Ethical behavior with antenatal mother Monitor FHR Examine antenatal mother in different stages of labor <b>Observe :</b> OG35.13 ARM OG13.14 NVD OG13.15 S&E OG13.15.1 PPIUCD insertion OG13.15.2 Epistomy repair Instrumental delivery Assisted breech delivery	Maintain asepsis & BMW management <b>OBSERVE:</b> Pre-op preparation Study case-sheet LSCS Minor surgeries PPIUCD

**THIRD PROFESSIONAL PART I 4 WEEKS**

	<b>OPD</b>	<b>WARD</b>	<b>LR</b>	<b>OT</b>
	History taking (O & G) Clinical examination Diagnosis and	<b>Obst:</b> Exam and monitoring of AN mothers High risk mother	Examine & monitor antenatal mother in different stages of labor	Maintain asepsis & BMW management <b>OBSERVE:</b> LSCS

<p>investigations required  <b>CASES TO BE STUDIED:</b>  Pregnancy with anaemia  PTL  Postdated  GDM  Heart disease  RH negative  RPL  BOH  HDIP  Elderly &amp; grand multi  Fibroid  PID  Ovarian tumour</p>	<p>Examination of post-natal &amp; post up cases  Maintain asepsis &amp; BMW management.  <b>Observe:</b>  Wound care  Writing discharge &amp; referral.  <b>GYN:</b>  History and clinical examination of cases</p>	<p><b>Observe :</b>  Complicated delivery like breech, shoulder dystocia, PIH, pregnancy with medical disorders.  Assist in; NVD,S&amp;E  PPIUCD insertion, Epistomy repair, Instrumental delivery, Assisted breech delivery&amp; cervical tear repair.</p> <p><b>OG35.17</b></p> <p>Demonstrate the correct technique of urinary catheterisation in a simulated/ supervised environment</p>	<p>PPIUCD  Hysterectomy  Laparotomy for ruptured ectopic  Surgery for malignancy  Maintain records.</p>
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### THIRD PROFESSIONAL PART II ( 8 + 4 ) WEEKS

	OPD	WARD	LR	OT
	<p>History taking (O &amp; G)  Clinical examination  Diagnosis and investigations required&amp; treatment  <b>CASES TO BE STUDIED:</b></p> <ul style="list-style-type: none"> <li>Twins</li> <li>Endometriosis</li> <li>Prolapse</li> <li>Infertility</li> <li>Malignancy</li> </ul> <p>Demonstration of USG: dating scan, anomaly scan &amp; FBPP scan.  OG36.1  Plan and institute a line of treatment, which is need based, cost effective and appropriate for common conditions taking into consideration  (a) Patient  (b) Disease  (c) Socio-economic status  (d) Institution/ Governmental guidelines.  <b>PPC:</b>  study about all contraceptive,sterilisation</p>	<p>Obst:  OG36.2  Organise antenatal, postnatal, well-baby and family welfare clinics  Exam and monitoring&amp; study of AN mothers, High risk mother  Examination of post up cases  Maintain asepsis &amp; BMW management.  Assist in wound dressing &amp; suture removal.  Postnatal counseling for lactation &amp; contraception.  <b>GYN:</b>  History and clinical examination of cases  Discussion at bed side &amp; plan management.</p>	<p>Examine &amp; monitor antenatal mother in different stages of labor  Assist in;  NVD, complicated VD S&amp;E,PPIUCD insertion, Epistomy repair,  OG37.6  Instrumental delivery, Assisted breech delivery &amp; cervical tear repair.  <b>OBSERVE &amp; ASSIST IN:</b>  management of PPH &amp; ectopic pregnancy.  Conduct NVD and episiotomy repair  OG35.16  Diagnose and provide emergency management of antepartum and postpartum</p>	<p>Maintain asepsis &amp; BMW management  <b>ASSIST IN:</b>  OG37.1 LSCS  PPIUCD  OG37.3  Hysterectomy</p> <ul style="list-style-type: none"> <li>Encirclage</li> <li>Secondary sutures</li> </ul> <p>OG37.4 Laparotomy for ruptured ectopic</p> <ul style="list-style-type: none"> <li>Surgery for malignancy</li> </ul> <p>Maintain records.</p> <p><b>OBSERVE</b></p> <p>OG38.1  Laparoscopy  OG38.2  <b>HYSTEROSCOPY</b>  OG38.3  <b>LAP STERILISATION</b>  OG38.4  Assess the need for and issue proper</p>

	surgery OG37.7 MTP Counseling regarding contraceptive choices		hemorrhage in a simulated / guided environment  <u>Chemotherapy:</u> observe & study various chemotherapeutic agents, regimens, mode of administration & precaution for GYNmalignancy	medical certificates to patients for various purposes
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## OBSTETRICS & GYNAECOLOGY

### Paper – 1

( Anatomy of female reproductive organs, fundamentals of reproduction, placenta and membranes, the fetus, physiological changes in pregnancy, diagnosis of pregnancy, fetus in utero, fetal skull and maternal pelvis, antenatal care preconceptional counseling and care, antenatal assessment of fetal well being, prenatal genetic counseling, normal labour, normal puerperium, vomiting in pregnancy, hemorrhage in early pregnancy, multiple pregnancy, amniotic fluid disorders, medical and surgical illness complicating pregnancy, pre term labour, PROM, Post maturity, IUFD, Complicated pregnancy, contracted pelvis, malpresentation, obstructed labour, complications of third stage, induction of labour, operative obstetrics, the new born infant ,disease of newborn )

Time: Three Hours

Maximum Marks: 100

Each Section to be answered in separate answer book Illustrate with suitable diagrams wherever necessary

#### SECTION A (Marks: 50)

1. What is Post partum hemorrhage ( PPH ).Enumerate its five common causes.Describe the management of atonic PPH . ( 2+2+6 )
2. What are the symptoms and signs of early pregnancy? Enumerate the investigations to be done in the first visit of a pregnant woman.What are the advices to be given to her? (5+2+3=10)
3. Write short notes on (4\*5=20)
  - a) Hyperemesis gravidarum
  - b) Oligoamnious
  - c) Pritchards Regimen
  - d) TIFA Scan
4. Explain the following. (2\*5=10)
  - a) Vasa previa
  - b) Bandl's ring

- c) Indications of MTP
- d) Fetus papyraceous
- e) Partial mole

SECTION B (Marks: 50)

5. Define GDM.Enumerate its risk factors.Discuss its fetomaternal outcome and management. (2+2+6)
6. Define ectopic pregnancy. What are its types . Discuss the diagnosis and treatment of Acute ruptured ectopic pregnancy. (2+2+6)
7. Write short notes on (4\*5=20)
- a) Partograph
  - b) Peri conceptional counselling
  - c) MMR
  - d) Anencephaly
8. Explain the following. (2\*5=10)
- a) Conjoint twins
  - b) High risk pregnancy
  - c) Cord Presentation
  - d) Prerequisites for applying low forceps
  - e) Fetal fibronectin test

# OBSTETRICS & GYNAECOLOGY

## Paper – 2

(Examination of a Gynaecological patient, Congenital malformation of female genital organs, puberty, menopause, menstruation, pelvic infection, sexually transmitted infections, dysmenorrhoea, AUB, Pelvic organ prolapse, Infertility, Benign lesions of cervix, Benign lesions of uterus and ovary, Endometriosis and adenomyosis, premalignant lesions, genital malignancy, Amenorrhoea, Contraception, disorders of sexual development, genital tract injury and fistula, urinary problems in gynaecology )

Time: Three Hours

Maximum Marks: 100

**Each Section to be answered in separate answer book Illustrate with suitable diagrams wherever necessary**

### PART A (50 marks )

1. Define primary infertility. Enumerate causes of male & female infertility. Discuss the tubal patency tests. (2+4+4)
2. Enumerate the theories, clinical features, diagnosis and management of Endometriosis. (2+2+2+4)
3. Write short notes on (4\*5=20)
  - a) Bacterial Vaginosis
  - b) Chemotherapy for GTN
  - c) Recent classification of AUB
  - d) Red Degenerations of fibroid
4. Explain the following. (2\*5=10)
  - a) Bartholin cyst.
  - b) MIRENA.
  - c) Metrorrhagia.
  - d) Ectropion.
  - e) Rokistansky protuberance.

### PART B (50 marks )

5. Discuss the etiology, risk factors of carcinoma cervix. What are the preventive measures ? (2+3+5)
6. Define Post menopausal bleeding. What are the causes ? Discuss its management. (2+2+6)
7. Write short notes on (5\*4=20)
  - a) Cryptomenorrhoea
  - b) Turner Syndrome
  - c) Metropathia hemorrhagica
  - d) Incomplete abortion
8. . Explain the following. (2\*5=10)
  - a) Risk of malignancy index



- b) Emergency contraceptive pill
- c) HAIR AN Syndrome
- d) Follicular monitorig
- e) Dermoid cyst

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## REFERENCE BOOKS

1. DC Dutta Text Book of Obstetrics
- 2.. DC Dutta Text Book of Gynaecology
3. Williams Obstetrics
4. Williams Gynaecology
5. Jeffcoates principles of Gynaecology
6. Ian Donald Obstetrics
7. Practical Obstetrics and Gynaecology. (Parolekar)
8. Bedside clinics in Obstetrics by Arup kumar Majhi
9. Bedside clinics in Gynaecology by Arup kumar Majhi

## XXIII:Pediatrics

(a) **Competencies:** The student must demonstrate:

1. Ability to assess and promote optimal growth, development and nutrition of children and adolescents and identify deviations from normal,
2. Ability to recognize and provide emergency and routine ambulatory and First Level Referral Unit care for neonates, infants, children and adolescents and refer as may be appropriate,
3. Ability to perform procedures as indicated for children of all ages in the primary care setting,
4. Ability to recognize children with special needs and refer appropriately,
5. Ability to promote health and prevent diseases in children,
6. Ability to participate in National Programmes related to child health and in conformation with the Integrated Management of Neonatal and Childhood Illnesses (IMNCI) Strategy,
7. Ability to communicate appropriately and effectively.

(b) **Integration:** The teaching should be aligned and integrated horizontally and vertically in order to provide comprehensive care for neonates, infants, children and adolescents based on a sound knowledge of growth, development, disease and their clinical, social, emotional, psychological correlates in the context of national health priorities.

### TEACHING METHODS & HOURS

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2nd	--	--	--	--	--	2 weeks
3 <sup>rd</sup> Part I	20 hours	30 hours	5 hours		55 hours	4 weeks
3 <sup>rd</sup> Part II	20 hours	35 hours	10 hours		65hours	4 weeks
Total	40 hours	65 hours	15 hours		120 hours	10 weeks

Total marks	University Examination Marks			Internal Assessment	
	Theory	clinical	Viva	Theory	Practical + Viva
Theory=100 Practical =100	Paper 1=100	Long Case =40 Short Case =30 Record & Log Book=10	20(10+10) One external & one Internal in each Group	100	100
Pass marks	Mandatory 50% in theory and Practical (Practical = Practical +Viva) of Theory + Orals			50% combined in theory and Practical (not less than 40% in each) for eligibility of appearing the University Examination	

### Scheme of Internal assessment

Timing	Month	Theory	Practical &Viva
3 <sup>rd</sup> Professional Year part I	January	100	100
	August	100	100
3 <sup>rd</sup> Professional Year part II	June	100	100
	December	100	100

**3<sup>rd</sup> MBBS Part I Routine(Theory) for the Department of Pediatrics**  
**Total : 20 Duration: 1hr**

Sl. No.	Topic code	Topic	No of Hours	Method of teaching
<b>Normal Growth and Development</b>				
1	PE1.1	Define the terminologies Growth and development and discuss the factors affecting normal growth and development	1	LGT
	PE1.2	Discuss and describe the patterns of growth in infants, children and adolescents		
	PE1.5	Define development and discuss the normal developmental mile stones with respect to motor, behaviour, social, adaptive and language		
	PE1.6	Discuss the methods of assessment of development		
<b>Adolescent Health &amp; Common problems related to Adolescent Health</b>				
2	PE6.1	Define Adolescence and stages of adolescence	1	LGT
	PE6.2	Describe the physical, physiological and psychological changes during adolescence (Puberty)		
	PE6.3	Discuss the general health problems during adolescence		
<b>To promote and support optimal Breast Feeding for infants</b>				
3	PE7.1	Awareness on the cultural beliefs and practices of breast feeding	1	LGT
	PE7.2	Explain the physiology of lactation		
	PE7.3	Describe the composition and types of breast milk and discuss the differences between cow's milk and Human milk		
	PE7.4	Discuss the advantages of breast milk		
	PE7.6	Enumerate the baby friendly hospital initiatives		
<b>Normal Nutrition,assessment and monitoring</b>				
4	PE9.1	Describe the age related nutritional needs of infants, children and adolescents including micronutrients and vitamins	1	LGT
	PE9.2	Describe the tools and methods for assessment and classification of nutritional status of infants, children and adolescents		
	PE9.3	Explains the Calorific value of common Indian foods		
<b>The National Health Programs, NHM,RCH</b>				

5	PE17.1	State the vision and outline the goals, strategies and plan of action of NHM and other important national programs pertaining to maternal and child health including RMNCH A+, RBSK, RKSK, JSSK mission Indradhanush and ICDS	1	LGT
	PE18.1	List and explain the components, plan, outcome of Reproductive Child Health (RCH) program and appraise its monitoring and evaluation		
	PE18.2	Explain preventive interventions for child survival and safe motherhood		
	PE18.4	Provide intra-natal care and conduct a normal delivery in a simulated environment		
	PE18.5	Provide intra-natal care and observe the conduct of a normal delivery		
<b>National Programs, RCH-Universal immunizations Program</b>				
6	PE19.1	Explain the components of the Universal Immunization Program and the National Immunization Program	1	LGT
	PE19.2	Explain the epidemiology of Vaccine preventable diseases		
	PE19.3	Vaccine description with regard to classification of vaccines, strain used, dose, route, schedule, risks, benefits and side effects, indications and contraindications		
	PE19.5	Discuss immunization in special situations – HIV positive children, immunodeficiency, pre-term, organ transplants, those who received blood and blood products, splenectomised children, adolescents, travellers		
<b>Cardiovascular system-Heart Diseases</b>				
7	PE23.1	Discuss the Hemodynamic changes, clinical presentation, complications and management of Acyanotic Heart Diseases –VSD, ASD and PDA	1	LGT
8	PE23.2	Discuss the Hemodynamic changes, clinical presentation, complications and management of Cyanotic Heart Diseases – Fallot’s Physiology	1	LGT
9	PE23.3	Discuss the etio-pathogenesis, clinical presentation and management of cardiac failure in infant and children	1	LGT
	PE23.6	Discuss the etio-pathogenesis, clinical features and management of Infective endocarditis in children		
10	PE23.4	Discuss the etio-pathogenesis, clinical presentation and management of Acute Rheumatic Fever in children	1	LGT

	PE23.5	Discuss the clinical features, complications, diagnosis, management and prevention of Acute Rheumatic Fever		
<b>Diarrheal diseases and Dehydration</b>				
11	PE24.1	Discuss the etio-pathogenesis, classification, clinical presentation and management of diarrheal diseases in children	1	LGT
	PE24.2	Discuss the classification and clinical presentation of various types of diarrheal dehydration		
	PE24.3	Discuss the physiological basis of ORT, types of ORS and the composition of various types of ORS		
	PE24.5	Discuss the role of antibiotics, antispasmodics, anti-secretory drugs, probiotics, anti-emetics in acute diarrheal diseases		
12	PE24.6	Discuss the causes, clinical presentation and management of persistent diarrhoea in children	1	LGT
	PE24.7	Discuss the causes, clinical presentation and management of chronic diarrhoea in children		
	PE24.8	Discuss the causes, clinical presentation and management of dysentery in children		
<b>Acute and chronic liver disorder</b>				
13	PE26.1	Discuss the etio-pathogenesis, clinical features and management of acute hepatitis in children	1	LGT
	PE26.2	Discuss the etio-pathogenesis, clinical features and management of Fulminant Hepatic Failure in children		
	PE26.3	Discuss the etio-pathogenesis, clinical features and management of chronic liver diseases in children		
	PE26.4	Discuss the etio-pathogenesis, clinical features and management of Portal Hypertension in children		
<b>Respiratory System</b>				
14	PE28.1	Discuss the etio-pathogenesis, clinical features and management of Naso pharyngitis	1	LGT
	PE28.2	Discuss the etio-pathogenesis of Pharyngo Tonsillitis		
	PE28.3	Discuss the clinical features and management of Pharyngo Tonsillitis		
	PE28.4	Discuss the etio-pathogenesis, clinical features and management of Acute Otitis Media (AOM)		
	PE28.5	Discuss the etio-pathogenesis, clinical features and management of Epiglottitis		
	PE28.6	Discuss the etio-pathogenesis, clinical features and management of Acute laryngo- trachea-bronchitis		
	PE28.7	Discuss the etiology, clinical features and management of Stridor in children		
15	PE28.18	Describe the etio-pathogenesis, diagnosis, clinical features, management and prevention of lower respiratory infections including bronchiolitis, wheeze associated LRTI Pneumonia and empyema	1	LGT

	PE28.19	Describe the etio-pathogenesis, diagnosis, clinical features, management and prevention of asthma in children		
<b>Anaemia and other Hemato-oncologic disorders in children</b>				
16	PE29.1	Discuss the etio-pathogenesis, clinical features, classification and approach to a child with anaemia	1	LGT
	PE29.2	Discuss the etio-pathogenesis, clinical features and management of Iron Deficiency anaemia		
	PE29.3	Discuss the etiopathogenesis, clinical features and management of VIT B12, Folate deficiency anaemia		
	PE29.4	Discuss the etio-pathogenesis, clinical features and management of Hemolytic anemia, Thalassemia Major, Sickle cell anaemia, Hereditary spherocytosis, Auto-immune hemolytic anaemia and hemolytic uremic syndrome		
17	PE29.6	Discuss the cause of thrombocytopenia in children: describe the clinical features and management of Idiopathic Thrombocytopenic Purpura (ITP)	1	LGT
	PE29.7	Discuss the etiology, classification, pathogenesis and clinical features of Hemophilia in children		
	PE29.8	Discuss the etiology, clinical presentation and management of Acute Lymphoblastic Leukemia in children		
	PE29.9	Discuss the etiology, clinical presentation and management of lymphoma in children		
<b>Vaccine Preventable diseases-Tuberculosis</b>				
18	PE34.1	Discuss the epidemiology, clinical features, clinical types, complications of Tuberculosis in Children and Adolescents	1	LGT
	PE34.2	Discuss the various diagnostic tools for childhood tuberculosis		
	PE34.3	Discuss the various regimens for management of Tuberculosis as per National Guidelines		
	PE34.4	Discuss the preventive strategies adopted and the objectives and outcome of the National Tuberculosis Control Program		
19	PE34.14	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of fever in children	1	LGT
	PE34.15	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with exanthematous illnesses like Measles, Mumps, Rubella & Chicken pox		
	PE34.16	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with Diphtheria, Pertussis, Tetanus.		
	PE34.17	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with Typhoid		

20	PE34.18	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with Dengue, Chikungunya and other vector born diseases	1	LGT
	PE34.19	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of children with Common Parasitic infections, malaria, leishmaniasis, filariasis, helminthic infestations, amebiasis, giardiasis		
	PE34.20	Enumerate the common causes of fever and discuss the etiopathogenesis, clinical features, complications and management of child with Rickettsial diseases		

**3<sup>rd</sup> MBBS Part II Routine(Theory) for the Department of Pediatrics  
Total :20, Duration 1hr each**

SL no	Topic code	Topic	No of Hours	Method of Teaching
<b>Common problems related to Development -1 (Developmental delay , Cerebral palsy)</b>				
1	PE3.1	Define, enumerate and discuss the causes of developmental delay and disability including intellectual disability in children	1	LGT
	PE3.2	Discuss the approach to a child with developmental delay		
	PE3.8	Discuss the etio-pathogenesis, clinical presentation and multi- disciplinary approach in the management of Cerebral palsy		
<b>Common problems related to Development-2 (Scholastic backwardness, Learning Disabilities , Autism , ADHD)</b>				
2	PE4.1	Discuss the causes and approach to a child with scholastic backwardness	1	LGT
	PE4.2	Discuss the etiology, clinical features, diagnosis and management of a child with Learning Disabilities		
	PE4.3	Discuss the etiology, clinical features, diagnosis and management of a child with Attention Deficit Hyperactivity Disorder (ADHD)		
	PE4.4	Discuss the etiology, clinical features, diagnosis and management of a child with Autism		
<b>: Provide nutritional support , assessment and monitoring for common nutritional problems-1hrs</b>				
3	PE10.1	Define and describe the etio-pathogenesis, classify including WHO classification, clinical features, complication and management of Severe Acute Malnourishment (SAM) and Moderate Acute Malnutrition (MAM)	1	LGT
	PE10.2	Outline the clinical approach to a child with SAM and MAM		
<b>Care of the Normal New born, and High risk New born -5hrs</b>				
4	PE20.7	Discuss the etiology, clinical features and management of Birth asphyxia	1	LGT

	PE20.9	Discuss the etiology, clinical features and management of Birth injuries		
5	PE20.8	Discuss the etiology, clinical features and management of respiratory distress in New born including meconium aspiration and transient tachypnoea of newborn	1	LGT
6	PE20.10	Discuss the etiology, clinical features and management of Hemorrhagic disease of New born	1	LGT
	PE20.19	Discuss the etiology, clinical features and management of Neonatal hyperbilirubinemia		
7	PE20.11	Discuss the clinical characteristics, complications and management of Low birth weight (preterm and Small for gestation)	1	LGT
8	PE20.16	Discuss the etiology, clinical features and management of Neonatal Sepsis	1	LGT
	PE20.17	Discuss the etiology, clinical features and management of Perinatal infections		
<b>Genito-Urinary system-3hrs</b>				
9	PE21.1	Enumerate the etio-pathogenesis, clinical features, complications and management of Urinary Tract infection in children	1	LGT
	PE21.2	Enumerate the etio-pathogenesis, clinical features, complications and management of acute post-streptococcal Glomerular Nephritis in children		
10	PE21.5	Enumerate the etio-pathogenesis, clinical features, complications and management of Acute Renal Failure in children	1	LGT
	PE21.6	Enumerate the etio-pathogenesis, clinical features, complications and management of Chronic Renal Failure in Children		
11	PE21.14	Recognize common surgical conditions of the abdomen and genitourinary system and enumerate the indications for referral including acute and subacute intestinal obstruction, appendicitis, pancreatitis, perforation intussusception, Phimosis, undescended testis, Chordee, hypospadiasis, Torsion testis, hernia Hydrocele, Vulval Synechia	1	LGT
	PE21.15	Discuss and enumerate the referral criteria for children with genitourinary disorder		
<b>Approach to and recognition of a child with possible Rheumatologic problem -1hr</b>				
12	PE22.1	Enumerate the common Rheumatological problems in children. Discuss the clinical approach to recognition and referral of a child with	1	LGT



		Rheumatological problem		
<b>Pediatric Emergencies – Common Pediatric Emergencies-1hr</b>				
13	PE27.1	List the common causes of morbidity and mortality in the under five children	1	LGT
14	PE27.3	Describe the etio-pathogenesis of respiratory distress in children	1	LGT
	PE27.4	Describe the clinical approach and management of respiratory distress in children		
<b>Systemic Pediatrics-Central Nervous system -3hrs</b>				
15	PE30.1	Discuss the etio-pathogenesis, clinical features , complications, management and prevention of meningitis in children	1	LGT
	PE30.2	Distinguish bacterial, viral and tuberculous meningitis		
	PE30.3	Discuss the etio-pathogenesis, classification, clinical features, complication and management of Hydrocephalus in children		
16	PE30.8	Define epilepsy. Discuss the pathogenesis, clinical types, presentation and management of Epilepsy in children	1	LGT
	PE30.9	Define status Epilepticus. Discuss the clinical presentation and management		
17	PE30.10	Discuss the etio-pathogenesis, clinical features and management of Mental retardation in children	1	LGT
	PE30.11	Discuss the etio-pathogenesis, clinical features and management of children with cerebral palsy		
	PE30.12	Enumerate the causes of floppiness in an infant and discuss the clinical features, differential diagnosis and management		
<b>Allergic Rhinitis , Atopic Dermatitis, Bronchial Asthma , Urticaria Angioedema -1h</b>				
18	PE31.5	Discuss the etio-pathogenesis, clinical types, presentations, management and prevention of childhood Asthma	1	LGT
<b>Endocrinology-2hr</b>				
19	PE33.1	Describe the etio-pathogenesis clinical features, management of Hypothyroidism in children	1	LGT
20	PE33.4	Discuss the etio-pathogenesis, clinical types, presentations, complication and management of Diabetes mellitus in children	1	LGT

**2<sup>nd</sup> MBBS Routine (Clinical Posting) for the Department of Pediatrics**  
**Total: 10(2weeks, 5days per week) Duration: 3hr.**

**Clinical Posting**

SL no	Topic code	Topic	No of CP	No of Hours of each cp	Method of teaching
1	PE1.7	Perform Developmental assessment and interpret	1	3	CP
	PE2.2	Assessment of a child with failing to thrive including eliciting an appropriate history and examination			
2	PE2.5	Assessment of a child with short stature: Elicit history, perform examination, document and present	1	3	CP
3	PE6.8	Respecting patient privacy and maintaining confidentiality while dealing with adolescence	1	3	CP
	PE6.9	Perform routine Adolescent Health check up including eliciting history, performing examination including SMR (Sexual Maturity Rating), growth assessments (using Growth charts) and systemic exam including thyroid and Breast exam and the HEADSS screening			
4	PE7.5	Observe the correct technique of breast feeding and distinguish right from wrong techniques	1	3	CP
	PE7.7	Perform breast examination and identify common problems during lactation such as retracted nipples, cracked nipples, breast engorgement, breast abscess			
	PE8.4	Elicit history on the Complementary Feeding habits			
	PE9.4	Elicit document and present an appropriate nutritional history and perform a dietary recall			
5	PE9.5	Calculate the age related calorie requirement in Health and Disease and identify gap	1	3	CP
	PE9.6	Assess and classify the nutrition status of infants, children and adolescents and recognize deviations			
	PE9.7	Plan an appropriate diet in health and disease			
	PE18.3	Conduct Antenatal examination of women independently and apply at-risk approach in antenatal care	1	3	CP
	PE18.6	Perform Postnatal assessment of newborn and mother, provide advice on breast feeding, weaning and on family planning			
	PE18.7	Educate and counsel caregivers of children			
7	PE18.8	Observe the implementation of the program by visiting the Rural Health Centre	1	3	CP
8	PE19.6	Assess patient for fitness for immunization and prescribe an age appropriate immunization schedule	1	3	CP
	PE19.11	Document Immunization in an immunization record			

Video/DOAP					
9	PE7.8	Educate mothers on ante natal breast care and prepare mothers for lactation	1	3	DOAP
	PE7.9	Educate and counsel mothers for best practices in Breast feeding			
	PE7.10	Respects patient privacy			
10	PE7.11	Participate in Breast Feeding Week Celebration(Vedio)	1	3	DOAP
	PE8.5	Counsel and educate mothers on the best practices in Complimentary Feeding			

**3<sup>rd</sup> MBBS Part I Routine (Clinical Posting) for the Department of Pediatrics  
Total: 24(4weeks, 6days per week) Duration: 3hr.**

**Clinical Posting**

SL no	Topic code	Topic	No of CP	No of Hours of each cp	Method of teaching
1	PE22.2	Counsel a patient with Chronic illness	3	3	CP
	PE23.7	Elicit appropriate history for a cardiac disease, analyse the symptoms e.g. breathlessness, chest pain, tachycardia, feeding difficulty, failing to thrive, reduced urinary output, swelling, syncope, cyanotic spells, Suck rest cycle, frontal swelling in infants. Document and present			
	PE23.8	Identify external markers of a cardiac disease e.g. Cyanosis, Clubbing, dependent edema, dental caries, arthritis, erythema rash, chorea, subcutaneous nodules, Oslers node, Janeway lesions and document			
	PE23.9	Record pulse, blood pressure, temperature and respiratory rate and interpret as per the age			
	PE23.10	Perform independently examination of the cardiovascular system – look for precordial bulge, pulsations in the precordium, JVP and its significance in children and infants, relevance of percussion in Pediatric examination, Auscultation and other system examination and document			
	PE23.11	Develop a treatment plan and prescribe appropriate drugs including fluids in cardiac diseases, anti -failure drugs, and inotropic agents			
	PE23.12	Interpret a chest X ray and recognize Cardiomegaly			
	PE23.13	Choose and Interpret blood reports in Cardiac illness			
	PE23.14	Interpret Pediatric ECG			
	PE23.15	Use the ECHO reports in management of cases			

2	PE24.9	Elicit, document and present history pertaining to diarrheal diseases	2	3	CP
	PE24.10	Assess for signs of dehydration, document and present			
	PE24.11	Apply the IMNCI guidelines in risk stratification of children with diarrheal dehydration and refer			
	PE24.12	Perform and interpret stool examination including Hanging Drop			
	PE24.13	Interpret RFT and electrolyte report			
	PE24.14	Plan fluid management as per the WHO criteria			
3	PE26.5	Elicit document and present the history related to diseases of Gastrointestinal system	2	3	CP
	PE26.6	Identify external markers for GI and Liver disorders e.g.. Jaundice, Pallor, Gynaecomastia, Spider angioma, Palmar erythema, Ichthyosis, Caput medusa, Clubbing, Failing to thrive, Vitamin A and D deficiency			
	PE26.7	Perform examination of the abdomen, demonstrate organomegaly, ascites etc.			
	PE26.8	Analyse symptoms and interpret physical signs to make a provisional/ differential diagnosis			
	PE26.9	Interpret Liver Function Tests, viral markers, ultra sonogram report			
PE26.13	Counsel and educate patients and their family appropriately on liver diseases				
4	PE28.9	Elicit, document and present age appropriate history of a child with upper respiratory problem including Stridor	2	3	CP
	PE28.13	Analyse the clinical symptoms and interpret physical findings and make a provisional / differential diagnosis in a child with ENT symptoms			
	PE28.14	Develop a treatment plan and document appropriately in a child with upper respiratory symptoms			
	PE28.15	Stratify risk in children with stridor using IMNCI guidelines			
	PE28.16	Interpret blood tests relevant to upper respiratory problems			
	PE28.17	Interpret X-ray of the paranasal sinuses and mastoid; and /or use written report in case of management Interpret CXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in pediatric chest X-rays			
5	PE29.10	Elicit, document and present the history related to Hematology	3	3	CP
	PE29.11	Identify external markers for hematological disorders e.g.. Jaundice, Pallor, Petechiae purpura, Ecchymosis, Lymphadenopathy, bone tenderness, loss of weight, Mucosal and large joint bleed			
	PE29.12	Perform examination of the abdomen, demonstrate organomegaly			
	PE29.13	Analyse symptoms and interpret physical signs to make a provisional/ differential diagnosis			
	PE29.14	Interpret CBC, LFT			
	PE29.18	Enumerate the referral criteria for Hematological			

		conditions			
	PE29.19	Counsel and educate patients about prevention and treatment of anemia			
6	PE34.5	Able to elicit, document and present history of contact with tuberculosis in every patient encounter	2	3	CP
	PE34.6	Identify a BCG scar			
	PE34.7	Interpret a Mantoux test			
	PE34.8	Interpret a Chest Radiograph			
	PE34.9	Interpret blood tests in the context of laboratory evidence for tuberculosis			
	PE34.10	Discuss the various samples for demonstrating the organism e.g. Gastric Aspirate, Sputum , CSF, FNAC			
<b>Video/DOAP</b>					
7	PE18.4	Provide intra-natal care and conduct a normal delivery in a simulated environment	1	3	DOAP
	PE18.5	Provide intra-natal care and observe the conduct of a normal delivery			
8	PE19.7	Educate and counsel a patient for immunization	1	3	DOAP
	PE19.10	Observe the handling and storing of vaccines			
	PE19.12	Observe the administration of UIP vaccines			
	PE19.14	Practice Infection control measures and appropriate handling of the sharps			
9	PE19.13	Demonstrate the correct administration of different vaccines in a mannequin	1	3	DOAP
10	PE24.15	Perform NG tube insertion in a manikin	1	3	DOAP
	PE24.16	Perform IV cannulation in a model			
	PE24.17	Perform Interosseous insertion model			
	PE26.10	Demonstrate the technique of liver biopsy in a Perform Liver Biopsy in a simulated environment			
11	PE28.10	Perform otoscopic examination of the ear	1	3	DOAP
	PE28.11	Perform throat examination using tongue depressor			
	PE28.12	Perform examination of the nose			

12	PE29.15	Perform and interpret peripheral smear	1	3	DOAP
13	PE34.11	Perform AFB staining	1	3	DOAP
<b>Debate/OSPE</b>					
14	PE17.2	Analyse the outcomes and appraise the monitoring and evaluation of NHM	1	3	Debate
	PE2.3	Counselling a parent with failing to thrive child			OSPE
<b>Skill Lab</b>					
15	PE30.23	Perform in a mannequin lumbar puncture. Discuss the indications, contraindication of the procedure	1	3	SL
<b>Demonstration</b>					
16	PE27.9	Discuss oxygen therapy, in Pediatric emergencies and modes of administration	1	3	SL
	PE27.10	Observe the various methods of administering Oxygen			
	PE31.11	Observe administration of Nebulisation			

**3<sup>rd</sup> MBBS Part II Routine(Clinical Posting) for the Department of Pediatrics  
Total: 24(4weeks, 6days per week) Duration: 3hr.**

<b>Clinical Posting</b>					
SL no	Topic code	Topic	No of CP	No of Hours of each cp	Method of teaching
1	PE3.3	Assessment of a child with developmental delay - Elicit document and present history	1	3	CP
2	PE10.3	Assessment of a patient with SAM and MAM, diagnosis, classification and planning management including hospital and community based intervention, rehabilitation and prevention	1	3	CP
	PE10.4	Identify children with under nutrition as per IMNCI criteria and plan referral			
	PE10.5	Counsel parents of children with SAM and MAM			
3	PE11.3	Assessment of a child with obesity with regard to eliciting history including physical activity, charting and dietary recall	1	3	CP
	PE11.4	Examination including calculation of BMI, measurement of waist hip ratio, identifying external markers like acanthosis, striae, pseudogynaecomastia etc			

	PE11.5	Calculate BMI, document in BMI chart and interpret			
4	PE12.3	Identify the clinical features of dietary deficiency / excess of Vitamin A	2	3	CP
	PE12.4	Diagnose patients with Vitamin A deficiency, classify and plan management			
	PE12.8	Identify the clinical features of dietary deficiency of Vitamin D			
	PE12.9	Assess patients with Vitamin D deficiency, diagnose, classify and plan management			
	PE12.17	Identify the clinical features of Vitamin B complex deficiency			
	PE12.18	Diagnose patients with Vitamin B complex deficiency and plan management			
	PE12.21	Identify the clinical features of Vitamin C deficiency			
5	PE13.3	Identify the clinical features of dietary deficiency of Iron and make a diagnosis	1	3	CP
	PE13.4	Interpret hemogram and Iron Panel			
	PE13.5	Propose a management plan for Fe deficiency anaemia			
6	PE20.4	Assessment of a normal neonate	1	3	CP
7	PE21.8	Elicit, document and present a history pertaining to diseases of the Genitourinary tract	1	3	CP
	PE21.9	Identify external markers for Kidney disease, like Failing to thrive, hypertension, pallor, Ichthyosis, anasarca			
	PE21.10	Analyse symptom and interpret the physical findings and arrive at an appropriate provisional / differential diagnosis			
	PE21.11	Perform and interpret the common analytes in a Urine examination			
	PE21.12	Interpret report of Plain X Ray of KUB			
	PE21.13	Enumerate the indications for and Interpret the written report of Ultra sonogram of KUB			
	PE21.16	Counsel / educate a patient for referral appropriately			
9	PE27.23	Assess for signs of severe dehydration	1	3	CP
10	PE30.17	Elicit document and present an age appropriate history pertaining to the CNS	2	3	CP
	PE30.18	Demonstrate the correct method for physical examination of CNS including identification of external markers. Document and present clinical findings			
	PE30.19	Analyse symptoms and interpret physical findings and propose a provisional / differential diagnosis			
	PE30.21	Enumerate the indication and discuss the limitations of EEG, CT, MRI			
	PE30.22	Interpret the reports of EEG, CT, MRI			

11	PE31.2	Recognize the clinical signs of Allergic Rhinitis	1	3	CP
	PE31.4	Identify Atopic dermatitis and manage			
	PE31.6	Recognise symptoms and signs of Asthma			
	PE31.7	Develop a treatment plan for Asthma appropriate to clinical presentation & severity			
	PE31.8	Enumerate criteria for referral			
	PE31.9	Interpret CBC and CX Ray in Asthma			
	PE31.10	Enumerate the indications for PFT			
12	PE32.2	Identify the clinical features of Down's Syndrome	1	3	CP
	PE32.3	Interpret normal Karyotype and recognize Trisomy 21			
	PE32.5	Counsel parents regarding 1. Present child 2. Risk in the next pregnancy			
13	PE32.7	Identify the clinical features of Turner Syndrome	1	3	CP
	PE32.8	Interpret normal Karyotype and recognize the Turner Karyotype			
	PE32.10	Counsel parents regarding 1. Present child 2. Risk in the next pregnancy			
14	PE32.12	Identify the clinical features of Klinefelter Syndrome	1	3	CP
	PE32.13	Interpret normal Karyotype and recognize the Klinefelter Karyotype			
15	PE33.2	Recognize the clinical signs of Hypothyroidism and refer	1	3	CP
	PE33.3	Interpret and explain neonatal thyroid screening report			
	PE33.5	Interpret Blood sugar reports and explain the diagnostic criteria for Type 1 Diabetes			
	PE33.6	Perform and interpret Urine Dip Stick for Sugar			
16	PE33.7	Perform genital examination and recognize Ambiguous Genitalia and refer appropriately	1	3	CP
	PE33.9	Perform Sexual Maturity Rating (SMR) and interpret			
	PE33.10	Recognize precocious and delayed Puberty and refer			
	PE33.11	Identify deviations in growth and plan appropriate referral			
<b>Video/DOAP</b>					
17	PE16.2	Assess children <2 months using IMNCI Guidelines	1	3	DOAP
	PE16.3	Assess children >2 to 5 years using IMNCI guidelines and Stratify Risk			
	PE20.18	Identify and stratify risk in a sick neonate using IMNCI guidelines			



18	PE20.3	Perform Neonatal resuscitation in a manikin	1	3	DOAP
	PE20.5	Counsel / educate mothers on the care of neonates			
	PE20.6	Explain the follow up care for neonates including Breast Feeding, Temperature maintenance, immunization, importance of growth monitoring and red flags			
19	PE27.14	Assess emergency signs and prioritize	1	3	DOAP
	PE27.15	Assess airway and breathing: recognise signs of severe respiratory distress. Check for cyanosis, severe chest indrawing, grunting			
	PE27.16	Assess airway and breathing. Demonstrate the method of positioning of an infant & child to open airway in a simulated environment			
	PE27.17	Assess airway and breathing: administer oxygen using correct technique and appropriate flow rate			
20	PE27.18	Assess airway and breathing: perform assisted ventilation by Bag and mask in a simulated environment	1	3	DOAP
	PE27.19	Check for signs of shock i.e. pulse, Blood pressure, CRT			
	PE27.20	Secure an IV access in a simulated environment			
	PE27.21	Choose the type of fluid and calculate the fluid requirement in shock			
21	PE27.22	Assess level of consciousness & provide emergency treatment to a child with convulsions/ coma - Position an unconscious child - Position a child with suspected trauma - Administer IV/per rectal Diazepam for a convulsing child in a simulated environment	1	3	DOAP
	PE27.30	Demonstrate confidentiality with regard to abuse			
	PE27.31	Assess child for signs of abuse			
	PE27.32	Counsel parents of dangerously ill / terminally ill child to break a bad news			
	PE27.33	Obtain Informed Consent			
	PE27.34	Willing to be a part of the ER team			

	PE27.35	Attends to emergency calls promptly			
<b>Skill lab</b>					
22	PE15.6	Demonstrate the steps of inserting an IV cannula in a model	1	3	SL
	PE15.7	Demonstrate the steps of inserting an interosseous line in a mannequin			
23	PE27.27	Assess for hypothermia and maintain temperature	1	3	SL
	PE27.28	Provide BLS for children in manikin			
	PE29.17	Demonstrate performance of bone marrow aspiration in manikin			

**3<sup>rd</sup> MBBS Part I Routine(SGD/Tutorial/seminar) for the Department of Pediatrics**  
**Total 30, duration:1hr**

SL no	Topic code	Topic	No of Hours	Method of teaching
<b>Normal Growth and Development - hr</b>				
1	PE1.3	Discuss and describe the methods of assessment of growth including use of WHO and Indian national standards. Enumerate the parameters used for assessment of physical growth in infants, children and adolescents	1	SGD
	PE1.4	Perform Anthropometric measurements, document in growth charts and interpret		
2	PE1.7	Perform Developmental assessment and interpret	1	SGD
<b>Common problems related to Growth</b>				
3	PE2.1	Discuss the etio-pathogenesis, clinical features and management of a child who fails to thrive	1	SGD
4	PE2.4	Discuss the etio-pathogenesis, clinical features and management of a child with short stature	1	SGD
	PE2.5	Assessment of a child with short stature: Elicit history, perform examination, document and present		
	PE2.6	Enumerate the referral criteria for growth related problems		

<b>Common problems related to behavior - hrs</b>				
<b>5</b>	PE5.10	Discuss the role of child guidance clinic in children with behavioural problems and the referral criteria	1	SGD
	PE5.11	Visit to Child Guidance Clinic and observe functioning		
<b>Adolescent Health &amp; common problems related to Adolescent Health Number of competencies: (13)</b>				
<b>6</b>	PE6.11	Visit to the Adolescent Clinic	1	SGD
	PE6.12	Enumerate the importance of obesity and other NCD in adolescents		
<b>To promote and support optimal Breast feeding for Infants - hr</b>				
<b>7</b>	PE7.8	Educate mothers on ante natal breast care and prepare mothers for lactation	1	SGD
	PE7.9	Educate and counsel mothers for best practices in Breast feeding		
	PE7.10	Respects patient privacy		
	PE7.11	Participate in Breast Feeding Week Celebration		
<b>Complementary Feeding</b>				
<b>8</b>	PE8.1	Define the term Complementary Feeding	1	SGD
	PE8.2	Discuss the principles, the initiation, attributes, frequency, techniques and hygiene related to Complementary Feeding including IYCF		
	PE8.3	Enumerate the common complimentary foods		
<b>Obesity in children</b>				
<b>9</b>	PE11.1	Describe the common etiology, clinical features and management of obesity in children	1	SGT
	PE11.2	Discuss the risk approach for obesity and discuss the prevention strategies		
	PE11.6	Discuss criteria for referral		
<b>Micronutrients in Health and disease-1 (Vitamins ADEK, B Complex and C)</b>				
<b>10</b>	PE12.6	Discuss the RDA, dietary sources of Vitamin D and their role in health and disease	2	SGT
	PE12.7	Describe the causes, clinical features, diagnosis and management of Deficiency / excess of Vitamin D (Rickets and Hypervitaminosis D)		
	PE12.10	Discuss the role of screening for Vitamin D deficiency		

	PE12.11	Discuss the RDA, dietary sources of Vitamin E and their role in health and disease		
	PE12.12	Describe the causes, clinical features, diagnosis and management of deficiency of Vitamin E		
	PE12.13	Discuss the RDA, dietary sources of Vitamin K and their role in health and disease		
	PE12.14	Describe the causes, clinical features, diagnosis management and prevention of deficiency of Vitamin K		
	PE12.15	Discuss the RDA, dietary sources of Vitamin B and their role in health and disease		
	PE12.16	Describe the causes, clinical features, diagnosis and management of deficiency of B complex Vitamins		
	PE12.17	Identify the clinical features of Vitamin B complex deficiency		
	PE12.18	Diagnose patients with Vitamin B complex deficiency and plan management		
	PE12.19	Discuss the RDA , dietary sources of Vitamin C and their role in Health and disease		
	PE12.20	Describe the causes, clinical features, diagnosis and management of deficiency of Vitamin C (scurvy)		
<b>National Programs, RCH - Universal Immunizations program</b>				
<b>11</b>	PE19.4	Define cold chain and discuss the methods of safe storage and handling of vaccines	<b>1</b>	<b>SGD</b>
	PE19.9	Describe the components of safe vaccine practice – Patient education/ counselling; adverse events following immunization, safe injection practices, documentation and Medico-legal implications		
	PE19.10	Observe the handling and storing of vaccines		
<b>12</b>	PE19.7	Educate and counsel a patient for immunization	<b>1</b>	<b>SGD</b>
	PE19.8	Demonstrate willingness to participate in the National and sub national immunisation days		
	PE19.11	Document Immunization in an immunization record		
	PE19.15	Explain the term implied consent in Immunization services		
<b>13</b>	PE19.12	Observe the administration of UIP vaccines	<b>1</b>	<b>SGD</b>
	PE19.13	Demonstrate the correct administration of different vaccines in a mannequin		
	PE19.14	Practice Infection control measures and appropriate handling of the sharps		
<b>14</b>	PE19.16	Enumerate available newer vaccines and their indications including pentavalent pneumococcal, rotavirus, JE, typhoid IPV & HPV	<b>1</b>	<b>SGD</b>
<b>Cardiovascular system- Heart Diseases</b>				
<b>15</b>	PE23.12	Interpret a chest X ray and recognize Cardiomegaly	<b>1</b>	<b>SGD</b>
	PE23.13	Choose and Interpret blood reports in Cardiac illness		

16	PE23.14	Interpret Pediatric ECG	1	SGD
	PE23.15	Use the ECHO reports in management of cases		
<b>Diarrhoeal diseases and Dehydration</b>				
17	PE24.4	Discuss the types of fluid used in Paediatric diarrheal diseases and their composition	1	SGD
18	PE24.14	Plan fluid management as per the WHO criteria	2	Skill Lab
	PE24.15	Perform NG tube insertion in a manikin		
	PE24.16	Perform IV cannulation in a model		
	PE24.17	Perform Interosseous insertion model		
<b>Acute and chronic liver disorders</b>				
19	PE26.9	Interpret Liver Function Tests, viral markers, ultra sonogram report	1	SGD
	PE26.10	Demonstrate the technique of liver biopsy in a Perform Liver Biopsy in a simulated environment		
	PE26.11	Enumerate the indications for Upper GI endoscopy		
20	PE26.12	Discuss the prevention of Hep B infection – Universal precautions and Immunisation	1	SGD
	PE26.13	Counsel and educate patients and their family appropriately on liver diseases		
<b>Respiratory system</b>				
21	PE28.8	Discuss the types, clinical presentation, and management of foreign body aspiration in infants and children	1	SGD
22	PE28.10	Perform otoscopic examination of the ear	1	SGD(OPD)
	PE28.11	Perform throat examination using tongue depressor		
	PE28.12	Perform examination of the nose		
23	PE28.16	Interpret blood tests relevant to upper respiratory problems	1	SGD
	PE28.17	Interpret X-ray of the paranasal sinuses and mastoid; and /or use written report in case of management Interpret CXR in foreign body aspiration and lower respiratory tract infection, understand the significance of thymic shadow in pediatric chest X-rays		
24	PE28.20	Counsel the child with asthma on the correct use of inhalers in a simulated environment	1	SGD
<b>Anemia and other Hemato-oncologic disorders in children</b>				
25	PE29.5	Discuss the National Anaemia Control Program	1	SGD

26	PE29.14	Interpret CBC, LFT	1	SGD
	PE29.15	Perform and interpret peripheral smear		
27	PE29.16	Discuss the indications for Hemoglobin electrophoresis and interpret report	1	SGD
	PE29.20	Enumerate the indications for splenectomy and precautions		
<b>Vaccine preventable Diseases - Tuberculosis</b>				
28	PE34.10	Discuss the various samples for demonstrating the organism e.g. Gastric Aspirate, Sputum , CSF, FNAC	1	SGD( Micro Lab)
	PE34.11	Perform AFB staining		
	PE34.12	Enumerate the indications and discuss the limitations of methods of culturing M.Tuberculi		

<b>3<sup>rd</sup> MBBS Part II Routine(SGD/Tutorial/Seminar) for the Department of Pediatrics</b>				
<b>Total: 35, Duration :1Hr</b>				
SL no	Topic code	Topic	No of Hours	Method of teaching
<b>Common problems related to Development -1 (Developmental delay , Cerebral palsy)- 3hr</b>				
1	PE 3.6	Discuss the referral criteria for children with developmental delay	1	SGD
	PE 3.7	Visit a Child Developmental Unit and observe its functioning		
<b>Common problems related to Development-2 (Scholastic backwardness, Learning Disabilities , Autism , ADHD)</b>				
2	PE 4.5	Discuss the role of Child Guidance clinic in children with Developmental problems	1	SGD
	PE 4.6	Visit to the Child Guidance Clinic		
<b>Provide nutritional support , assessment and monitoring for common nutritional problems</b>				
3	PE10.4	Identify children with under nutrition as per IMNCI criteria and plan referral	1	SGD
<b>Micronutrients in Health and disease-1 (Vitamins ADEK, B Complex and C)</b>				

4	PE 12.1	Discuss the RDA, dietary sources of Vitamin A and their role in Health and disease	1	SGD
	PE 12.2	Describe the causes, clinical features, diagnosis and management of Deficiency / excess of Vitamin A		
	PE 12.5	Discuss the Vitamin A prophylaxis program and their recommendations		
5	PE12.8	Identify the clinical features of dietary deficiency of Vitamin D	1	SGD
	PE 12.9	Assess patients with Vitamin D deficiency, diagnose, classify and plan management		
<b>Micronutrients in Health and disease -2: Iron, Iodine, Calcium, Magnesium )</b>				
6	PE13.1	Discuss the RDA, dietary sources of Iron and their role in health and disease	1	SGD
	PE13.2	Describe the causes, diagnosis and management of Fe deficiency		
	PE13.6	Discuss the National anaemia control program and its recommendations		
<b>Fluid and electrolyte balance )</b>				
7	PE15.1	Discuss the fluid and electrolyte requirement in health and disease	1	SGD
	PE15.2	Discuss the clinical features and complications of fluid and electrolyte imbalance and outline the management		
	PE15.3	Calculate the fluid and electrolyte requirement in health		
8	PE15.4	Interpret electrolyte report	1	SGD
	PE15.5	Calculate fluid and electrolyte imbalance		
	PE33.5	Interpret Blood sugar reports and explain the diagnostic criteria for Type 1 Diabetes		
	PE33.6	Perform and interpret Urine Dip Stick for Sugar		
<b>Integrated Management of Neonatal and Childhood Illnesses (IMNCI) Guideline )</b>				
9	PE16.1	Explain the components of Integrated Management of Neonatal and Childhood Illnesses (IMNCI) guidelines and method of Risk stratification	1	SGD
	PE20.18	Identify and stratify risk in a sick neonate using IMNCI guidelines		
<b>Care of the Normal New born, and High risk New born</b>				
10	PE20.1	Define the common neonatal nomenclatures including the classification and describe the characteristics of a Normal Term Neonate and High Risk Neonates	1	SGD
	PE20.2	Explain the care of a normal neonate		

11	PE20.12	Discuss the temperature regulation in neonates, clinical features and management of Neonatal Hypothermia	1	SGD
	PE20.13	Discuss the temperature regulation in neonates, clinical features and management of Neonatal Hypoglycemia		
	PE20.14	Discuss the etiology, clinical features and management of Neonatal hypocalcemia		
	PE20.15	Discuss the etiology, clinical features and management of Neonatal seizures		
12	PE20.20	Identify clinical presentations of common surgical conditions in the new born including TEF, esophageal atresia, anal atresia, cleft lip and palate, congenital diaphragmatic hernia and causes of acute abdomen	1	SGD
<b>Genito-Urinary system )</b>				
13	PE21.3	Discuss the approach and referral criteria to a child with Proteinuria	1	SGD
	PE21.11	Perform and interpret the common analytes in a Urine examination		
	PE21.12	Interpret report of Plain X Ray of KUB		
14	PE21.4	Discuss the approach and referral criteria to a child with Hematuria	1	SGD
	PE21.7	Enumerate the etio-pathogenesis, clinical features, complications and management of Wilms Tumor		
15	PE21.17	Describe the etiopathogenesis, grading, clinical features and management of hypertension in children	1	SGD
<b>Pediatric Emergencies – Common Pediatric Emergencies</b>				
16	PE27.2	Describe the etio-pathogenesis, clinical approach and management of cardiorespiratory arrest in children	1	SGD
17	PE27.5	Describe the etio-pathogenesis, clinical approach and management of Shock in children	1	SGD
	PE27.6	Describe the etio-pathogenesis, clinical approach and management of Status epilepticus		
18	PE27.7	Describe the etio-pathogenesis, clinical approach and management of an unconscious child	1	SGD
	PE27.8	Discuss the common types, clinical presentations and management of poisoning in children		
19	PE27.11	Explain the need and process of triage of sick children brought to health facility	1	SGD
	PE27.12	Enumerate emergency signs and priority signs		
	PE27.13	List the sequential approach of assessment of emergency and priority signs		
20	PE27.24	Monitoring and maintaining temperature: define hypothermia. Describe the clinical features, complications and management of Hypothermia	1	SGD
	PE27.25	Describe the advantages and correct method of keeping an infant warm by skin to skin contact		



	PE27.26	Describe the environmental measures to maintain temperature		
21	PE27.27	Assess for hypothermia and maintain temperature	1	SGD
	PE27.28	Provide BLS for children in manikin		
22	PE27.30	Demonstrate confidentiality with regard to abuse	1	SGD
	PE27.31	Assess child for signs of abuse		
23	PE27.32	Counsel parents of dangerously ill / terminally ill child to break a bad news	1	SGD
	PE27.33	Obtain Informed Consent		
	PE27.34	Willing to be a part of the ER team		
	PE27.35	Attends to emergency calls promptly		
<b>Systemic Pediatrics-Central Nervous system</b>				
24	PE30.4	Discuss the etio-pathogenesis, classification, clinical features, and management of Microcephaly in children	1	SGD
	PE30.5	Enumerate the Neural tube defects. Discuss the causes, clinical features, types, and management of Neural Tube defect		
25	PE30.6	Discuss the etio-pathogenesis, clinical features, and management of Infantile hemiplegia	1	SGD
26	PE30.7	Discuss the etio-pathogenesis, clinical features, complications and management of Febrile seizures in children	1	SGD
27	PE30.13	Discuss the etio-pathogenesis, clinical features, management and prevention of Poliomyelitis in children	1	SGD
	PE30.14	Discuss the etio-pathogenesis, clinical features and management of Duchene muscular dystrophy		
28	PE30.15	Discuss the etio-pathogenesis, clinical features and management of Ataxia in children	1	SGD
	PE30.16	Discuss the approach to and management of a child with headache		
29	PE30.20	Interpret and explain the findings in a CSF analysis	1	SGD
	PE30.23	Perform in a mannequin lumbar puncture. Discuss the indications, contraindication of the procedure		
<b>Allergic Rhinitis , Atopic Dermatitis, Bronchial Asthma , Urticaria Angioedema</b>				
30	PE31.1	Describe the etio-pathogenesis, management and prevention of Allergic Rhinitis in Children	1	SGD
	PE31.2	Recognize the clinical signs of Allergic Rhinitis		
	PE31.3	Describe the etio-pathogenesis, clinical features and management of Atopic dermatitis in Children		
	PE31.12	Discuss the etio-pathogenesis, clinical features and complications and management of Urticaria		

		Angioedema		
31	PE31.9	Interpret CBC and CX Ray in Asthma	1	SGD
	PE31.10	Enumerate the indications for PFT		
	PE31.11	Observe administration of Nebulisation		
<b>Chromosomal Abnormalities</b>				
32	PE32.1	Discuss the genetic basis, risk factors, complications, prenatal diagnosis, management and genetic counselling in Down's Syndrome	1	SGD
33	PE32.6	Discuss the genetic basis, risk factors, clinical features, complications, prenatal diagnosis, management and genetic counselling in Turner's Syndrome	1	SGD
	PE32.11	Discuss the genetic basis, risk factors, complications, prenatal diagnosis, management and genetic counselling in Klinefelter Syndrome		
<b>Endocrinology</b>				
34	PE33.2	Recognize the clinical signs of Hypothyroidism and refer	1	SGD
	PE33.3	Interpret and explain neonatal thyroid screening report		
35	PE33.8	Define precocious and delayed Puberty	1	SGD
	PE33.9	Perform Sexual Maturity Rating (SMR) and interpret		
	PE33.10	Recognize precocious and delayed Puberty and refer		
	PE33.11	Identify deviations in growth and plan appropriate referral		

**3<sup>rd</sup> MBBS Part I SDL for the Department of Pediatrics**  
**Total :5, Duration :1Hr**

SL no	Topic code	Topic	No of session	No of Hours of each session	Method of teaching
<b>Common problems related to behavior</b>					
1	PE5.1	Describe the clinical features, diagnosis and management of thumb sucking	1	1	Seminar
	PE5.2	Describe the clinical features, diagnosis and management of Feeding problems			
	PE5.3	Describe the clinical features, diagnosis and management of nail biting			
	PE5.4	Describe the clinical features, diagnosis and management of Breath Holding spells			

	PE5.5	Describe the clinical features, diagnosis and management of temper tantrums			
	PE5.6	Describe the clinical features, diagnosis and management of Pica			
	PE5.7	Describe the clinical features, diagnosis and management of Fussy infant			
	PE5.8	Discuss the etiology, clinical features and management of Enuresis			
	PE5.9	Discuss the etiology, clinical features and management of Encopresis			
<b>Adolescent Health &amp; common problems related to Adolescent Health Number of competencies</b>					
2	PE6.4	Describe adolescent sexuality and common problems related to it	1	1	Seminar
	PE6.5	Explain the Adolescent Nutrition and common nutritional problems			
	PE6.6	Discuss the common Adolescent eating disorders (Anorexia Nervosa, Bulimia)			
	PE6.7	Describe the common mental health problems during adolescence			
3	PE6.10	Discuss the objectives and functions of AFHS (Adolescent Friendly Health Services) and the referral criteria	1	1	Seminar
	PE6.13	Enumerate the prevalence and the importance of recognition of sexual drug abuse in adolescents and children			
<b>Cardiovascular system- Heart Diseases</b>					
4	PE23.16	Discuss the indications and limitations of Cardiac catheterization	1	1	Seminar
	PE23.17	Enumerate some common cardiac surgeries like BT shunt, Potts and Waterston's and corrective surgeries			
	PE23.18	Demonstrate empathy while dealing with children with cardiac diseases in every patient encounter			
<b>Vaccine preventable Diseases - Tuberculosis</b>					
5	PE34.13	Enumerate the newer diagnostic tools for Tuberculosis including BACTEC CBNAAT and their indications	1	1	Seminar

**3<sup>rd</sup> MBBS Part II SDL 2020-2021 for the Department of Pediatrics  
Total :5, Duration:1Hr**

SL no	Topic code	Topic	No of session	Method of teaching	No of Hours
<b>Common problems related to Development -1 (Developmental delay , Cerebral palsy)</b>					

1	PE3.5	Discuss the role of the child developmental unit in management of developmental delay	1	Seminar	1
<b>Obesity in children</b>					
2	PE11.1	Describe the common etiology, clinical features and management of obesity in children	1	Seminar	1
	PE11.2	Discuss the risk approach for obesity and discuss the prevention strategies			
	PE11.6	Discuss criteria for referral			
3	PE12.6	Discuss the RDA, dietary sources of Vitamin D and their role in health and disease	1	Seminar	1
	PE12.7	Describe the causes, clinical features, diagnosis and management of Deficiency / excess of Vitamin D (Rickets and Hypervitaminosis D)			
	PE12.10	Discuss the role of screening for Vitamin D deficiency			
	PE12.11	Discuss the RDA, dietary sources of Vitamin E and their role in health and disease			
	PE12.12	Describe the causes, clinical features, diagnosis and management of deficiency of Vitamin E			
	PE12.13	Discuss the RDA, dietary sources of Vitamin K and their role in health and disease			
	PE12.14	Describe the causes, clinical features, diagnosis management and prevention of deficiency of Vitamin K			
	PE12.15	Discuss the RDA, dietary sources of Vitamin B and their role in health and disease			
	PE12.16	Describe the causes, clinical features, diagnosis and management of deficiency of B complex Vitamins			
	PE12.17	Identify the clinical features of Vitamin B complex deficiency			
	PE12.18	Diagnose patients with Vitamin B complex deficiency and plan management			
	PE12.19	Discuss the RDA , dietary sources of Vitamin C and their role in Health and disease			
PE12.20	Describe the causes, clinical features, diagnosis and management of deficiency of Vitamin C (scurvy)				
<b>Micronutrients in Health and disease -2: Iron, Iodine, Calcium, Magnesium</b>					
4	PE13.7	Discuss the RDA , dietary sources of Iodine and their role in Health and disease	2	Seminar	1
	PE13.8	Describe the causes, diagnosis and management of deficiency of Iodine			
	PE13.9	Identify the clinical features of Iodine deficiency disorders			
	PE13.10	Discuss the National Goiter Control program and their recommendations			
5	PE13.11	Discuss the RDA, dietary sources of Calcium and their role in health and disease	3	Seminar	1

	PE13.12	Describe the causes, clinical features, diagnosis and management of Ca Deficiency			
	PE13.13	Discuss the RDA, dietary sources of Magnesium and their role in health and disease			
	PE13.14	Describe the causes, clinical features, diagnosis and management of Magnesium Deficiency			
<b>Toxic elements and free radicals and oxygen toxicity</b>					
6	PE14.1	Discuss the risk factors, clinical features, diagnosis and management of Lead Poisoning	2	Seminar	1
	PE14.2	Discuss the risk factors, clinical features, diagnosis and management of Kerosene ingestion			
	PE14.3	Discuss the risk factors, clinical features, diagnosis and management of Organophosphorous poisoning			
	PE14.4	Discuss the risk factors, clinical features, diagnosis and management of paracetamol poisoning			
	PE14.5	Discuss the risk factors, clinical features, diagnosis and management of Oxygen toxicity			
<b>Pediatric Emergencies – Common Pediatric Emergencies</b>					
7	PE.27.29	Discuss the common causes, clinical presentation, medico-legal implications of abuse	1	Seminar	1

### 3<sup>rd</sup> MBBS - Paediatrics

2020

**Full Marks: 100**

**Time: As in Programme**

**The figures in the right-hand margin indicate marks.**

**Answer ALL questions.**

#### SECTION –A

1. Discuss the aetio-pathogenesis, clinical features and management of a child who fails to thrive. i. [3+3+4]
2. Define birth asphyxia as per NNF (National Neonatology Forum) guidelines. Enumerate the aetiology of birth asphyxia based on antenatal, natal and postnatal factors. List the complications of hypoxic ischemic encephalopathy. Describe the post resuscitation management of the asphyxiated neonate. [2+3+2+3]

**3. Write short notes on the following:**

**[5 x 4=20]**

- a) Baby Friendly hospital initiative
- b) Accredited social health activist (ASHA).

- c) Vaccine vial monitor (VVM)
- d) Acute Epiglottitis

**4. Answer the following in brief:**

**[2 x5=10]**

- a) Describe criteria for severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) as per WHO.
- b) Enumerate the components of the National vitamin A prophylaxis program.
- c) List the vaccines covered under UIP and NIP.
- d) Classify the neonate according to period of gestation.
- e) Describe different modalities for oxygen delivery.

**1. SECTION -B**

2. Define acute glomerulonephritis . Describe the clinical features of Post-Streptococcal Glomerulonephritis (PSGN). Enumerate the complications of PSGN. Outline management of PSGN.

**a. [2+3+2+3]**

3. Define Portal Hypertension in children. Enumerate the causes, describe clinical features and outline the management of portal hypertension.

**4. [2+2+3+3]**

**3. Write short notes on the following:**

**[5 x 4=20]**

- a) Status epilepticus
- b) Wilms Tumor
- c) Cyanotic spell
- d) ResoMal

**4. Answer the following in brief:**

**[2 x5=10]**

- a) List indications of kidney biopsy in nephrotic syndrome.
- b) Enumerate investigations for hypertension in children.
- c) Define diagnostic criteria of Kawasaki disease.
- d) Describe the modified Jones criteria to diagnose the Acute rheumatic fever.
- e) Enumerate investigations for chronic diarrhoea.

## Reference Books

- 1 Kliegman, Stanton, St Geme, Schor: Nelson Textbook of Pediatrics: Edition 20: Vol 1, Vol 2
- 2 Vinod K Paul, Arvind Bagga : Ghai essential pediatrics: Eight edition
- 3 Care of the Newborn” by Meharban Singh (latest edition)
- 4 “Pediatrics Clinical Methods” by Meharban Singh (Sixth edition)
- 5 Santosh Kumar: Paediatric clinical examination -4<sup>th</sup> edition
- 6 Cloherty Manual of Neonatal care (latest edition)
- 7 A Parthasarathy: IAP Text book of Pediatrics\_ Seventh edition

## 8: Assessment

### Eligibility to appear for Professional examinations

The performance in essential components of training are to be assessed

#### (a) Attendance

1. Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the examinations in that subject. In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.
2. If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting.
3. Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

#### b) Internal Assessment:

Internal assessment shall be based on day-to-day assessment. It shall relate to different ways in which learners participate in learning process including assignments, preparation for seminar, clinical case presentation, preparation of clinical case for discussion, clinical case study/problem solving exercise, participation in project for health care in community. proficiency in carrying out a practical or a skill in small research project, a written test etc.

1. Regular periodic examinations shall be conducted throughout the course. There shall be no less than three internal assessment examinations in each Preclinical / Para-clinical subject and no less than two examinations in each clinical subject in a professional year. An end of posting clinical assessment shall be conducted for each clinical posting in each professional year.
2. When subjects are taught in more than one phase, the internal assessment must be done in each phase and must contribute proportionately to final assessment. For example, General Medicine must be assessed in second Professional, third Professional Part I and third Professional Part II, independently.
3. Day to day records and log book (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.
4. The final internal assessment in a broad clinical specialty (e.g., Surgery and allied specialties etc.) shall comprise of marks from all the constituent specialties. The proportion of the marks for each constituent specialty shall be determined by the time of instruction allotted to each.
5. Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.
6. The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test. Universities shall guide the colleges regarding formulating policies for remedial measures for students who are either not able to score qualifying marks or have missed on some assessments due to any reason.
7. Learners must have completed the required certifiable competencies for that phase of training and completed the log book appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

#### University Examinations

University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

Nature of questions will include different types such as structured essays (Long Answer Questions



- LAQ), Short Answers Questions (SAQ) and objective type questions (e.g. Multiple Choice Questions - MCQ). Marks for each part should be indicated separately. MCQs shall be accorded a weightage of not more than 20% of the total theory marks. In subjects that have two papers, the learner must secure at least 40% marks in each of the papers with minimum 50% of marks in aggregate (both papers together) to pass.

Practical/clinical examinations will be conducted in the laboratories and /or hospital wards. The objective will be to assess proficiency and skills to conduct experiments, interpret data and form logical conclusion. Clinical cases kept in the examination must be common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyze the case and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.

There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.

A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course. University Examinations shall be held as under:

**(a) First Professional**

1. The first Professional examination shall be held at the end of first Professional training (1+12 months), in the subjects of Human Anatomy, Physiology and Biochemistry.
2. A maximum number of four permissible attempts would be available to clear the first Professional University examination, whereby the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.

**(b) Second Professional**

1. The second Professional examination shall be held at the end of second professional training (11 months), in the subjects of Pathology, Microbiology, and Pharmacology.

**(c) Third Professional**

1. Third Professional Part I shall be held at end of third Professional part 1 of training (12 months) in the subjects of Ophthalmology, Otorhinolaryngology, Community Medicine and Forensic Medicine and Toxicology
2. Third Professional Part II - (Final Professional) examination shall be at the end of training (14 months including 2 months of electives) in the subjects of General Medicine, General Surgery, Obstetrics & Gynecology and Pediatrics. The discipline of Orthopedics, Anesthesiology, Dentistry and Radiodiagnosis will constitute 25% of the total theory marks incorporated as a separate section in paper II of General Surgery.
3. The discipline of Psychiatry and Dermatology, Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis will constitute 25% of the total theory marks in General Medicine incorporated as a separate section in paper II of General Medicine.

**(d) Examination schedule is in Table1.**

**(e) Marks distribution is in Table 10.**

**Table 10 : Marks distribution for various subjects**

Phase of Course	Written-Theory – Total	Practicals/Orals/ Clinicals	Pass Criteria
<b>First Professional</b>			<u>Internal Assessment:</u> 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations  <u>University Examination</u> Mandatory 50% marks separately in theory and practical (practical = practical/ clinical + viva)
Human Anatomy - 2 papers	200	100	
Physiology - 2 papers	200	100	
Biochemistry - 2 papers	200	100	
<b>Second Professional</b>			
Pharmacology - 2 Papers	200	100	
Pathology - 2 papers	200	100	
Microbiology - 2 papers	200	100	
<b>Third Professional Part – I</b>			
Forensic Medicine & Toxicology - 1 paper	100	100	
Ophthalmology – 1 paper	100	100	

**Note:** At least one question in each paper of the clinical specialties should test knowledge - competencies acquired during the professional development programme (AETCOM module); Skills competencies acquired during the Professional Development programme (AETCOM module) must be tested during clinical, practical and viva.

**In subjects that have two papers, the learner must secure** at least 40% marks in each of the papers with

Otorhinolaryngology – 1 paper	100	100
Community Medicine - 2 papers	200	100
<b>Third Professional Part – II</b>		
General Medicine - 2 papers	200	200
General Surgery - 2 papers	200	200
Pediatrics – 1 paper	100	100
Obstetrics & Gynaecology - 2 papers	200	200

minimum 50% of marks in aggregate (both papers together) to pass in the said subject.

**Criteria for passing in a subject:** A candidate shall obtain 50% marks in University conducted examination separately in Theory and Practical (practical includes: practical/ clinical and viva voce) in order to be declared as passed in that subject.

### Appointment of Examiners

- Person appointed as an examiner in the particular subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.
- For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained. Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be

appointed.

- (c) In case of non-availability of medical teachers, approved teachers without a medical degree (engaged in the teaching of MBBS students as whole-time teachers in a recognized medical college), may be appointed examiners in their concerned subjects provided they possess requisite doctorate qualifications and four years teaching experience (as assistant professors) of MBBS students. Provided further that the 50% of the examiners (Internal & External) are from the medical qualification stream.
- (d) External examiners may not be from the same University.
- (e) The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his/her subject.
- (f) A University having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college.
- (g) External examiners shall rotate at an interval of 2 years.
- (h) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.
- (i) All eligible examiners with requisite qualifications and experience can be appointed internal examiners by rotation in their subjects.
- (j) All theory paper assessment should be done as central assessment program (CAP) of concerned university.
- (k) Internal examiners should be appointed from same institution for unitary examination in same institution. For pooled examinations at one centre approved internal examiners from same university may be appointed.
- (l) The **grace marks up to a maximum of five marks** may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

**Table 11: Certifiable Procedural Skills:**

*A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate*

Specialty	Procedure
<b>General Medicine</b>	<ul style="list-style-type: none"> <li>• Venipuncture (I)</li> <li>• Intramuscular injection(I)</li> <li>• Intradermal injection (D)</li> <li>• Subcutaneous injection(I)</li> <li>• Intra Venous (IV) injection (I)</li> <li>• Setting up IV infusion and calculating drip rate (I)</li> <li>• Blood transfusion (O)</li> <li>• Urinary catheterization (D)</li> <li>• Basic life support (D)</li> <li>• Oxygen therapy (I)</li> <li>• Aerosol therapy / nebulization (I)</li> <li>• Ryle’s tube insertion (D)</li> <li>• Lumbar puncture (O)</li> <li>• Pleural and ascitic aspiration (O)</li> <li>• Cardiac resuscitation (D)</li> <li>• Peripheral blood smear interpretation (I)</li> <li>• Bedside urine analysis (D)</li> </ul>
<b>General Surgery</b>	<ul style="list-style-type: none"> <li>• Basic suturing (I)</li> <li>• Basic wound care (I)</li> </ul>

	<ul style="list-style-type: none"> <li>• Basic bandaging (I)</li> <li>• Incision and drainage of superficial abscess (I)</li> <li>• Early management of trauma (I) and trauma life support (D)</li> </ul>
<b>Orthopedics</b>	<ul style="list-style-type: none"> <li>• Application of basic splints and slings (I)</li> <li>• Basic fracture and dislocation management (O)</li> <li>• Compression bandage (I)</li> </ul>
<b>Gynecology</b>	<ul style="list-style-type: none"> <li>• Per Speculum (PS) and Per Vaginal (PV) examination (I)</li> <li>• Visual Inspection of Cervix with Acetic Acid (VIA) (O)</li> <li>• Pap Smear sample collection &amp; interpretation (I)</li> <li>• Intra- Uterine Contraceptive Device (IUCD) insertion &amp; removal (I)</li> </ul>
<b>Obstetrics</b>	<ul style="list-style-type: none"> <li>• Obstetric examination (I)</li> <li>• Episiotomy (I)</li> <li>• Normal labor and delivery (including partogram) (I)</li> </ul>
<b>Pediatrics</b>	<ul style="list-style-type: none"> <li>• Neonatal resuscitation (D)</li> <li>• Setting up Pediatric IV infusion and calculating drip rate (I)</li> <li>• Setting up Pediatric Intraosseous line (O)</li> </ul>
<b>Forensic Medicine</b>	<ul style="list-style-type: none"> <li>• Documentation and certification of trauma (I)</li> <li>• Diagnosis and certification of death (D)</li> <li>• Legal documentation related to emergency cases (D)</li> <li>• Certification of medical-legal cases e.g. Age estimation, sexual assault etc.(D)</li> <li>• Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)</li> </ul>
<b>Otorhinolaryngology</b>	<ul style="list-style-type: none"> <li>• Anterior nasal packing (D)</li> <li>• Otoscopy (I)</li> </ul>
<b>Ophthalmology</b>	<ul style="list-style-type: none"> <li>• Visual acuity testing (I)</li> <li>• Digital tonometry (D)</li> <li>• Indirect ophthalmoscopy (O)</li> <li>• Epilation (O)</li> <li>• Eye irrigation (I)</li> <li>• Instillation of eye medication (I)</li> <li>• Ocular bandaging (I)</li> </ul>
<b>Dermatology</b>	<ul style="list-style-type: none"> <li>• Slit skin smear for leprosy (O)</li> <li>• Skin biopsy (O)</li> <li>• Gram's stained smear interpretation(I)</li> <li>• KOH examination of scrapings for fungus (D)</li> <li>• Dark ground illumination (O)</li> <li>• Tissue smear (O)</li> <li>• Cautery - Chemical and electrical (O)</li> </ul>

I- Independently performed on patients, O- Observed in patients or on simulations,

D- Demonstration on patients or simulations and performance under supervision in patients

**Certification of Skills: Any faculty member of concerned department can certify skills. For common procedures, the certifying faculty may be decided locally.**

## 9: Internship

**Internship** is a phase of training wherein a graduate will acquire the skills and competencies for practice of medical and health care under supervision so that he/she can be certified for independent medical practice as an Indian Medical Graduate. In order to make trained work force available, it may be considered as a phase of training wherein the graduate is expected to conduct actual practice under the supervision of a trained doctor. The learning methods and modalities have to be done during the MBBS course itself with larger number of hands on session and practice on simulators.

### Goal:

The goal of the internship programme is to train medical students to fulfill their roles as doctors of first contact in the community.

**Objectives:** At the end of the internship period, the medical graduate will possess all competencies required of an Indian Medical Graduate, namely:

Independently provide preventive, promotive, curative and palliative care with compassion,

Function as leader and member of the health care team and health system,

Communicate effectively with patients, families, colleagues and the community,

Be certified in diagnostic and therapeutic skills in different disciplines of medicine taught in the undergraduate programme,

Be a lifelong learner committed to continuous improvement of skills and knowledge,

Be a professional committed to excellence and is ethical, responsive and accountable to patients, community and profession

### Time Distribution

Community Medicine (Residential posting)	2 months
General Medicine including 15 days of Psychiatry	2 months
General Surgery including 15 days Anaesthesia	2 months
Obstetrics & Gynaecology including Family Welfare Planning	2 months
Pediatrics	1 month
Orthopaedics including PM & R	1 month
Otorhinolaryngology	15 days
Ophthalmology	15 days
Casualty	15 days
Elective posting (1x15 days)	15 days

Subjects for Elective posting will be as follows:

1. Dermatology, Venereology & Leprosy

2. Respiratory Medicine
3. Radio diagnosis
4. Forensic Medicine & Toxicology
5. Blood Bank
6. Psychiatry

**Note:** Structure internship with assessment at the end in the college.

**Other details:**

The core rotations of the internship shall be done in primary and secondary/ tertiary care institutions in India. In case of any difficulties, the matter may be referred to the Medical Council of India to be considered on individual merit.

Every candidate will be required after passing the final MBBS examination to undergo compulsory rotational internship to the satisfaction of the College authorities and University concerned for a period of 12 months so as to be eligible for the award of the degree of Bachelor of Medicine and Bachelor of Surgery (MBBS) and full registration.

The University shall issue a provisional MBBS pass certificate on passing the final examination.

The State Medical Council will grant provisional registration to the candidate upon production of the provisional MBBS pass certificate. The provisional registration will be for a period of one year. In the event of the shortage or unsatisfactory work, the period of provisional registration and the compulsory rotating internship shall be suitably extended by the appropriate authorities.

The intern shall be entrusted with clinical responsibilities under direct supervision of a designated supervising physician. They shall not work independently.

Interns will not issue medical certificate or death certificate or other medico-legal document under their signature.

Each medical college must ensure that the student gets learning experience in primary/secondary and urban/rural centers in order to provide a diverse learning experience and facilitate the implementation of national health programmes/ priorities. These shall include community and outreach activities, collaboration with rural and urban community health centers, participation in government health missions etc.

One year's approved service in the Armed Forces Medical Services, after passing the final MBBS examination shall be considered as equivalent to the pre-registration training detailed above; such training shall, as far as possible, be at the Base/General Hospital. The training in Community Medicine should fulfill the norms of the MCI as proposed above.

In recognition of the importance of hands-on experience, full responsibility for patient care and skill acquisition, internship should be increasingly scheduled to utilize clinical facilities available in District Hospital, Taluka Hospital, Community Health Centre and Primary Health Centre, in addition to Teaching Hospital. A critical element of internship will be the acquisition of specific experiences and skill as listed in

major areas: provided that where an intern is posted to District/Sub Divisional Hospital for training, there shall be a committee consisting of representatives of the college/University, the State Government and the District administration, who shall regulate the training of such trainee. Provided further that, for such trainee a certificate of satisfactory completion of training shall be obtained from the relevant administrative authorities which shall be countersigned by the Principal/Dean of College.

### **Assessment of Internship:**

The intern shall maintain a record of work in a log book, which is to be verified and certified by the medical officer under whom he/she works. Apart from scrutiny of the record of work, assessment and evaluation of training shall be undertaken by an objective approach using situation tests in knowledge, skills and attitude during and at the end of the training.

Based on the record of work and objective assessment at the end of each posting, the Dean/Principal shall issue cumulative certificate of satisfactory completion of training at the end of internship, following which the University shall award the MBBS degree or declare him eligible for it.

Full registration shall only be given by the State Medical Council/Medical Council of India on the award of the MBBS degree by the University or its declaration that the candidate is eligible for it.

Some guidelines for the implementation of the training programme are given below

## **INTERNSHIP – DISCIPLINE RELATED**

### **Community Medicine**

#### **Goal:**

The aim of teaching the undergraduate student in Community Medicine is to impart such knowledge and skills that may enable him to diagnose and treat common medical illnesses and recognize the importance of community involvement. He/she shall acquire competence to deal effectively with an individual and the community in the context of primary health care. This is to be achieved by hands-on experience in the District Hospital and Primary Health Centre. The details are as under: -

#### **1) District Hospital /Community Health Centre/Attachment to General Practitioner:**

##### **A. An intern must be able to do without assistance:**

1. An intern must:
  - a) Be able to diagnose common ailments and advise primary care;
  - b) Demonstrate knowledge on 'Essential drugs' and their usage;
  - c) Recognize medical emergencies, resuscitate and institute initial treatment and refer to a suitable institution.
  
2. An intern must be familiar with all National Health Programmes (e.g. RCH, UIP, CDD, ARI, FP, ANC, Tuberculosis, Leprosy and others), as recommended by the Ministry of Health and Family Welfare.
3. An intern must:
  - a) Gain full expertise in immunization against infectious disease;
  - b) Participate in programmes related to prevention and control of locally prevalent endemic diseases including nutritional disorders;
  - c) Learn skills in family welfare planning procedures;

4. An intern must:
  - a) Conduct programmes on health education,
  - b) Gain capabilities to use Audiovisual aids,
  - c) Acquire capability of utilization of scientific information for promotion of community health

**B. An intern must have observed or preferably assisted at the following:**

1. An intern should be capable of establishing linkages with other agencies as water supply, food distribution and other environmental/social agencies.
2. An intern should acquire managerial skills including delegation of duties to and monitoring the activities of paramedical staff and other health professionals.

**II) Taluka Hospital/ First Referral Unit**

**A. An intern must be able to do without assistance:**

1. An intern shall provide health education to an individual/community on:
  - a) tuberculosis,
  - b) small family, spacing, use of appropriate contraceptives,
  - c) applied nutrition and care of mothers and children,
  - d) immunization.

**B. An intern must be able to do with supervision:**

An intern shall attend at least one school health programme with the medical officer.

**III) Primary Health Centre / Urban Health Centre**

**A. An intern must be able to do without assistance the following:**

- a) Participate in family composite health care (birth to death), inventory of events.
- b) Participate in use of the modules on field practice for community health e.g. safe motherhood, nutrition surveillance and rehabilitation, diarrheal disorders etc.
- c) Participate in and maintain documents related to immunization and cold chain.
- d) Acquire competence in diagnosis and management of common ailments e.g. malaria, tuberculosis, enteric fever, congestive heart failure, hepatitis, meningitis acute renal failure etc.

**B. An intern must be able to do under supervision the following:**

- a) Acquire proficiency in Family Welfare Programmes (antenatal care, normal delivery, contraception etc.).
- b) Undergo village attachment of at least one week duration to understand issues of community health along with exposure to village health centres, ASHA Sub Centres.
- c) Participate in Infectious Diseases Surveillance and Epidemic Management activities along with the medical officer.

**General Medicine**

**Goal:**

The aim of teaching the undergraduate student in General Medicine is to impart such knowledge and skills that may enable him to diagnose and treat common medical illnesses. He/she shall acquire competence in clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management; this would include diseases common in tropics (parasitic, bacterial or viral infections, nutritional disorders, including dehydration and electrolyte disturbances) and various system illnesses.



**A. An intern must be able to do without assistance and interpret the results of:**

- i. the following laboratory investigations:
  - a) Blood: (Routine haematology smear and blood groups),
  - b) Urine: (Routine chemical and microscopic examination),
  - c) Stool: (for ova/cyst and occult blood),
  - d) Sputum and throat swab for gram stain or acid-fast stain, and
  - e) Cerebrospinal Fluid (CSF) for smear,
  - f) Electrocardiogram (ECG),
  - g) Glucometer recording of blood sugar,
  - h) routine radiographs of chest, abdomen, skull etc.
- ii. Perform independently the following:
  - a) diagnostic procedures Proctoscopy, Ophthalmoscopy/Otoscopy, Indirect laryngoscopy.
  - b) Therapeutic procedures; Urethral catheterization, Insertion of Ryle's Tube, Pleural, Ascitic fluid aspiration, Cerebrospinal Fluid (CSF) aspiration, Air way tube installation, Oxygen administration etc.

**B. An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) **Biopsy Procedures:** Liver, Kidney, Skin, Nerve, Lymph node, and muscle biopsy, Bone marrow aspiration, Biopsy of Malignant lesions on surface, nasal/nerve/skin smear for leprosy under supervision.

**C. Skills that an intern should be able to perform under supervision:**

- a) An intern should be familiar with lifesaving procedures, including use of aspirator, respirator and defibrillator, cardiac monitor, blood gas analyser.
- b) An intern should be able to advise about management and prognosis of acute & chronic illnesses like viral fever, gastroenteritis, hepatitis, pneumonias, myocardial infarction and angina, TIA and stroke, seizures, diabetes mellitus, hypertension renal and hepatic failure, thyroid disorders and hematological disorders. He should participate in counseling sessions for patients with non-communicable diseases and tuberculosis, HIV patients etc.
- c) Intern should be able to confirm death and demonstrate understanding of World Health Organisation cause of death reporting and data quality requirements.
- d) Intern should be able to demonstrate understanding of the coordination with local and national epidemic management plans.
- e) Intern shall be able to demonstrate prescribing skills and demonstrate awareness of pharmacovigilance, antibiotics policy, prescription audit and concept of essential medicines list.

**Paediatrics:**

**Goals:**

The aim of teaching the undergraduate student in Pediatrics is to impart such knowledge and skills that may enable him to diagnose and treat common childhood illnesses including neonatal disorders. He/she shall acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management; this would include diseases common in tropics (parasitic, bacterial or viral infections, nutritional disorders, including dehydration and electrolyte disturbances) and various system illnesses.

**D. An intern must be able to do without assistance:**

An intern shall be able to diagnose and manage common childhood disorders including neonatal disorders and acute emergencies, examining sick child making a record of information.

An intern shall perform:

- a) **diagnostic techniques:** blood collection (including from femoral vein and umbilical cord), drainage of abscess, collection of cerebrospinal, pleural and peritoneal fluids, suprapubic aspiration of urine.
- b) **techniques related to patient care:** immunization, perfusion techniques, nasogastric tube insertion, feeding procedures, tuberculin testing & breast-feeding counseling.
- c) **use of equipments:** vital monitoring, temperature monitoring, resuscitation at birth and care of children receiving intensive care.
- d) institute early management of common childhood disorders with special reference to pediatric dosage and oral rehydration therapy.

**E. An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) screening of newborn babies and those with risk factors for any anomalies and steps for prevention in future; detect congenital abnormalities;
- b) recognise growth abnormalities; recognise anomalies of psychomotor development;
- c) assess nutritional and dietary status of infants and children and organize prevention, detection and follow up of deficiency disorders both at individual and community levels, such as:
  - protein-energy malnutrition
  - deficiencies of vitamins especially A, B, C and D;
  - Iron deficiency

**F. Skills that an intern should be able to perform under supervision:**

- a) An intern should be familiar with life-saving procedures, including use of aspirator, respirator, cardiac monitor, blood gas analyser.
- b) An intern should be able to advise about management and prognosis of acute & chronic illnesses like viral fever, gastroenteritis, hepatitis, pneumonias, congenital heart diseases, seizures, renal and hepatic diseases, thyroid disorders and hematological disorders. She/he should participate in counseling sessions with parents including HIV counseling.

**General surgery:**

**Goals:**

The aim of teaching the undergraduate student in General Surgery is to impart such knowledge and skills that may enable him to diagnose and treat common surgical ailments. He/she shall have ability to diagnose and suspect with reasonable accuracy all acute and chronic surgical illnesses.

**(A) THERAPEUTIC- An intern must perform or assist in:**

- a) venesection or venous access
- b) tracheostomy and endotracheal intubation
- c) catheterization of patients with acute retention or trocar cystostomy
- d) drainage of superficial abscesses
- e) basic suturing of wound and wound management (including bandaging)
- f) biopsy of surface tumours
- g) perform vasectomy

**(B) Skill that an intern should be able to perform under supervision:**

- a) Advise about prognosis of acute & chronic surgical illnesses, head injury, trauma, burns and cancer.

Counsel patients regarding the same.

- b) Advise about rehabilitation of patients after surgery and assist them for early recovery.
- c) Intern should be able to demonstrate understanding of World Health Organisation cause of death reporting and data quality requirements.
- d) Intern should be able to demonstrate understanding of the use of national and sub-national cause of death statistics.

**(C) An intern must have observed or preferably assisted at the following operations/procedures:**

- a) Resuscitation of critical patients
- b) Basic surgical procedures for major and minor surgical illnesses
- c) Wound dressings and application of splints
- d) Laparoscopic/ Minimally Invasive surgery
- e) Lymph node biopsy

**CASUALTY:**

**GOAL:**

The aim of teaching the undergraduate student in casualty is to impart such knowledge and skills that may enable him/her to diagnose and treat common acute surgical /medical ailments. He/she shall have ability to diagnose and suspect, with reasonable accuracy, acute surgical illnesses including emergencies, resuscitate critically injured patient and a severely burned patient, control surface bleeding and manage open wounds and monitor and institute first-line management of patients of head, spine, chest, abdominal and pelvic injury as well as acute abdomen.

**(A) THERAPEUTIC- An intern must perform or assist in:**

- a) Identification of acute emergencies in various disciplines of medical practice,
- b) Management of acute anaphylactic shock,
- c) Management of peripheral-vascular failure and shock,
- d) Management of acute pulmonary edema and Left Ventricular Failure (LVF),
- e) Emergency management of drowning, poisoning and seizure,
- f) Emergency management of bronchial asthma and status asthmaticus,
- g) Emergency management of hyperpyrexia,
- h) Emergency management of comatose patients regarding airways, positioning, prevention of aspiration and injuries,
- i) Assessment and administering emergency management of burns,
- j) Assessing and implementing emergency management of various trauma victims,
- k) Identification of medico-legal cases and learn filling up of forms as well as complete other medico-legal formalities in cases of injury, poisoning, sexual offenses, intoxication and other unnatural conditions.

**(B) Skill that an intern should be able to perform under supervision:**

- a) Advise about prognosis of acute surgical illnesses, head injury, trauma and burns. Counsel patients regarding the same.

**(C) An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Resuscitation of critical patients
- b) documentation medico legal cases
- c) management of bleeding and application of splints;

## **OBSTETRICS AND GYNAECOLOGY**

### **GOAL:**

The aim of teaching the undergraduate student in Obstetrics & Gynaecology is to impart such knowledge and skills that may enable him to diagnose and manage antenatal and post natal follow up; manage labor and detect intrapartum emergencies; diagnose and treat common gynaecologic ailments.

### **(A) THERAPEUTIC- An intern must perform or assist in:**

- a) Diagnosis of early pregnancy and provision of ante-natal care; antenatal pelvic assessment and detection of cephalopelvic disproportion,
- b) Diagnosis of pathology of pregnancy related to:
  - abortion
  - ectopic pregnancy
  - tumours complicating pregnancy
  - acute abdomen in early pregnancy
  - hyperemesis gravidarum,
- c) Detection of high risk pregnancy cases and give suitable advice e.g. PIH, hydramanios, antepartum haemorrhage, multiple pregnancies, abnormal presentations and intra-uterine growth retardation,
- d) Induction of labor and amniotomy under supervision,
- e) Induction of labor and amniotomy under supervision,
- f) Management of normal labor, detection of abnormalities, post-partum hemorrhage and repair of perineal tears,
- g) Assist in forceps delivery,
- h) Detection and management of abnormalities of lactation,
- i) Evaluation and prescription oral contraceptives with counseling,
- j) Per speculum, per vaginam and per rectal examination for detection of common congenital, inflammatory, neoplastic and traumatic conditions of vulva, vagina, uterus and ovaries,
- k) Medico-legal examination in Gynecology and Obstetrics.

### **(B) Skills that an intern should be able to perform under supervision:**

- a) Dilatation and curettage and fractional curettage,
- b) Endometrial biopsy,
- c) Endometrial aspiration,
- d) Pap smear collection,
- e) Intra Uterine Contraceptive Device (IUCD) insertion,
- f) Minilap ligation,
- g) Urethral catheterization,
- h) Suture removal in postoperative cases,
- i) Cervical punch biopsy.

### **(C) An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Major abdominal and vaginal surgery cases,
- b) Second trimester Medical Termination of Pregnancy (MTP) procedures e.g. Emcredyl Prostaglandin instillations, Caesarean section.

## **OTORHINOLARYNGOLOGY (ENT)**

### **GOAL:**

The aim of teaching the undergraduate student in ophthalmology is to impart such knowledge and skills that may enable him to diagnose and treat common otorhinolaryngological conditions such as ear pain, foreign bodies

and acquire ability for a comprehensive diagnosis of common Ear, Nose and Throat (ENT) diseases including emergencies and malignant neoplasms of the head and neck.

**(A) THERAPEUTIC- An intern must perform or assist in:**

- a) Ear syringing, antrum puncture and packing of the nose for epistaxis,
- b) Nasal douching and packing of the external canal,
- c) Removing foreign bodies from nose and ear,
- d) Observing or assisting in various endoscopic procedures and tracheostomy.

**(B) Skill that an intern should be able to perform under supervision:**

- a) Intern shall have participated as a team member in the diagnosis of various ENT- related diseases and be aware of National programme on prevention of deafness,
- b) Intern shall acquire knowledge of various ENT related rehabilitative programmes.

**(C) An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Intern shall acquire skills in the use of head mirror, otoscope and indirect laryngoscopy and first line of management of common Ear Nose and Throat (ENT) problems.

**OPHTHALMOLOGY :**

**GOAL:**

The aim of teaching the undergraduate student in ophthalmology is to impart such knowledge and skills that may enable him to diagnose and treat common ophthalmological conditions such as Trauma, Acute conjunctivitis, allergic conjunctivitis, xerosis, entropion, corneal ulcer, iridocyclitis, myopia, hypermetropia, cataract, glaucoma, ocular injury and sudden loss of vision.

**(A) THERAPEUTIC- An intern must perform or assist in:**

- a) Subconjunctival injection
- b) Ocular bandaging
- c) Removal of concretions
- d) Epilation and electrolysis
- e) Corneal foreign body removal
- f) Cauterization of corneal ulcers
- g) Chalazion removal
- h) Entropion correction
- i) Suturing conjunctival tears
- j) Lids repair
- k) Glaucoma surgery (assisted)
- l) Enucleation of eye in cadaver.

**Skill that an intern should be able to perform under supervision:**

- (a) Advise regarding methods for rehabilitation of the blind.

**(B) An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Assessment of refractive errors and advise its correction,
- b) Diagnose ocular changes in common systemic disorders,
- c) Perform investigative procedures such as tonometry, syringing, direct ophthalmoscopy, subjective refraction and fluorescein staining of cornea.

**ORTHOPAEDICS :**

**GOAL:**

The aim of teaching the undergraduate student in Orthopaedics and Physical Medicine and Rehabilitation is to impart such knowledge and skills that may enable him to diagnose and treat common ailments. He/she shall have ability to diagnose and suspect presence of fracture, dislocation, actual osteomyelitis, acute poliomyelitis and common congenital deformities such as congenital talipes equinovarus (CTEV) and dislocation of hip (CDH).

**(A) THERAPEUTIC- An intern must assist in:**

- a) Splinting (plaster slab) for the purpose of emergency splintage, definitive splintage and post-operative splintage and application of Thomas splint,
- b) Manual reduction of common fractures – phalangeal, metacarpal, metatarsal and Colles' fracture,
- c) Manual reduction of common dislocations – interphalangeal, metacarpophalangeal, elbow and shoulder dislocations,
- d) Plaster cast application for undisplaced fractures of arm, fore arm, leg and ankle,
- e) Emergency care of a multiple injury patient,
- f) Transport and bed care of spinal cord injury patients.

**(B) Skill that an intern should be able to perform under supervision:**

- a) Advise about prognosis of poliomyelitis, cerebral palsy, CTEV and CDH,
- b) Advise about rehabilitation of amputees and mutilating traumatic and leprosy deformities of hand.

**(C) An intern must have observed or preferably assisted at the following operations:**

- a) Drainage for acute osteomyelitis,
- b) Sequestrectomy in chronic osteomyelitis,
- c) Application of external fixation,
- d) Internal fixation of fractures of long bones.

## **DERMATOLOGY VENEREOLOGY & LEPROSY :**

### **GOAL:**

The aim of teaching the undergraduate student in Dermatology Venereology & Leprosy is to impart such knowledge and skills that may enable him to diagnose and treat common dermatological infections and leprosy. He/she shall acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management; this would include diseases common in tropics (parasitic, bacterial or viral infections, and cutaneous manifestations of systemic illnesses).

### **G. THERAPEUTIC- At the end of internship an intern must be able to:**

- a) Conduct proper clinical examination; elicit and interpret physical findings, and diagnose common disorders and emergencies,
- b) Perform simple, routine investigative procedures for making bedside diagnosis, specially the examination of scraping for fungus, preparation of slit smears and staining for AFB for leprosy patient and for STD cases,
- c) Manage common diseases recognizing the need for referral for specialized care in case of inappropriateness of therapeutic response.

### **H. An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Skin biopsy for diagnostic purpose

## **PSYCHIATRY :**

### **GOAL:**

The aim of teaching the undergraduate student in Psychiatry is to impart such knowledge and skills that may enable him to diagnose and treat common psychiatric illnesses. He/she shall acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management. He/she should also be able to recognize the behavioural manifestations of systemic illnesses.

### **A. THERAPEUTIC- An intern must perform or assist in:**

- a) Diagnose and manage common psychiatric disorders,
- b) Identify and manage psychological reactions,
- c) Diagnose and manage behavioural disorders in medical and surgical patients.

### **B. An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) ECT administration,
- b) Therapeutic counseling and follow-up.

## **RESPIRATORY MEDICINE:**

### **GOAL:**

The aim of teaching the undergraduate student in Respiratory Medicine is to impart such knowledge and skills that may enable him to diagnose and treat common respiratory illnesses. He/she shall acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management.

#### **A. THERAPEUTIC - An intern must perform or assist in:**

- a) diagnosing and managing common respiratory disorders and emergencies,
- b) simple, routine investigative procedures required for making bed side diagnosis, especially sputum collection, examination for etiological organism like AFB, interpretation of chest X-rays and respiratory function tests,
- c) interpreting and managing various blood gases and pH abnormalities in various illnesses.

#### **B. An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Laryngoscopy,
- b) Pleural aspiration, respiratory physiotherapy, laryngeal intubation and pneumo-thoracic drainage aspiration,
- c) Therapeutic counseling and follow up.

## **ANAESTHESIOLOGY:**

### **GOAL:**

The aim of teaching the undergraduate student in anaesthesia is to impart such knowledge and skills that may enable him to understand principles of anaesthesia and recognize risk and complications of anaesthesia. At the end of internship, graduate should be able to perform cardio-pulmonary resuscitation correctly, including recognition of cardiac arrest.

#### **(A) THERAPEUTIC- An intern must perform or assist in:**

- a) Pre-anaesthetic checkup and prescribe pre-anaesthetic medications,
  - b) Venepuncture and set up intravenous drip,
  - c) Laryngoscopy and endotracheal intubation,
  - d) Lumbar puncture, spinal anaesthesia and simple nerve blocks,
  - e) Simple general anaesthetic procedures under supervision,
  - f) Monitor patients during anaesthesia and in the post-operative period,
  - g) Maintain anaesthetic records,
  - h) Perform cardio-pulmonary resuscitation correctly, including recognition of cardiac arrest.

#### **(B) Skill that an intern should be able to perform under supervision:**

- a) Counseling and advise regarding various methods of anaesthesia,
- b) Recognise and manage problems associated with emergency anaesthesia,
- c) Recognise and treat complications in the post-operative period.

#### **(C) An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) Anaesthesia for major and minor surgical and other procedures;



## **RADIODIAGNOSIS :**

### **GOAL:**

The aim of teaching the undergraduate student in radiodiagnosis is to impart such knowledge and skills that may enable him to understand principles of imageology and recognize risk and complications of radiologic procedures and the need for protective techniques. At the end of internship, graduate should be able to counsel and prepare patients for various radiologic procedures.

#### **An intern must acquire competency in:**

- a) Identifying and diagnosing acute abdominal conditions clinically and choose appropriate imaging modality for diagnosis,
- b) Identifying and diagnosing acute traumatic conditions in bones and skull using X rays / CT Scans with emphasis on fractures and head injuries,
- c) Recognising basic hazards and precautions in radio-diagnostic practices specially related to pregnancy,
- d) Demonstrating awareness of the various laws like PC PNDT Act.

## **PHYSICAL MEDICINE AND REHABILITATION:**

### **GOAL:**

The aim of teaching the undergraduate student in Physical Medicine & Rehabilitation is to impart such knowledge and skills that may enable him to diagnose and treat common rheumatologic, orthopedic and neurologic illnesses requiring physical treatment. He/she shall acquire competence for clinical diagnosis based on history, physical examination and relevant laboratory investigations and institute appropriate line of management.

#### **A. THERAPEUTIC- An intern must perform or assist in:**

- a) Diagnosing and managing with competence clinical diagnosis and management based on detailed history and assessment of common disabling conditions like poliomyelitis, cerebral palsy, hemiplegia, paraplegia, amputations etc.
- b) Participation as a team member in total rehabilitation including appropriate follow up of common disabling conditions,
- c) Procedures of fabrication and repair of artificial limbs and appliances.

#### **B. An intern must have observed or preferably assisted at the following operations/ procedures:**

- a) use of self-help devices and splints and mobility aids
- b) accessibility problems and home making for disabled
- c) Simple exercise therapy in common conditions like prevention of deformity in polio, stump exercise in an amputee etc.
- d) Therapeutic counselling and follow up

## **FORENSIC MEDICINE AND TOXICOLOGY GOAL:**

The aim of teaching the undergraduate student in Forensic Medicine is to impart such knowledge and skills that may enable him to manage common medico-legal problems in day to day practice. He/she shall acquire competence for post mortem diagnosis based on history, physical examination and relevant observations during autopsy.

**C. An intern must perform or assist in:**

- a) Identifying and documenting medico-legal problems in a hospital and general practice,
- b) Identifying the medico-legal responsibilities of a medical man in various hospital situations,
- c) Diagnosing and managing with competence basic poisoning conditions in the community,
- d) Diagnosing and managing with competence and documentation in cases of sexual assault,
- e) Preparing medico-legal reports in various medico legal situations.

**D. An intern must have observed or preferably assisted at the following operations/ procedures, as given in Table 11:**

- a) Various medico legal / post-mortem procedures and formalities during their performance by police.

[**Foot Note:** The Principal Regulations namely, “Graduate Medical Education Regulations, 1997” were published in Part – III, Section (4) of the Gazette of India vide Medical Council of India notification dated 4<sup>th</sup> March, 1997, and amended vide MCI notifications dated 29/05/1999, 02/07/2002, 30/09/2003, 16/10/2003, 01/03/2004, 20/10/2008, 15/12/2008, 22/12/2008, 25/03/2009, 19/04/2010, 07/10/2010, 21/12/2010, 15/02/2012, 29/12/2015, 05/08/2016, 21/09/2016, 10/03/2017, 04/07/2017, 23/01/2018, 06/02/2018, 21/05/2018, 05/02/2019 & 14/05/2019.]