MAHATMA GANDHI UNIVERSITY
of
MEDICAL SCIENCES & TECHNOLOGY
JAIPUR

Syllabus

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBBS)

(4 ½ Years Degree Course + 1 Year Internship)

Edition 2021-22

NOTICE

1. Amendments made by the Statutory Regulating Council i.e. National Medical Commission in Rules/ Regulations of Graduate Medical Courses shall automatically apply to the Rules/ Regulations of the Mahatma Gandhi University of Medical Sciences & Technology.

2. The University reserves the right to make changes in the syllabus/books/ guidelines, fee–structure or any other information at any time without prior notice. The decision of the University shall be binding on all.

3. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

RULES & REGULATIONS OF
BACHELOR OF MEDICINE & BACHELOR OF SURGERY
(4½ Years Degree Course + 1 Year Internship)

Goals of Medical Graduate Training Programme:

(1) National Goals: At the end of undergraduate program, the medical student should be able to:

(a) Recognize "health for all' as a national goal and right of all citizens and by undergoing training for medical profession, fulfil his/her social obligations towards realization of this goal.

(b) Learn various aspects of National policies on health and devote him/her 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 approach, acquire educational experience for proficiency in profession and promote healthy living.

(e) Become exemplary citizen by observation of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

(2) Institutional Goals: At the end of the Undergraduate curriculum at Mahatma Gandhi University of Medical Sciences and Technology, the student should be:

a) 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) Competent to practice preventive, promotive, curative and rehabilitative medicine in respect to the commonly encountered health problems.

c) Able to appreciate rationale for different therapeutic modalities, be familiar with the administration of the "essential drugs" and their common side effects.

d) 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 attitude for continuous self learning and to seek further expertise or to pursue research in any chosen area of medicine.

f) Familiar with the basic tenets essential for the implementation of National Health Programmes including practical aspects of the following:
   i. Family Welfare and Maternal and Child Health (MCH)
   ii. Sanitation and water supply
   iii. Prevention and control of communicable and non-communicable diseases
   iv. Immunization
   v. Health Education

g) Able to acquire basic management skills in the area of human resources, materials and resource management related to health care delivery.

h) Able to identify community health problems and learn to work to resolve these by designing and instituting corrective steps and evaluating outcome of such measures.

i) Able to lead, facilitate and/or work as a leading partner in health care teams and be proficient in communication skills.

j) Competent to work in a variety of health care settings.

k) Have personal characteristics and attributes required for professional life such as personal integrity, sense of responsibility, dependability and empathy.

ADMISSION TO THE MBBS COURSE:

Admission to the Medical Course-Eligibility Criteria: No candidate shall be allowed to be admitted to the Medical Curriculum proper of first Bachelor of Medicine and Bachelor of Surgery course until he /she has qualified the National Eligibility Entrance Test, and he/she shall not be allowed to appear for the National Eligibility-Cum-Entrance Test until:

(1) He/she shall complete the age of 17 years on or before 31st December of the year of admission to the MBBS.

(1A) He/She has obtained a minimum of marks in National Eligibility-Cum-Entrance Test as prescribed in Clause 5 of Chapter II.

(IB) Provided further that in order to be eligible, Upper age limit: As per Letter No. U-11022/2/2022-UGMEB, dated 09 March 2022 received from National Medical Commission (NMC), Under Graduate Medical Education Board (UGMEB) regarding the upper age limit, "that there should be no upper age limit as decided in the fourth NMC meeting held on 21 October 2021".

Eligibility for appearing in NEET examination:
He/She has passed qualifying examination as under:-

(a) The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of Physics, Chemistry, Biology/Biotechnology and Mathematics or any other elective subjects with English at a level not less than core course of English as prescribed by the National Council of Educational Research and Training after the introduction of the 10+2+3 years educational structure as recommended by the National Committee on education;

Or

(b) The intermediate examination in science of an Indian University/Board or other recognised examining body with Physics, Chemistry and Biology/Bio-technology which shall include a practical test in these subjects and also English as a compulsory subject;

Or

(c) The pre-professional/pre-medical examination with Physics, Chemistry and Biology/Bio-technology, after passing either the higher secondary school examination, or the pre-university or an equivalent Examination. The pre-professional/pre-medical examination shall include a practical test in Physics, Chemistry and Biology/Bio-technology and also English as a compulsory subject;

Or

(d) The first year of the three years degree course of a recognized university, with Physics, chemistry and Biology/Bio-technology including a practical test in three subjects provided the examination is a "University Examination" and candidate has passed 10+2 with English at a level not less than a core course;

Or

(e) B.Sc. examination of an Indian University, provided that he/she has passed the B.Sc. examination with not less than two of the following subjects Physics, Chemistry, Biology (Botany, Zoology)/Bio-technology and further that he/she has passed the earlier qualifying examination with the following subjects – Physics, Chemistry, Biology and English.

Or

(f) Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology/Biotechnology including practical test in each of these subjects and English.
Provided that a candidate who has appeared in the qualifying examinationthe result of which has not been declared, he may be provisionally permitted to take up the competitive entrance

examination and in case of selection for admission to the MBBS course, he shall not be admitted to that course until he fulfils the eligibility criteria under regulation 4."

Entrance Test shall vest with National Medical Commission. However, National Medical Commission with the previous approval of the Central Government shall select organization/s to conduct 'National Eligibility-cum-Entrance Test for admissionto MBBS course.

In any academic year for admission to MBBS Course, the Central Government in consultation with National Medical Commisssion may, at its discretion, lower the minimum marks required for admission to MBBS Course for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said year only.

III. The reservation of seats in medical colleges for respective categories shall be as per applicable laws prevailing in States. An all India merit list as well as State-wise merit list of the eligible candidates shall be prepared on the basis of the marks obtained in National Eligibility-cum-Entrance Test and candidates shall be admitted to MBBS course from the said lists only.

"II. In order to be eligible for admission to MBBS Course for a particular academic year, it shall be necessary for a candidate to obtain minimum of marks at 50th percentile in 'National Eligibility cum-Entrance Test to MBBS course' held for the said academic year. However, in respect of candidates belonging to Scheduled Castes, Scheduled Tribes, Other Backward Classes, the minimum marks shall be at 40th percentile. In respect of candidates with locomotory disability of lower limbs terms of Clause 4(3) above, the minimum marks shall be at 45th percentile. The percentile shall be determined on the basis of highest marks secured in the All-India common merit list in 'National Eligibility-cum-Entrance Test for admission to MBBS course'.

"VI. To be eligible for admission to MBBS course, a candidate must have passed in the subjects of Physics, Chemistry, Biology/Biotechnology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry and Biology/Bio-technology at the qualifying examination as mentioned in clause (2) of Regulation 4 and in addition must have come in the merit list of "National Eligibility-cum-Entrance Test" for admission to MBBScourse. In respect of candidates belonging to Scheduled Castes, Scheduled Tribes or other Backward Classes the minimum marks obtained in Physics, Chemistry and Biology/Bio-technology taken together in qualifying examination shall be 40% instead of 50%.

In respect of candidates with benchmark disabilities specified under theRights of Persons with Disabilities Act, 2016, the minimum marks in qualifying examination in Physics, Chemistry and Biology (or Botany and Zoology)/Bio-technology taken together in qualifying examination shall be 45% instead of 50%.5% seats of the annual sanctioned intake capacity shall be filled up by candidates with benchmark disabilities in accordance with the provisions of the Rights of Persons with Disabilities Act, 2016, based on the merit list of 'National Eligibility-Cum-Entrance Test'.

5A- Common Counseling
The Designated Authority for counseling for admission to MBBS course in a State, including, Medical Educational Institutions established by the State Government\University established by an Act of State shall be Department of medical education Government of Rajasthan.

The selection of students to the medical college shall be based solely on merit of the candidate and for determination of the merit, following criteria be adopted:

i. Marks obtained in the qualifying examination

ii. On the basis of the competitive entrance examination(NEET)
Combination of i and ii

The reservation policy of the Govt. of Rajasthan will be applicable on Common Entrance Test seats
(3) Migration: No application for migration to other medical college will be entertained from the students admitted to MBBS course at this institution. The President of the University may grant NOC for migration of student in exceptional circumstances. However, the final approval will be granted by National Medical Commission.

(4) Training Period and Time Distribution / Duration of the Course:
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, Pediatrics, Orthopaedics, Dermatology, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Psychiatry, Respiratory Medicine, Radiodiagnosis & Radiotherapy and Anaesthesiology & Professional development including AETCOM module.
(b) **Electives (2 months)** - To provide learners with opportunity for diverse learning experiences, to do /community projects that will stimulate enquiry, self directed experimental learning and lateral thinking [9.3].
c) **Part II (13 months)** - Clinical subjects include:
1. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology and Leprosy (DVL),

2. Respiratory Medicine including Tuberculosis)
3. Surgery and allied specialties (General Surgery, Orthopedics [including trauma]), Dentistry, Physical Medicine and rehabilitation, Anaesthesiology and Radiodiagnosis)
4. Obstetrics and Gynecology (including Family Welfare)
5. Pediatrics
6. 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, problemoriented 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.

Phase distribution and timing of examination :-

<table>
<tr><td>Jan</td><td>Feb</td><td>March</td><td>April</td><td>May</td><td>June</td><td>July</td><td>August</td><td>Sept</td><td>October</td><td>Nov</td><td>December</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Foundation course</td><td colspan="4">I MBBS</td></tr>
<tr><td colspan="8">I MBBS</td><td>Exam I MBBS</td><td colspan="3">II MBBS</td></tr>
<tr><td colspan="8">II MBBS</td><td>Exam II MBBS</td><td colspan="3">III MBBS Part I</td></tr>
<tr><td colspan="9">III MBBS Part I</td><td>Exam III MBBS Part I</td><td>Electives & Skills</td></tr>
<tr><td colspan="12">III MBBS Part II</td></tr>
<tr><td>Exam III MBBS Part II</td><td></td><td colspan="10">Internship</td></tr>
<tr><td colspan="2">Internship</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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- Subject to change according to NMC Guidelines.
- One month is provided at the end of every professional year for completion of examination and declaration of results.

Distribution of subjects by Professional Phase

Phase & year of MBBS training	Subjects & New Teaching Elements	Duration#	University examination
First Professional MBBS	• Foundation Course (1 month) • Human Anatomy, Physiology & Biochemistry, introduction to Community Medicine, Humanities • Early Clinical Exposure • Attitude, Ethics, and Communication Module (AETCOM)	1 + 13 months	I Professional
Second Professional MBBS	• Pathology, Microbiology, Pharmacology, Forensic Medicine and Toxicology, • Introduction to clinical subjects including Community Medicine • Clinical postings • Attitude, Ethics & Communication Module (AETCOM)	12 months	II Professional

Third Professional MBBS Part I	• General Medicine, General Surgery, Obstetrics & Gynecology, Pediatrics, Orthopedics, Dermatology, Psychiatry, Otorhinolaryngology, Ophthalmology,Community Medicine, Forensic Medicine and Toxicology, Respiratory medicine, Radiotherapy, Anesthesiology • Clinical subjects /postings • Attitude, Ethics & Communication Module (AETCOM)	13 months	III Professional (Part I)
Electives	• Electives, Skills and assessment*	2 months	
Third Professional MBBS Part II	• General Medicine, Pediatrics, General Surgery, Orthopedics, Obstetrics and Gynecology including Family welfare and allied specialties • Clinical postings/subjects • Attitude, Ethics & Communication Module (AETCOM)	13 months	III Professional (Part II)
Assessment of electives shall be included in Internal Assessment.			

Foundation Course (one month)

Subjects/ Contents	Teaching hours	Self Directed Learning (hours)	Total hours
Orientation 1	30	0	30
Skills Module 2	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 skills3	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.

First Professional teaching hours

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.

Second Professional Teaching Hours: -

Subjects	Lectures (hours)	Small Group Teaching/ Tutorials/ Integrated learning/ Practical (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***	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).

Third Professional Part I teaching hours

Subjects	Lectures (hours)	Small Group Teaching/ Tutorials/ Integrated learning/ Practical (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
Total	303	401	66	1551

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

Third Professional Part II teaching hours

Subjects	Lectures (hours)	Small Group Teaching/ Tutorials/ Integrated learning/ Practical (hours)	Self directed learning (hours)	Total (hours)
General Medicine	70	125	15	210
General Surgery	70	125	15	2
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
Total	250	435	60	1780

* 25% of allotted time of third professional shall be utilized for integrated learning with pre- and para- clinical subjectsand shall be assessed during the clinical subjects examination. This allotted time will be utilized as integrated teachingby 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.

Clinical postings

Subjects	Period of training			Total weeks
	II MBBS	III MBBS part I	III MBBS part II	
Electives	-	-	8*(4 regular clinical posting)	4
General Medicine[1]	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics and Gynecology[2]	4	4	8+4	20
Pediatrics	2	4	4	10
Community Medicine	4	6	-	10
Orthopedics- including rauma[3]	2	4	2	8
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Respiratory Medicine	2	-	-	2
Psychiatry	2	2	-	4
Radio diagnosis[4]	2	-	-	2
Dermatology	2	2	2	6
Dentistry and 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.

1. This posting includes Laboratory Medicine (Para-clinical) & Infectious Diseases (Phase III Part I).
2. This includes maternity training and family welfare (including Family Planning).
3. This posting includes Physical Medicine and Rehabilitation.
4. This posting includes Radiotherapy, wherever available.

New teaching / learning elements

9.1. Foundation Course

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

9.1.2 Objectives**:** The objectives are to:

(a) Orient the learner to:

a. The medical profession and the physician's role in society
b. The MBBS programme
c. Alternate health systems in the country and history of medicine
d. Medical ethics, attitudes and professionalism
e. Health care system and its delivery
f. National health programmes and policies
g. Universal precautions and vaccinations
h. Patient safety and biohazard safety
i. Principles of primary care (general and community based care)
j. The academic ambience

(b) 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

(c) Train the learner to provide:

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

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

(a) Local language programme
(b) English language programme
(c) Computer skills
(d) These may be done in the last two hours of the day for the duration of the Foundation Course.

9.1.4 These sessions must be as interactive as possible.

9.1.5 Sports (to be used through the Foundation Course as protected 04 hours / week).

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

9.1.7 Institutions shall develop learning modules and identify the appropriate resource persons for their delivery.

9.1.8 The time committed for the Foundation Course may not be used for any other curricular activity.

9.1.9 The Foundation Course will have compulsory 75% attendance. This will be certified by the Dean of the college.

9.1.10 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.

9.1.11 every college must arrange for a meeting with parents and their wards.

9.2. Early Clinical Exposure

9.2.1 **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.

9.2.2 **Elements**

(a) 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).
(b) 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).
(c) 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.

9.3. Electives

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

(a) For diverse learning experiences,
(b) To do research/community projects that will stimulate enquiry, self-directed, experiential learning and lateral thinking.

9.3.2 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.

9.3.3 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.

9.3.4 **Structure**

(a) The learner shall rotate through two elective blocks of 04 weeks each.
(b) 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.
(c) 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.

(d) 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.

9.3.5 Each institution will develop its own mechanism for allocation of electives.

9.3.6 It is preferable that elective choices are made available to the learners in the beginning of the academic year.

9.3.7 The learner must submit a learning log book based on both blocks of the elective.

9.3.8 75% attendance in the electives and submission of log book maintained during elective is required for eligibility to appear in the final MBBS examination.

9.3.9 Institutions may use part of this time for strengthening basic skill certification.

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

9.4.1 Objectives of the programme:

At the end of the programme, the learner must demonstrate ability to:

(a) 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,

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

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

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

(e) understand the strengths and limitations of alternative systems of medicine,

(f) respond to events and issues in a professional, considerate and humane fashion,

(g) translate learning from the humanities in order to further his / her professional and personal growth.

9.5. Learner-doctor method of clinical training (Clinical Clerkship)

9.5.1 Goal: To provide learners with experience in:

(a) Longitudinal patient care,

(b) Being part of the health care team,

(c) Hands-on care of patients in outpatient and inpatient setting.

9.5.2 Structure:

(a) The first clinical posting in second professional shall orient learners to the patient, their roles and the specialty.

(b) The learner-doctor programme will progress as outlined in Table 9.

(c) 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,

(d) 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,

(e) Participate in the unit rounds on its admission day and will present the assigned patients to the supervising physician,

(f) Follow the patient's progress throughout the hospital stay until discharge,

(g) Participate, under supervision, in procedures, surgeries, deliveries etc. of assigned patients (according to responsibilities outlined in table 9),

(h) Participate in unit rounds on at least one other day of the week excluding the admission day,

(i) Discuss ethical and other humanitarian issues during unit rounds.

(j) Attend all scheduled classes and educational activities,

(k) Document his/her observations in a prescribed log book / case record. (d) No learner will be given independent charge of the patient (e) The supervising physician will be responsible for all patient care decisions

9.5.3 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)

Year of Curriculum	Focus of Learner - Doctor programme
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

ASSESSMENT

11. Assessment

11.1. Eligibility to appear for Professional examinations

11.1.1. The performance in essential components of training are to be assessed, based on:

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.

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 the 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 not 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

11.2.1 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.

11.2.2 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.

11.2.3 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.

11.2.4 Viva/oral examination should assess approach to patient management, emergencies, and 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.

11.2.5 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

11.2.6 A learner shall not be entitled to graduate after 10 years of his/her joining of 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.

11.2.7 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

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.

Phase of Course	Written-Theory – Total	Practicals/ Orals/ Clinicals	Pass Criteria
First Professional			**Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations **University Examination** 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	
Second Professional			
Pharmacology -2 Papers	200	100	
Pathology -2 Papers	200	100	
Microbiology - 2 Papers	200	100	
Third Professional part 1			
Forensic Medicine & Toxicology - 1 paper	100	100	
Ophthalmology – 1 paper	100	100	
Otorhinolaryngology – 1 paper	100	100	
Community Medicine - 2 papers	200	100	
Third Professional part 2			
General Medicine - 2 papers	200	200	
General Surgery- 2 papers	200	200	
Pediatrics -1 paper	100	100	
Obstetrics & Gynaecology - 2 papers	200	200	

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 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.

Admission timing and admission process shall be organized in such a way that teaching in the first Professional year commences with induction through the Foundation Course by the 1st 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.
(ii) Not 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.
(iii) A learner shall not be entitled to graduate later than ten (10) years of her/his joining the first MBBS course.

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.

Grace Marks: Grace marks upto a maximum of 5 marks shall be awarded as per grace rules to students who have failed only in one subject but passed in all other subjects.

1. A student who appears in the whole examination in first attempt and obtains the required minimum pass marks in the total aggregate of an examination but fails to obtain the minimum pass marks in one subject (in theory and / or practical as the case may be) will be awarded the grace marks up to a maximum of 05 marks according to the following scale, provided the candidate passes the examination by award of such grace marks:

Marks obtained by the candidate above the required minimum aggregate pass marks		Grace marks can be given up to
Up to 6 marks	-	02
Up to 12 marks	-	03
Up to 18 marks	-	04
19 marks and above	-	05

2. No grace marks would be awarded to a candidate who appears in part/ supplementary/remand examination. Non appearance of a candidate in any part of the examination on account of any reason will make him ineligible for grace marks.
3. A candidate who passes the examination after the award of grace marks in a paper/practical or the aggregate will be shown in the marks sheet to have passed the examination by grace. Grace marks will not be added to the marks obtained by a candidate from the examiners.
4. A candidate who is awarded grace marks in any subject to pass the examination will not be entitled for distinction in any subject.
5. The place of the candidate (who is given grace marks to pass the examination) in the examination merit list will be determined by the aggregate marks he secures from the examiners.

1) **Re-evaluation/ Retotalling :**

a) Re-evaluation: Re-evaluation of theory papers in all years of study of the MBBS course shall be permissible by the university on application and remittance of a prescribed fee. Such answer script shall be re-evaluated as per University rules. Re-evaluation shall not be permitted for second attempt in any paper.

b) Re-totaling: The University on application and remittance of a stipulated fee shall permit a recounting or opportunity to recount the marks received for various questions in an answer paper/papers for theory

of any number of subjects for which the candidate has appeared in the university examination as per university rules. Any error in totalling of the marks if identified shall be suitably rectified.

Qualification and experience to be eligible for examiner ship for MBBS examination

(a) M.D/M.S/Ph. D Degree from a recognized institution
(b) Four years teaching experience as Assistant Professor in the subject in a recognized Medical college after obtaining MD/MS in the subject. An examiner with Ph.D. Degree shall have 7 Years of teaching experience in a recognized medical college.
(c) Should be holding the post of a Reader/Associate Professor or above in a Medical Institution approved/ recognized by the National Medical Commission for MBBS.

11.2.9 **Appointment of Examiners**

(a) 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.
(b) 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.
(c) External examiners may not be from the same University.
(d) The internal examiner in a subject shall not accept external examinership for a college fromwhich external examiner is appointed in his/her subject.
(e) External examiners shall rotate at an interval of 2 years.
(f) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.
(g) All eligible examiners with requisite qualifications and experience can be appointed internal examiners by rotation in their subjects.
(h) All theory paper assessment should be done as central assessment program (CAP) of the University.

INTERNSHIP

12. 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.

12.1. Goal:

The goal of the internship programme is to train medical students to fulfill their roles as doctors of first contact in the community.

12.2. Objectives:

At the end of the internship period, the medical graduate will possess all competencies required of an Indian Medical Graduate, namely:

12.2.1 Independently provide preventive, promotive, curative and palliative care with compassion,
12.2.2 Function as leader and member of the health care team and health system,
12.2. Communicate effectively with patients, families, colleagues and the community,

12.2.4 Be certified in diagnostic and therapeutic skills in different disciplines of medicine taught in the undergraduate programme,

12.2.5 Be a lifelong learner committed to continuous improvement of skills and knowledge,

12.2.6 Be a professional committed to excellence and is ethical, responsive and accountable to patients, community and profession.

12.3 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	2 months
Family Welfare Planning 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.

12.4 Other details:

12.4.1 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 National Medical Commission to be considered on individual merit.

12.4.2 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.

12.4.3 The University shall issue a provisional MBBS pass certificate on passing the final examination.

12.4.4 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.

12.4.5 The intern shall be entrusted with clinical responsibilities under direct supervision of a designated supervising physician. They shall not work independently.

12.4.6 Interns will not issue medical certificate or death certificate or other medico-legal document under their signature.

12.4.7 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.

12.4.8 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 NMC as proposed above.

12.4.9 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.

12.5 Assessment of Internship:

12.5.1 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.

12.5.2 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.

12.5.3 Full registration shall only be given by the State Medical Council/ National Medical Commission on the award of the MBBS degree by the University or its declaration that the candidate is eligible for it.

12.5.4 Some guidelines for the implementation of the training programme are given below.

INTERNSHIP – DISCIPLINE RELATED:

12.6.1 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: -

I) 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.

12.6.2 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.

III) 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.

12.6.3: PEDIATRICS:

GOAL:

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.

A. 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.

B. 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

C. 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.

12.6.4: GENERAL SURGERY

GOAL:

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

12.6.5: 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;

12.6.6: 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 perennial 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 vaginum 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.

12.6.7 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.

12.6.8 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.

(B) Skill that an intern should be able to perform under supervision:

(a) Advise regarding methods for rehabilitation of the blind.

(C) 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 fluorescin staining of cornea.

12.6.9 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 talipesequinovarus (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 postoperative 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.

12.6.10 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.

A. 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.

B. An intern must have observed or preferably assisted at the following operations/ procedures: a) Skin biopsy for diagnostic purpose

12.6.11 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.

12.6.12 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) herapeutic counseling and follow up.

12.6.13 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;

12.6.14 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.

12.6.15 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

12.6.16 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.

A. 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.

B. 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.

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
General Medicine	Venipuncture (I) • Intramuscular injection(I) • Intradermal injection (D) • Subcutaneous injection(I) • Intra Venous (IV) injection (I) • Setting up IV infusion and calculating drip rate (I) • Blood transfusion (O) • Urinary catheterization (D) • Basic life support (D) • Oxygen therapy (I) • Aerosol therapy / nebulization (I) • Ryle's tube insertion (D) • Lumbar puncture (O) • Pleural and ascitic aspiration (O) • Cardiac resuscitation (D) • Peripheral blood smear interpretation (I) • Bedside urine analysis (D)
General Surgery	Basic suturing (I) • Basic wound care (I) • Basic bandaging (I) • Incision and drainage of superficial abscess (I) • Early management of trauma (I) and trauma life support (D)
Orthopedics	Application of basic splints and slings (I) • Basic fracture and dislocation management (O) • Compression bandage (I)
Gynecology	Per Speculum (PS) and Per Vaginal (PV) examination (I) • Visual Inspection of Cervix with Acetic Acid (VIA) (O) • Pap Smear sample collection & interpretation (I) • Intra- Uterine Contraceptive Device (IUCD) insertion & removal (I)
Obstetrics	Obstetric examination (I) • Episiotomy (I) • Normal labor and delivery (including partogram) (I)

Pediatrics	Neonatal resuscitation (D) • Setting up Pediatric IV infusion and calculating drip rate (I) • Setting up Pediatric Intraosseous line (O)
Forensic Medicine	Documentation and certification of trauma (I) • Diagnosis and certification of death (D) • Legal documentation related to emergency cases (D) • Certification of medical-legal cases e.g. Age estimation, sexual assault etc. (D) • Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)
Otorhinolaryngology	Anterior nasal packing (D) • Otoscopy (I)
Ophthalmology	Visual acuity testing (I) • Digital tonometry (D) • Indirect ophthalmoscopy (O) • Epilation (O) • Eye irrigation (I) • Instillation of eye medication (I) • Ocular bandaging (I)
Dermatology	Slit skin smear for leprosy (O) • Skin biopsy (O) • Gram's stained smear interpretation(I) • KOH examination of scrapings for fungus (D) • Dark ground illumination (O) • Tissue smear (O) • Cautery - Chemical and electrical (O)

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.

SCHEME OF EXAMINATION MBBS
New Curriculum

First Professional

Subject	Theory			Practical			Subject Total	Internal assessment		
Human Anatomy	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max. Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100
Physiology	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max. Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100
Biochemistry	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max. Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100

Second Professional

Subject	Theory			Practical			Subject Total	Internal Assessment		
Pharmacology	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100
Pathology	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100
Microbiology	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100

Third Professional Part - I

Subject	Theory			Practical			Subject Total	Internal Assessment		
Forensic medicine and Toxicology	Paper I		Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100		100	60	40	100	200	100	100	200
Pass Marks	50		50			50	100	40	40	100
Ophthalmology	Paper I		Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100		100	60	40	100	200	100	100	200
Pass Marks	50		50			50	100	40	40	100
Otorhinolaryngology	Paper I		Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100		100	60	40	100	200	100	100	200
Pass Marks	50		50			50	100	40	40	100
Community Medicine	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	60	40	100	300	100	100	200
Pass Marks	40	40	100			50	150	40	40	100

Third Professional Part - II

Subject	Theory			Practical			Subject Total	Internal Assessment		
General Medicine	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	120	80	200	400	100	100	200
Pass Marks	40	40	100			100	200	40	40	100
General surgery	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	120	80	200	400	100	100	200
Pass Marks	40	40	100			100	200	40	40	100
Paediatrics	Paper I		Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100		100	60	40	100	200	100	100	200
Pass Marks	50		50			50	100	40	40	100
Obstretics and Gynaecology	Paper I	Paper II	Total	Practical	Viva	Total		Theory	Practical	Total
Max Marks	100	100	200	120	80	200	400	100	100	200
Pass Marks	40	40	100			100	200	40	40	100

First MBBS Examination

HUMAN ANATOMY

1. GOAL:

The broad goal of the teaching of undergraduate students in Anatomy aims at providing comprehensive knowledge of the gross and microscopic structure and development of human body to provide a basis for understanding the clinical correlation of organs or structures involvedand the anatomical basis for the disease presentations.

2. OBJECTIVES:

(a) **Knowledge:** At the end of the course the student should be able to:

i. Comprehend the normal disposition, clinically relevant interrelationships, functional and cross sectional anatomy of the various structures in the body.
ii. Identify the microscopic structure and correlate elementary ultra-structure of various organs and tissues and correlate the structure with the functions as a prerequisite for understanding the altered state in various disease processes.
iii. Comprehend the basic structure and connections of the central nervous system to analyse the integrative and regulative functions of the organs and systems. He/she should be able to locate the site of gross lesions according to the deficits encountered.
iv. Demonstrate knowledge of the basic principles and sequential development of the organs and systems, recognise the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards. He/she should be able to explain the developmental basis of the major variations and abnormalities.

(b) **Skills :**At the end of the course the student should be able to:

i. Identify and locate all the structures of the body and mark the topography of the living anatomy.
ii. Identify the organs and tissues under the microscope.
iii. Understand the principles of karyotyping and identify the gross congenital anomalies.
iv. Understand principles of newer imaging techniques and interpretation of computerised tomography (ct) scan, sonogram etc.
v. Understand clinical basis of some common clinical procedures i.e., intramuscular injection, lumbar puncture and kidney biopsy.

(a) **Integration:** From the integrated teaching of other basic sciences, student should be able to comprehend the regulation and integration of the functions of the organs and systems in the body and thus interpret the anatomical basis of disease process.

3. SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical (Practical/ Clinical) + Viva Voce	**60+40= 100 marks**	
Internal assessment		
Theory	**100**	**100+100=200 Total**
Practical	**100**	

Notes:

1. Each Theory paper shall be of 100 marks and of 3 hours duration.
2. Each paper will consist of two Sections A & B of 50 marks each.

3. Each section will have three questions.
4. Question no1 shall contain 10 multiple choice question (MCQs) of one mark each. Answers of MCQs are to be given on OMR answer sheet. This answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.
5. Question no 2 shall contain structured short notes (attempt any 4 out of 5) of 5 marks each
6. Question no 3 shall contain structured long questions (attempt any 2 out of 3) of 10 marks each
7. Each section shall be answered in separate answer book.
8. Section A will be assessed by the External Examiner and Section B by the Internal Examiner.
9. **Internal Assessment**: It shall be mendatory to obtain atleast 50% marks combined in theory and practical (not less than 40% in each) to become eligible for appearing at University Examination.
10. **University Examination:** To pass the University Examination, it shall be mendatory to obtain atleast 50 marks separately in theory and practical (practical = practical/clinical + viva)

SYLLABUS:

4.1 Theory

1. Principles of Anatomy, Embryology, Histology, Osteology
2. Regional anatomy including Radiology, surface marking and applied anatomy:-
   a. Superior extremity
   b. Inferior extremity
   c. Thorax
   d. Head and Neck
   e. Abdomen and pelvis
3. Radiology and surface marking of important structures in the body
4. Applied aspects and anatomical basis of common health disorders and procedures

Paper I

(General Embryology & Histology, Gross Anatomy, Embryology & Histology of Head, Neck , Brain and Upper Extremity)

Upper Limb

(1) Pectoral region
(2) Mammary gland
(3) Axilla
(4) Brachial plexus
(5) Scapular region
(6) Arm
(7) Forearm
(8) Hand
(9) Lymphatic drainage of upper limb.
(10) Venous drainage of upper limb.
(11) Dermatomes of upper limb.
(12) Joints of upper limb
(13) Anatomical basis of intramuscular and intravenous injections.

Head, Neck and Brain

(1) Scalp, meninges and dural venous sinuses
(2) Face-- superficial and deep structures with applied aspects
(3) Neck-- superficial and deep structures with their applied aspects
(4) Orbit
(5) Parotid region

(6) Temporal and infra-temporal fossae
(7) Submandibular region
(8) Peripheral parasympathetic Ganglia:-
    a. Ciliary Ganglion
    b. Otic Ganglion
    c. Pterygopalatine Ganglion
    d. Submandibular Ganglion
(9) Oral cavity, tongue and pharynx
(10) Nasal cavity with para -nasal sinuses
(11) Larynx
(12) Ear
(13) Eye ball
(14) Joints of neck
(15) MRI, C.T. Scan (basic information)

Neuroanatomy

1. Meninges and CSF formation & circulation
2. Spinal cord
3. Brainstem
4. Cerebrum
5. Cerebellum
6. Diencephalon
7. Blood supply and applied anatomy of above structure

Embryology

General Embryology

(1) General introduction to embryology --growth and development with stages.
(2) Oogenesis and Spermatogenesis.
(3) Chromosomes and their abnormalities.
(4) Barr body
(5) Teratogenesis
(6) Twining
(7) Assessment of foetal status of development
(8) Morula formation/Blastocyst implantation,
(9) Formation and Derivatives of 3 germ layers and their fate.
(10) Folding of Embryo.
(11) Foetal membranes, Amnion and amniotic cavity, Allantois, Yolk sac
(12) Placenta and Umbilical cord.

Systemic Embryology

(1) Mouth, Nasal cavity and palate with congenital defects.
(2) Pharyngeal apparatus with anomalies.
(3) Nervous system
(4) Integumentary System.
(5) Musculoskeletal system

Histology

General

(1) Cell biology cell division, cell cycle, sex chromatin.
(2) Methods of histological study and staining of dead and living tissues
(3) All basic tissues of body

(4) Classification of epithelial tissue with details of each tissue
(5) Cell junctions
(6) Glands
(7) Connective tissues
(8) Bone with Intra-membranous and intra-cartilaginous ossification.
(9) Skin and its appendages.
(10) Lymphoid tissue –Tonsil, Thymus, Spleen and Lymph node

Systemic Histology

(1) Nervous tissue-neuron, ganglia, peripheral nerve, spinal cord, cerebrum and cerebellum
(2) Eye
(3) Ear

Paper II

(Genetics, Gross Anatomy, Embryology & Histology of Thorax, Abdomen & Pelvis and Lower Extremity)

Lower Limb

(1) Superficial and deep fascia of thigh
(2) Front of thigh and applied anatomy
(3) Anterior and medial compartments of thigh
(4) Gluteal region
(5) Back of thigh
(6) Popliteal fossa
(7) Anterior,posterior and lateral compartments of leg
(8) Foot
(9) Joints
(10) Lymphatic and Venous drainage of Lower Limb
(11) Dermatomes of Lower Limb
(12) Arches of foot
(13) Venesection

Abdomen

(1) Divisions of abdominal cavity
(2) Quadrants and planes of abdomen.
(3) Anterior abdominal wall and its applied aspect
(4) Peritoneum with applied aspect
(5) All viscera in abdominal cavity and pelvis-- their gross features, placement, relations, blood supply, lymphatic drainage, nerve supply and applied aspects.
(6) Posterior abdominal wall
(7) Nerves, nerve plexuses, blood vessels and lymphatics of abdomen and pelvis
(8) Diaphragm and its applied aspect
(9) Perineum with triangles, pouches, ischiorectal fossa and external genitalia
(10) Anatomical basis of :
    a. Circumcision.
    b. Tubectomy/Vasectomy.
    c. Abdominal paracentesis
    d. Per-cutaneous needle biopsy of liver.
    e. Lumbar puncture

Thorax

(1) Boundaries and thoracic wall
(2) Mediastinum-- divisions, contents and applied aspects
(3) Pleura with its reflections.
(4) Lungs and Bronchopulmonary segments with applied aspects.
(5) Pericardium and applied aspects.
(6) Coronary Circulation.
(7) Chambers of heart with applied aspects.
(8) Conducting system of heart.
(9) Skeleton of heart.
(10) Aorta and pulmonary trunk
(11) Azygos system of veins.
(12) Thoracic duct.
(13) Oesophagus
(14) Autonomic nerve supply
(15) Radiology and surface marking
(16) Anatomical basis of bronchoscopy, pleural tap, intracardiac injection and apex beat

Human Genetics

(1) Cell, cell division, mitosis and meiosis, nucleus, DNA, chromosomes, classification, karyotype, chromosomal aberrations (Klinefelter, Turner and Down's Syndrome)
(2) Prenatal diagnosis for congenital abnormalities, sex determination.
(3) Pedigree chart, pathogenesis of chromosomal aberrations and their effects, recombinant DNA, genetic inheritance, genetic counselling, inborn errors of metabolism.

Osteology

(1) General Introductory terms
(2) Classification of bones
(3) Laws of ossification
(4) Bones of :-
    a Upper Limb
    b Lower Limb
    c Thorax
    d Skull
    e Vertebral Column
    f Pelvis

Systemic Embryology

(1) Gastrointestinal system
(2) Respiratory system
(3) Cardio vascular system
(4) Genitourinary system
(5) Endocrine system

Systemic Histology

(1) Respiratory system
(2) Gastrointestinal tract
(3) Cardio-vascular system
(4) Urinary system
(5) Male reproductive system
(6) Female reproductive system
(7) Endocrine glands

4.2 Practical

1. Dissection of Human cadavers
2. Histology-slides
3. Embryology models- Demo
4. Surface making of cadavers
5. Radiological anatomy
6. Osteology

7. Books

Core Books

1. General Anatomy- B D Chaurasia
2. Three Vol. of Gross Anatomy – Inderbir Singh/BD Chaurasia/ Vishram Singh
3. Cunnigham's Manual of Practical Anatomy- Vol I II III
4. Neuroanatomy- Snell's/ IB Singh/ Krishna Garg, Kaul and Bahl
5. Embryology- I B Singh/ Langman's
6. Histology- Gunasegaran/ Krishna Garg. De Fiore Atlas of Histology
7. Genetics- Varsha Katira/ G P Pal
8. Surface and Radiological Anatomy- Kapur & Suri/ A Halim

Reference Books

1. Clinical Anatomy- Neeta V Kulkarni
2. Gray's Anatomy
3. Atlas of Anatomy- Netter's/ McMinn/Thieme's
4. Lee McGregor's Synopsis of Surgical anatomy
5. Clinical Anatomy by Richard Snell

MBBS101 **Hum. Ana. I**

First M.B.B.S. (Main/ Remanded) Examination Month /Year

HUMAN ANATOMY

Paper I

(Section A & B)

(General Embryology, Human Anatomy, Histology and Embryology of Brain, Head, Neck and Upper Extremity)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 10x1= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q.2 Structured short notes (attempt any four out of five) 4x5=20

1

2

3

4

5

Q.3 Structured long question (attempt any two out of three) 2x10= 20

1

2

3

Section B

Q.1 MCQ 10x1 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1

2

3

4

5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1

2

3

First M.B.B.S. (Main / Remanded) Examination Month / Year
HUMAN ANATOMY
Paper-I
(Section A & B)
(General Embryology, Human Anatomy, Histology and Embryology of Brain, Head, Neck and Upper Extremity)
Time: 3 hrs
Maximum Marks: 100

Use separate answer book for each Section.
For each section, student shall be allowed to take only one supplementary copy along with one main answer book
(Any Question having parts should be answered as whole at one place only)
Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis.

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION-A

Q.1 MCQ 10x1=10

1. The secondary center of ossification appears in following part of the developing bone:
   A. Diaphysis
   B. Metaphysis
   C. Epiphyseal plate
   D. Epiphysis

2. Which of the following is not a fibrous joint
   A. Schindylesis
   B. Symphysis
   C. Gomphosis
   D. Syndesmosis.

3. Thalidomide baby is characterized by:
   A. Agenesis of all limb
   B. Phocomelia
   C. Sirenomelia
   D. Syndactyly

4. The opponens pollicis muscle is innervated by:
   A. Lateral common digital branch of median nerve
   B. Anterior interosseous nerve
   C. Recurrent branch of median nerve
   D. Deep branch of ulnar nerve

5. Ligaments of Cooper are modifications of:
   A. Fibrous stroma of breast
   B. Pectoralo fascia
   C. Fatty tissue of breast
   D. Axillary fascia

6. The safety muscle of the tongue is :
   A. Intrinsic
   B. Hyoglossus
   C. Genioglossus
   D. Stylogossus

7. Which of the following laryngeal cartilages forms a complete ring :
   A. Epiglottis
   B. Thyroid
   C. Arytenoid
   D. Cricoid

8. The medial pterygoid muscle takes origin from all bones , except:
   A. Sphenoid
   B. Palatine
   C. Maxilla
   D. Zygomatic

9. Piriform fossa is located in :
   A. Laryngeal inlet
   B. Laryngopharynx
   C. Oropharynx
   D. Nasopharynx

10. The vagus nerve passes into the abdomen through the
   A. Vena caval orifice
   B. Aortic orifice
   C. Oesophageal orifice
   D. Deep to the medial arcuate ligament

Q.2. Write short notes on the following **(any four)** 4x5=20
   1. Innervation of scalp
   2. Neural crest
   3. Lingual nerve
   4. Dangerous area of face
   5. Microanatomy of thyroid gland

Q.3. Describe in detail about the following: - (**any two**) 2x10=20
   1. Type & variety, ligaments, movements, muscles causing movement and applied anatomy of Temporomandibular joint
   2. Gross anatomy, relation, nerve supply and applied anatomy of parotid gland
   3. Development, nerve supply and lymphatic drainage of tongue

SECTION- B

Q.1. MCQ 10x1=10

1. Myelination of axon of optic nerve and of sciate nerve is the function of which of the following pair (cells are arranged in the order of the nerves):
   A. Satellite cells and oligodendroglia
   B. Protoplasmic astrocytes and Schwann cells
   C. Fibrous astrocytes and ependymal cells
   D. Oligodendroglia and Schwann cells

2. Which of the following is the outer covering of the peripheral nerve:
   A. Perineurium
   B. Neurilemmma
   C. Epineurium
   D. Endoneurium

3. The extrambryonic mesoderm develops from:
   A Amnion
   B Trophoblast
   C Primitive Node
   D Yolk Sac

4. Abduction of the middle finger is brought about by :
   A Third dorsal interosseous
   B Third lumbrical
   C Second and third dorsal interossei
   D Second and third lumbrical

5. Which of the following pierces the interosseous membrane ?
   A Anterior interosseous artery
   B Anterior interosseous nerve
   C Posterior interosseous artery
   D Posterior interosseous nerv

6. The muscle attached to pterygomandibular raphe are supplied by following nerve pair:
   A Facial and vagus
   B Facial and glossopharyngeal
   C Mandibular andfacial
   D Glossopharyngeal and madnibular

7. A lesion of left hypoglossal nerve causes :
   A Deviation of the tongue to the right on protrusion
   B Total inability to protrude the tongue
   C Deviation of tongue to the left on produsion
   D Loss of taste sensations on the left half of posterior one -third

8. A 22 Year -old college student is being seen for possible sinusitis. The physician sees purulent discharge arising from the superior nasal meatus. Which of the following sinuses is likely to be infected?
   A. Frontal
   B. Maxillary
   C. Sphenoidal
   D. Posterior ethmoidal

9. A 48 -Year -old woman present to her physician with ‘double vision “ and is unable to adduct her right eye on attempted left lateral gaze . Convergence is intact . Both direct and consensual light reflexes are normal. Which of the following structures is most likely to be affected?
   A. Left oculomotor nerve
   B. Medial longitudinal faciculus
   C. Right abducent nerve
   D. Right oculomotor nerve

10. An injury to the hypoglossal nerve in the hypoglossal canal would not affect
   A. Hyoglossus muscle
   B. Genioglossus muscle
   C. Styloglossus muscle
   D. Palatoglossus muscle

Q2. Write short notes on the following **(any four)** 4x5=20

1. Carotid sheath
2. Inferior cerebellar peduncle
3. Carpal tunnel syndrome
4. Development of spinal cord
5. Sternocleidomastoid muscle

Q.3. Describe in detail about the following:- **(any two)** 2x10 =20

1. Constituent fibers, arterial supply and applied anatomy of Internal capsule
2. Lateral wall of nasal cavity
3. Circle of Wille’s

MBBS102 **Hum. Ana. II**

First M.B.B.S.(Main/ Remanded) Examination Month /Year

HUMAN ANATOMY

Paper II

(Section A & B)

(Genetics, General Histology, Human Anatomy, Histology and Embryology of Thorax, Abdomen & Pelvis and Lower Extremity)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any 4 out of five) 4x5=20

1

2

3

4

5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1

2

3

Section B

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q 2 Structured short notes (attempt any four out of five) 4x5=20

1

2

3

4

5

Q 3 Structured long question (attempt any two out of three) 2x10= 20

1

2

3

MBBS102 **Hum. Ana. II**

First M.B.B.S. (Main/Remanded) Examination Month / Year

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions, Questions on applied aspect, Questions on preclinical basis.

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION-A

Q.1 MCQ 10x1=10

1. The gastric contents exiting through a posterior perforation of the stomach will accumulate on the:
   A. Left paracolic gutter
   B. Left paravertebral gutter
   C. Rt. Paravertebral gutter
   D. Omental bursa

2. A patient was diagnosed with bleeding ulcer of the lesser curvature of the stomach which artery is most likely involved?
   A. Gostroduodenal
   B. Lt gastric
   C. Lt gastroepiploic
   D. Rt. Gastroepiploic

3. The spleen contacts all of the following organs except:
   A. Jejunum
   B. Kidney
   C. Lt colic flexure
   D. Tail of pancreas

4. The inferior mesenteric vein usually joins which vein:
   A. Inferior venacava
   B. Lt Renal vein
   C. Portal vein
   D. Splenic vein

5. During the removal of a patient kidney .You would observe which of the following as being most anterior within the renal sinus?
   A. Renal arteries
   B. Renal vein
   C. Major calyx
   D. Renal plevis

6. The part of the broad ligament giving attachment & support to the uterine tube is the:
   A. Mesometrium
   B. Mesovarium
   C. Mesosalpinx
   D. Round ligament

7. Which of the following structures separates the pelvic cavity from the perineum
   A. Pelvic diaphragm
   B. Perineal membrane
   C. Perineal body
   D. Urogenital diaphragm

8. A CT scan through the transpyloric plane is likely to include which of the following structures?
   A. Coeliac trunk
   B. Oesophagus
   C. Pancreas
   D. Transverse colon

9. The spleen develops in :
   A. The dorsal mesogastrium
   B. The ventral mesogastrium
   C. Both the dorsal and ventral mesogastrium
   D. The mesentry of the midgut

10. A patient with liver cirrhosis has symptoms of oesophageal varices. This due to dilatation of the anastomosis between which of the following pairs of veins?
   A. Lt gastric and the azygous vein
   B. Rt. Gastric and the azygous vein
   C. Rt. Gastric and the hemiazygous vein
   D. Lt. gastric and the hemiazygous vein

Q.2 Write short notes on the following **(any four)** 4x5=20

1. Site of Portocaval anastomosis
2. Femoral hernia
3. Bronchopulmonary segments of the Rt lung
4. Typical intercostal space
5. Openings of diaphragm

Q.3. Describe in detail about the following:- **(any two**) 2x10=20

1. Arterial supply, lymphatic drainage & nerve supply of stomach
2. Boundaries, gross anatomy & applied anatomy of Ischiorectal fossa.
3. Factors maintaining medial longitudinal arch & give its applied anatomy.

SECTION- B

Q.1 MCQ 10x1=10

1. Which of the following does not conduct spermatozoa?
   A. Ampula of the ductus deferens
   B. Duct of the seminal vesicle
   C. Epididymis
   D. Prostatic urethra

2. The uterus is located
   A. Posterior to the bladder & rectum
   B. Posterior to the bladder & anterior to the rectum
   C. Anterior to the bladder & rectum
   D. Anterior to the bladder & post. to the rectum

3. Preganglionic parasympathetic nerve fibers within the pelvic plexus arise from S2 S3 S4 and enter the plexus via:
   A. Sacral splanchnic nerve
   B. Gray rami communicants
   C. Pelvic splanchnic nerves
   D. White rami communicants

4. Which of the following nerves carry parasympathetic fibers to the pelvic organs?
   A. Sacral splanchnic nerves
   B. Pudendal nerves
   C. Pelvic splanchnic nerves
   D. Hypogastric nerves

5. A newborn male is found to have uretheral openings along the ventral surface of the penis this condition is called
   A. Pseudophroditism
   B. Epispadias
   C. Hypospadias
   D. Testicular feminizing syndrome

6. Pain of appendicitis is often first felt around the umbilicus indicating that the appendix receives its sympathetic from which spinal cord segment?
   A. T9
   B. T10
   C. T11
   D. T12

7. The blockages of main bile duct in the quadrate lobe will likely cause reduced flow of bile secretion in the:
   A. Left hepatic duct
   B. Rt. hepatic duct
   C. Cystic duct
   D. Common Hepatic duct

8. A53 year old female patient with severe jaundice was diagnosed with pancreatic cancer you suspect that tumor is located in which portion of the pancreas
   A. Head
   B. Neck
   C. Body
   D. Tail

9. Ligation of the common hepatic artery will eliminate the gastric blood supply through whic of the following arteries.
   A. Left gastric & short gastric arteries
   B. Short gastric & Rt gastroepiploic artery
   C. Rt. Gastroepiploic & Rt. Gastric artery
   D. Rt. Gastric & Lt. gastric arteries

10. A patient suffering from tuberculosis of the Lt epididymis was found to have an ulcer on the posterior wall of the scrotum which group of lymph nodes would you examine for local spread of the disease?
   A. Deep inguinal lymph nodes
   B. Superficial inguinal lymph nodesInternal iliac lymph nodes
   C. External iliac lymph nodes
   D. Aortic group of lymph nodes

Q.2 Write short notes on the following **(any four)** 4x5=20

1. Interventricular septum
2. Supports of Uterus
3. Microanatomy of spleen
4. Structures passing through greater sciatic foramen
5. Callot's triangle

Q.3. Describe in detail about the following: - (**any two**) 2x10=20

1. Development, relations, nerve supply & blood supply of Rt kidney
2. Development, relations, blood supply, nerve supply & applied anatomy of liver
3. The differences between the proximal & distal part of the Anal canal

Instructions to paper setter for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis.

Q3. Structured long question

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PHYSIOLOGY

1. GOAL:

The broad goal of the teaching of undergraduate students in Physiologyaims at providing the student comprehensive knowledge of the normal functionsof the organ systems of the body to facilitate an understanding of thephysiological basis of health and disease.

2. OBJECTIVES:

(a) **Knowledge:** At the end of the course the student will be able to:

i. Explain the normal functioning of all the organ systems and theirinteractions for well coordinated total body function.
ii. Assess the relative contribution of each organ system to the maintenanceof the milieu interior.
iii. Elucidate the physiological aspects of normal growth anddevelopment.
iv. Describe the physiological response and adaptations to environmentalstresses.
v. List the physiological principles underlying pathogenesis and treatment ofdisease.

(b) **Skills:** At the end of the course the student should be able to :

i. Conduct experiments designed for study of physiological phenomenon
ii. Interpret experimental/investigative data.
iii. Distinguish between normal and abnormal data derived as a result of testswhich he/she has performed and observed in the laboratory.

(c) **Integration:** At the end of the integrated teaching the student should acquire anintegrated knowledge of organ structure and function and its regulatorymechanisms.

SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60+40= 100 marks**	
Internal assessment		
Theory	**100**	**100+100 = 200 Total**
Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

SYLLABUS

Theory

Paper I General physiology and Biophysics, CNS including ANS, Special Senses, Muscle and Nerve, Endocrines, Reproduction, Growth and Development)

(Section – A)

General Physiology & Biophysics

(1) Introduction to Physiology
(2) Cell function: morphology of cell components & functions.
(3) Homeostasis :
(4) Body fluids: Compartments- volume and composition, units for measuring concentration of solutes.
(5) Transport across the cell membrane- Intra cellular, inter cellular communication, transport across capillary wall.
(6) Apoptosis: programmed cell death
(7) The concept of pH & Buffer systems in the body
(8) Biomembrane potential: resting membrane potential, action potential: ionic basis, properties.

Nervous system

(1) Organization: Neurons, neuroglia, spinal cord-structure & functions effects of hemi section, spinal shock.
(2) ascending & descending tracts,
(3) Sensory unit, Receptors, reflexes and Synapse : Classification, types, functions, properties, adaptation, receptor potential, synaptic transmission, mechanism, chemical & electrical synapse, reflex Action
(4) Spinal reflexes: Classification, organization & functions.
(5) Sensations: Touch, pain, temperature-reception, transmission & perception, position sense (proprioception) pain modulation-segmental, supra spinal, referred pain, visceral pain-mechanism, applied physiology,
(6) Thalamus.
(7) Basal ganglia,
(8) cerebellum,
(9) Vestibular apparatus, structure & function, neural connections, motion sickness, Meniere's disease.
(10) Reticular formation, connections, functions, role in sleep & wakefulness. role in motor movement motor neuron, motor unit, descending motor pathways, common disorders affecting cerebellum, basal ganglia, Parkinson's disease, tests,
(11) Posture & equilibrium-Maintenance, postural reflexes, parts involved.
(12) Cerebral cortex Brodman's areas, functions, intellectual functions
(13) (speech & language, learning & memory) conditioned reflexes.
(14) E.E.G: Method of recording: REM& Non REM sleep, clinical uses
(15) Hypothalamus : Connection & function.
(16) Role in emotions & behaviour along with limbic system.
(17) C.S.F.: Formation, circulation, absorption, composition, lumber puncture.
(18) Special Senses :
   a. Vision : functional anatomy, image formation, reduced eye, refractive errors, intra ocular pressure, cataract, glaucoma, accommodation, visual acuity, field of vision, photochemistry of vision, dark & light adaptation, visual pathway, lesions, electro retinogram, Mechanism & Movement of eye balls, diplopia, visual reflexes.
   b. Hearing : Sound-pitch & intensity.Ear : functional anatomy, middle ear-functions, internal ear, organ of corti, mechanism of stimulation, cochlear potentials, theories of hearing, auditory pathway, deafness, tests of hearing, Audiometry
   c. Olfaction & taste (chemical sense) Stimulus, receptions, neural transduction, pathways & applied.

Autonomic Nervous System

(1) Organization, cholinergic & adrenergic receptors, transmission,
(2) Actions of sympathetic & para sympathetic on different effector organs, autonomic tone,
(3) Agonist & antagonists drugs acting on ANS. Autonomic reflexes,
(4) Applied aspects.

Muscle & Nerve

(1) Types of muscle, composition, end plate potential, mechanism of contraction, energetics, mechanical, thermal, chemical changes, O2 debt, cardiac & smooth muscles.
(2) Nerve: Classification, nerve conduction, degeneration & regeneration, neuromuscular transmission, blocking drugs, myasthenia Gravis.

(Section – B)

Endocrinology

(1) Endocrine, hormones: Classification, mechanisms of action, measurement, their general regulatory mechanisms.
(2) Hypothalamus as an endocrine organ, mechanisms of hormones synthesis.
(3) Pituitary: Structure hormones, actions & applied physiology.
(4) Thyroid: Structure, hormones, actions, abnormal thyroid secretions, Goiter, applied physiology.
(5) Parathyroid: Structure, hormones, actions, calcium metabolism, serum calcium & it control applied physiology, bone metabolism.
(6) Adrenal gland: Structure, hormones, actions, applied physiology & adrenal crisis.
(7) Pancreas: Structure of endocrine Pancreas, hormones, mechanisms of actions, diabetes mellitus, principles of management.
(8) Local hormones: Melatonin, ANP, GIT hormones (gut brain peptides) acetyl choline, prostaglandins, serotonin, etc.
(9) Obesity and metabolic syndrome

Reproductive System

(1) Sex organs, genetic basis of sex, sex determination, sex differentiation, common chromosomal abnormalities, Gonadotrophins
(2) Describe and discuss puberty: onset, progression, stages; early and delayed puberty and outline adolescent clinical and psychological association.
(3) Female reproduction system: Parts, menstrual cycle & its control, ovulation, mechanism, tests to detect ovulation, ovary-structure & function.
(4) Estrogen & progesterone: synthesis, actions, corpus luteum –functions.
(5) Physiology of copulation Fertilization, functions of placenta, change during pregnancy, mammary gland and lactation, physiology of labour.
(6) Contraception, infertility.
(7) Male reproduction system: Testes -structure & functions, spermatogenesis, regulation of testosterone, actions,
(8) Semen analysis
(9) Pregnancy tests
(10) Discuss the hormonal changes and their effects during perimenopause and menopause

Growth and Development

(1) Growth chart & Interpret anthropometric assessment of infants
(2) Describe physiology of Infancy
(3) Describe and discuss physiology of aging; free radicals and antioxidants

Paper – II

(Blood and Immunity, Cardiovascular system, Respiration, Excretion, Digestion, Environmental physiology and Temperature regulation)

(Section – A)
Blood & Immunity

(1) Blood: its composition & functions
(2) Plasma proteins, classification & functions,
(3) Hemoglobin;
(4) RBC: structure, erythropoiesis, life span, blood indices, osmotic fragility, R.E. system,
(5) anemias and jaundice
(6) WBC's: structure & functions,
(7) Platelets: Structure & functions, leucopoiesis, thrombopoiesis,
(8) Hemostasis, clotting factors, mechanism of coagulation, fibrinolysis, anti coagulants, bleeding disorder,
(9) Blood groups, clinical importance, blood transfusion, blood substitutes.
(10) Immunity,

Cardio-vascular system:

1. Functional anatomy of heart including chambers, sounds; and Pacemaker tissue and conducting system.
2. Structure of cardiac muscle & blood vessels,
3. Properties cardiac action potentials
4. Cardiac cycle: Heart sounds, murmurs,
5. Electrocardiography, origin and spread of cardiac impulse, cardiac vectors, recording of normal ecg, ecg change during arrhythmias
6. Hemodynamics, Poiseuille equation, rheological properties
7. Describe and discuss local and systemic cardiovascular regulatory mechanisms
8. factors affecting heart rate, cardiac output, measurement, regulation, normal & abnormal variation, regulation.
9. Blood Pressure: factors affecting and determining, regulation, hypertension.,
10. Regional circulation: microcirculation, lymphatic circulation, coronary, cerebral, skeletal muscle, cutaneous,foetal, pulmonary and splanchnic
11. Shock: classification, patho physiology, physiological basis of treatment.syncope and heart failure
12. Applied aspects: Hypertrophy, Heart block, Ischemia & infraction, Cardio vascular changes during exercise.

(Section – B)
Respiration

1. Structure in relation to functions, mechanics, compliance, work of breathing,
2. Pulmonary pressures, pulmonary ventilation, alveolar ventilation, volumes & capacities, dead space, measurements, pulmonary blood flow, distribution, regulation.
3. Composition of inspired, expired & alveolar air, gas laws, arterial & venous blood gas composition, mechanism of gas exchange, diffusion barrier, factors affecting, diffusion capacities of O2, CO2 & CO.
4. Transport of gases, O2 & CO2 & O2 carrying capacity, oxy-hemoglobin & CO2 dissociation curves, Bohr effect, Haldane effect.
5. Regulation of respiration: neural & chemical, generation of normal rhythm.
6. Hypoxias, cyanosis, oxygen therapy, hyperbaric O2 therapy, asphyxias, hypercapnoea, effect of exercises,
7. High altitude physiology, acclimatization,
8. Deep sea diving, space physiology (Basics),
9. Artificial respiration, CPR.
10. Applied aspects : Abnormal breathings, dyspnea, ARDS, IRDS,

Digestive System

1. General organization: Structure in relation to function, innervations.
2. Describe the composition, mechanism of secretion, functions, and regulation of saliva, gastric, pancreatic, intestinal and bile secretions
3. Movements of different parts of GIT, control mechanisms, gastric emptying
4. Describe the physiology of digestion and absorption of nutrients
5. GIT Hormones, secretion & its control
6. Gut Brain Axis
7. Liver: structure & functions, bile: mechanism of secretion, functions,
8. Enterohepatic circulation, jaundice,
9. Applied aspects: Discuss the physiology aspects of: peptic ulcer, gastro- oesophageal reflux disease, vomiting, diarrhoea, constipation, Adynamic ileus, Hirschsprung's disease
10. Describe & discuss gastric function tests, pancreatic exocrine function tests & liver function tests

Excretion

1. Gross structure: nephron – parts with functions, renal circulation, its control,
2. Describe the structure and functions of juxta glomerular apparatus and role of renin-angiotensin system
3. Mechanism of urine formation, GFR, measurement.
4. Mechanism of urine concentration & dilution, acidification of urine,
5. Renal clearance test
6. Describe the renal regulation of fluid and electrolytes & acid-base balance
7. Urinary bladder : Anatomy, innervations, micturition reflex & its control, neurogenic bladder
8. Artificial kidney : Principles of dialysis
9. Renal functions tests.
10. Describe cystometry and discuss the normal cystometrogram

Environmental physiology & Temperature regulation

1. Describe and discuss mechanism of temperature regulation
2. Describe and discuss adaptation to altered temperature (heat and cold)
3. Describe and discuss mechanism of fever, cold injuries and heat stroke

4.2 Practical

Haematology:

- Study of Microscope
- Estimation of hemoglobin
- Hemocytometry
- Determination of Total Erythrocyte (RBC) Count
- Determination of Platelet Count
- Preparation of a peripheral Blood Smear
- Identification of Cells
- Determination of Differential Leucocyte Count: DLC
- Determination of Arneth Count
- Determination of Bleeding Time (BT) and Clotting Time (CT)
- Determination of Blood groups (A,B,O and Rh system)
- Determination of Erythrocyte Sedimentation Rate (ESR) and Packed cell volume (PCV)
- Determination of Reticulocyte Count
- RBC Indices (Blood Standards)

Amphibian Experimentsz

- Introduction to amphibian experiments and Muscle nerve preparation
- Record a simple muscle curve and study the Effect of temperature on simple muscle Twitch.
- Effect of two successive stimuli (of same strength) on skeletal muscle.
- Effect of increasing strength of stimuli on skeletal muscle.
- Effect of increasing frequency of stimuli on skeletal muscle (genesis of tetanus).
- Effect of free load and after load on skeletal muscle.
- Effect of repeated stimuli on skeletal muscle (study of phenomenon of Fatigue).
- Study of isometric contraction in skeletal muscle
- Determination of conduction velocity of sciatic nerve and effect of variables on it.
- Properties of cardiac muscle – Refractory period, All- or-None Law, extra- systole and compensatory pause, beneficial effect.
- Properties of cardiac muscle – Refractory period, All- or-None Law, extra- systole and compensatory pause, beneficial effect.
- Properties of cardiac muscle – Refractory period, All- or-None Law, extra- systole and compensatory pause, beneficial effect.

Clinical physiology

- Physiological principles of clinical examination.
- General Physical examination, physiological basis of some clinical symptoms an
- General principles of Inspection/Palpation/Percussion/Auscultation.
- Examination of arterial Pulse.
- Measurements of arterial blood pressure
- Effect of Posture on Blood Pressure
- Effect of Exercise on Blood Pressure.
- Clinical examination of Respiratory system
- Clinical examination of Cardiovascular system.
- Spirometry
- Recording of 12 lead Electrocardiography (ECG) and its interpretation.
- Clinical examination of abdomen.
- Examination of cranial nerves.
- Examination of sensory system.
- Examination of motor system including reflexes.
- Visual acuity
- cardiovascular autonomic function tests
- Peak Expiratory Flow Rate (PEFR)

BOOKS:

1. Text book of Medical Physiology - AC Guyton and Hall
2. Review of Medical Physiology - WF Ganong
3. Physiological basis for Medical Practice - Best and Taylor
4. Textbook of medical physiology: Dr G K Pal
5. Textbook of medical physiology: Dr A K Jain
6. Text Book of Physiology - Berne and Levi
7. Practical manuals by Dr Reshu Gupta and Dr R C Gupta
8. Logbook of Physiology

MBBS103 **Physio. I**

First M.B.B.S. (Main/ Remanded) Examination Month /Year

Physiology

Paper-I

(Section – A & B)

(General physiology and Biophysics, CNS including ANS, Special Senses, Muscle and Nerve, Endocrines, Reproduction, Growth and Development)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q 1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

First M.B.B.S. (Main/ Remanded) Examination Month /Year
Physiology
Paper-I
(Section – A & B)
(General physiology and biophysics, CNS including ANS, Special Senses, Muscle and Nerve, Endocrines, Reproduction, Growth and Development)
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Maximum Marks: 100

Use separate answer book for each Section.
For each section, student shall be allowed to take only one supplementary copy along with one main answer book
(Any Question having parts should be answered as whole at one place only)
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Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis.

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q. 1 MCQ 1x10= 10

1. Ovulation is primarily caused by preovulatory surge of :
   A. Estradiol.
   B. Luteinizing hormone.
   C. Progesterone.
   D. Follicle stimulating hormone.
2. The blobs of the visual cortex are associated with :
   A. Ocular dominance.
   B. Orientation.
   C. Color processing.
   D. Saccadic eye movements

3. In human being, the least useful physiological response to low environmental temperature is :
   A. Shivering.
   B. Vasoconstriction.
   C. Release of thyroxine.
   D. Piloerection.

4. The maintenance of posture in a normal adult human being depends upon:
   A. Integrity of reflex arc.
   B. Muscle power.
   C. Type of muscle fibres.
   D. Joint movements in physiological range.

5. Minimum intensity of sound which the human ear may perceive is:
   A. Zero decibel
   B. 20 decibel
   C. 40 decibel
   D. 60 decibel

6. Maternal-fetal ABO incompatibility is less common than Rhesus incompatibility because:
   A. Fetal antibodies to ABO are less developed
   B. Maternal ABO antibodies do not cross the placenta
   C. Maternal ABO antigens do not cross the placenta
   D. Fetal ABO antigens are less immunogenic

7. Lesions of optic chiasma typically causes:
   A. Complete blindness of affected eye
   B. Bi temporal hemi anopia
   C. Bi nasal hemi anopia
   D. Scotoma

8. Fast pain fibers use which neurotransmitter at synapse in dorsal horn.
   A. Glutamate
   B. Acetyl choline
   C. Substance P
   D. Gama amino butyric acid

9. A 17-year-old boy presents to the emergency department with a cerebellar haemorrhage. On exam, he exhibits jerky eye movements, sways when standing, and has a "drunk-like" gait Which region of the cerebellum is most likely affected by the haemorrhage?
   A Anterior lobe
   B Dentate nucleus
   C Flocculonodular lobe
   D Posterior lobe

10. A 30-year-old woman is diagnosed with galactorrhea from both breasts. She is not pregnant and has never been pregnant. The nipple discharge started two weeks ago, after she was in a car accident. She had a concussion and is still having headaches. The galactorrhea is most likely a result of which substance not reaching the pituitary gland?
   A Dopamine
   B Gonadotropin-releasing hormone
   C Growth hormone–releasing hormone
   D Oxytocin

Q2 Structured short notes (attempt any four out of five) 4x5=20

1 Events occurring at neuromuscular junction
2 lesions of optic chiasma
3 Strength duration curve
4 Errors of refraction
5 Active transport and its type

Q3 Structured long question (attempt any two out of three) 2x10= 20

1. Define and classify synapse. Mention the properties of synapse. Add a note on post synaptic inhibition
2. Define Resting membrane potential. Describe the genesis of resting membrane potential
3. Describe reflex arc with a help of a diagram. Write about withdrawal reflex and its significance.

Section - B

Q.1 MCQ 1x10 =10

1. Resting membrane potential is mainly due to:
   A. Influx of sodium ions
   B. Influx of potassium ions
   C. Efflux of potassium ions
   D. Influx of chloride ions

2. Jumping of depolarization from node to node is called as:
   A. Orthodromic conduction
   B. Antidromic conduction
   C. Saltatory conduction
   D. Absolute refractory period

3. A patient complains of swelling in the neck since 5 months duration. Swelling moving with deglutition, nontender All are features of endemic goiter except:
   A. Enlarged thyroid gland
   B. Increased TSH
   C. Decreased T3 and T4
   D. Increased BMR

4. The secretion of growth hormone:
   A. Dependent on integrity of hypothalamus
   B. Ceases when adult state is reached
   C. Decreases during injury stress
   D. Increases during fasting when blood glucose level is reduced

5. Hyper aldosteronism is associated with:
   A. Oedema
   B. Retention of sodium
   C. Hyperkalemia
   D. Hypotension

6. A person with road traffic injury came to the emergency, on clinical examination; it was found that the Dorsal column pathway was involved. So transmission of which of the following sensations will not be affected
   A. position sense
   B. two point discrimination
   C. slow pain
   D. vibration

7. Which of the following is not a postural reflex:
   A. Flexor withdrawal reflex
   B. Stretch reflex
   C. Tonic neck reflex
   D. Vestibular placing reaction

8. Most common site of lesion of corticospinal tract is:
   A. Medullary pyramids
   B. Pontine nuclei
   C. Internal capsule
   D. Motor cortex

9. Neocerebellum is concerned with control of:
   A. Trunk and limb muscles
   B. Postural reflexes
   C. Skilled voluntary motor activity
   D. equilibrium

10. All of the following mechanisms of action of oral contraceptive pill are true, except :
   A Inhibition of ovulation.
   B Prevention of fertilization.
   C interference with implantation of fertilized ovum.
   D interference with placental functioning

Q2 Structured short notes (attempt any four out of five) 4x5=20

1. Classify contraceptives, mechanism of action of oral contraceptives
2. Functions of glucocorticoids.
3. Stages of spermatogenesis and factors affecting it
4. Functions of Placenta.
5. Capacitation

Q3 Structured long question (attempt any two out of three) 2x10= 20

1. Describe the different phases of menstrual cycle. Write in brief about hormones responsible for each.
2. Enumerate the pancreatic hormone. Describe the blood glucose regulation
3. Define puberty. Mention the changes occurring during puberty. Add a note on Turners syndrome

MBBS104 **Physio. II**

First M.B.B.S. (Main/ Remanded) Examination Month /Year

Physiology

Paper-II

(Section – A & B)

(Blood and Immunity, Cardiovascular system, Respiration, Excretion, Digestion, Environmental physiology and Temperature regulation)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

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SECTION A

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

SECTION B

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2. Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2

First M.B.B.S. (Main/ Remanded) Examination Month /Year

Physiology

Paper-II

(Section – A & B)

(Blood and Immunity, Cardiovascular system, Respiration, Excretion, Digestion, Environmental physiology and Temperature regulation)

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Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis.

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q.1 MCQ 1x10= 10

1. Oxygen therapy is most useful in:
   A. Anemic hypoxia
   B. Hypoxic hypoxia
   C. Stagnant hypoxia
   D. Cyanide poisoning

2. Acclimatization of sweating mechanism:
   A. Increases loss of Sodium in sweat
   B. Occurs due to decrease Aldosterone secretion
   C. Increases rate of sweating
   D. Occurs on chronic exposure to hot weather

3. A young female aged 20 years complaining of Daily loss of small amount of blood with fatigue, lack of concentration. The peripheral blood film shows microcytic hypochromic Red blood cells, what is the probable diagnosis :
   A. Megaloblastic anemia
   B. Iron deficiency anemia
   C. Aplastic anemia
   D. Hemolytic anemia

4. Leucopenia is seen in all of the following except:
   A. repeated exposure to radiation
   B. Bone marrow depression
   C. Antimitotic drug use
   D. Acute bacterial infections

5. A patient having history of delayed stoppage of bleeding after injury , bleeding time will be prolonged in which of the following conditions**:**
   A. Thromboctyopenia
   B. Christmas disease
   C. Chronic liver disease
   D. Purpura

6. Deglutition apnoea is::
   A. Associated with esophageal phase of deglutition
   B. Due to closure of larynx by epiglottis
   C. Due to closure of nasopharynx by soft palate
   D. Due to inhibition of respiratory centers

7. Main constituents of gastric juice includes:
   A. HCl, gastrin, mucus and pepsin
   B. Intrinsic factor, gastrin, pepsinogen and HCl
   C. Pepsinogen, HCl, mucus and intrinsic factor
   D. Mucus, trypsin, gastrin and intrinsic factor

8. Bile salts:
   A. Are cholegauge and choleretic agents
   B. Emulsify fat by increasing surface tension
   C. Are completely lost in feces
   D. Does not show entero-hepatic circulation

9. An increase in which of the following tend to increase capillary filtration rate:
   A. Arteriolar resistance
   B. Plasma colloid osmotic pressure
   C. Interstitial hydrostatic pressure
   D. Capillary hydrostatic pressure

10. P-R interval in ECG denotes conduction of impulse from:
   A. S A node to A V node
   B. S A node to bundle of HIS
   C. S A node to ventricles
   D. A V node to ventricles

Q2 Structured short notes (attempt any 4 out of five) 4x5=20

1. Hazards of blood transfusion.
2. Methods of measurement cardiac output
3. Enterohepatic circulation.
4. Intrinsic Clotting mechanism
5. Heart sounds

Q3 Structured long question (attempt any two out of three) 2x10= 20

1. Define blood pressure. Mention the determinants of blood pressure. Add a note on short term regulation of blood pressure.
2. Mention the normal body temperature. Explain the mechanism in altered body temperature in hot environment
3. Define Immunity. Mention its classification. Add a note on Bcells lymphocyte

Section B

Q1 MCQ 1x10= 10

1. Which of the following statement is false?
   A. Clearance of urea is less than GFR
   B. PAH clearance indicates renal plasma flow
   C. Inulin clearance equals GFR
   D. Renal clearance of a substance is expressed as mg/ml

2. Purpose of counter current multiplier in kidney is to:
   A. Form concentrated urine
   B. Form dilute urine
   C. Make medullary interstitial fluid hyper osmolar
   D. Maintain urinary pH

3. Slowest rate of conduction of cardiac action potential is in:
   A. Internodal bundles
   B. Atrio-ventricular node
   C. Ventricular muscle
   D. Purkinje fibers

4. Volume of air left in the lungs after tidal expiration is:
   A. Known as reserve volume
   B. Functional residual capacity
   C. About 4800ml
   D. Serve no useful purpose

5. Which of the following is not synthesized in liver:
   A. Albumin
   B. Immunoglobulins
   C. Cholesterol
   D. Urea

6. Surfactant decrease work of breathing by:
   A. Decreasing force required to inflate the lungs
   B. Decreasing force of contraction of inspiratory muscles
   C. Dilating bronchioles
   D. Decreasing alveolar diameter

7. Right shift of oxyhemoglobin dissociation curve is caused by all except:
   A. Increase in pCO2
   B. Increase pH
   C. Acidosis
   D. Increase in 2,3 DPG

8. Basic respiratory rhythm is generated by:
   A. Medullary respiratory centers
   B. Pneumotaxic centers
   C. Apneustic center
   D. Vagus nerve

9. A 56 year old male patient complaining of chest pain sprerading towards leftv arm along with sweating visited the physician ,was asked to get an ECG done .which of the following ECG findings are hall mark of acute myocardial infarction
   A. Prolonged Q-R interval
   B. Tall T wave
   C. inversion of T wave only
   D. Elevation of ST segment in leads overlying the infarcted area and depression of ST segment in reciprocal leads.

10. During old age the sensitivity of the baroreceptors is decreased and hence they are prone for syncope immediately after getting up from lying down position Which of the following is ture about baroreceptors.
   A. Stimulation of baroreceptors decresases blood pressure and heart rate.
   B. Their activation is responsible for rise in blood pressire only
   C. Atherosclerosis in old age makes them more sensitive to fall in BP
   D. Fall in carotid sinus pressure will increase firing in afferents from baroreceptors.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1. Juxta glomerular apparatus.
2. Vomiting reflex
3. Pancreatic enzymes and its action.
4. Oxygen haemoglobin dissociation curve.
5. Non respiratory functions of Lung

Q3 Structured long question (attempt any two out of three) 2x10= 20

1. Define Glomerular filtration rate. Mention the factors affecting it. Add a note on plasma clearance
2. Composition, Functions and regulation of Pancreatic juice
3. Enlist the respiratory centres. Describe the neural regulation of respiration.

Instructions to paper setter for framing questions

Q1. MCQs

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BIOCHEMISTRY

1. GOALS:

The broad goal of the teaching of undergraduate students in biochemistry is to make them understand the scientific basis of life processes at the molecular level.The course curriculum aims to enable the student to apply the acquired knowledge of medical biochemistry in various physiological and pathological conditions and to correlate the biochemical findings with the clinical conditions.

2. OBJECTIVES:

a) **Knowledge:** At the end of the course, the learner should be able to

i. Understand, describe and summarize the molecular and functional organization of cells. Structure – function relationship and inter relationships of various biomolecules in health and disease.

ii. Summarize the basic and clinical aspects of enzymology with emphasis on diagonostic enzymes.

iii. Understand and describe digestion, assimilation of nutrients and associated disorders like obesity, malnutrition and malabsorption.

iv. Understand, describe and integrate the various metabolic pathways and their regulation.

v. Describe mechanisms involved in water electrolyte and Acid Base Balance.

vi. Understand and summarize basic molecular mechanism of organization of genome, genetic expression and regulations; recombinant DNA technology and genetic engineering and explain the biochemical basis of common inherited disorders in India.

vii. Summarize the basic aspects of immunology including body defence mechanism.

viii. Understand the biochemical aspects of carcinogenesis and effects of xenobiotics.

ix. Identify principles of routine and specialized biochemistry laboratory investigations and techniques; analysis and interpretation of biochemical laboratory reports.

x. Use basic devices for qualitative and quantitative biochemical investigations.

b) **Skills:** At the end of the course, the student should be able to:

i. Make use of conventional techniques/instruments to perform biochemical analysis relevant to clinical screening and diagnosis

ii. Analyze and interpret investigative data

iii. Demonstrate the skills of solving scientific and clinical problems to integrate molecular events.

c) **Integration:** The knowledge acquired in biochemistry should help the students tointegrate molecular events with structure and function of the human body inhealth and disease.

3. SCHEME OF EXAMINATION:

<table>
<tr><td>Theory</td><td>200 Marks</td><td rowspan="2">200 + 100= 300 Total</td></tr>
<tr><td>Practical + Viva</td><td>60+40= 100 marks</td></tr>
<tr><td>Internal assessment</td><td></td><td></td></tr>
<tr><td rowspan="2">Theory</td><td>100</td><td rowspan="2">100 +100 = 200 Total</td></tr>
<tr><td>Practical</td><td>100</td></tr>
</table>

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each

4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

DEPARTMENT OF BIOCHEMISTRY

Course content for MBBS as per CBME for Biochemistry Paper I, II and Practicals

Paper I:

BASIC BIOCHEMISTRY, ENZYME, CHEMISTRY AND METABOLISM OF CARBOHYDRATES, LIPIDS, PROTEINS, HOMEOSTASIS, VITAMINS AND MINERALS METABOLISM, HAEM METABOLISM

	BASIC BIOCHEMISTRY (CELL)
BI1.1	Define and describe the molecular and functional organization of cell. Describe sub-cellular components Describe the cellular transport
	ENZYME
BI2.1	Explain fundamental concepts of enzyme, isoenzyme, alloenzyme, coenzyme & co-factors. Enumerate the main classes of IUBMB nomenclature. Factors affecting enzyme action.
BI2.2	Clinical importance of SGOT, SGPT
BI2.3	Describe and explain the basic principles of enzyme activity
BI2.4	Describe and discuss enzyme inhibitors as poisons and drugs and as therapeutic enzymes
BI2.5	Describe and discuss the clinical utility of various serum enzymes as markers of pathological conditions.
BI2.6	Use of enzymes in Lab investigations (Enzyme based assays)
BI2.7	Interpret laboratory results of enzyme activities & describe the clinical utility of various enzymes as markers of pathological conditions.
	CHEMISTRY AND METABOLISM OF CARBOHYDRATES
BI3.1	Discuss and differentiate monosaccharides, disaccharides and polysaccharides. Significance of carbohydrates as energy fuels, structural elements and storage.
BI3.2, 3.3	Describe the processes involved in digestion and assimilation of carbohydrates from storage and from food
BI3.4	Define and differentiate the pathways of carbohydrate metabolism (glycolysis, gluconeogenesis, glycogen metabolism, HMP shunt). Uronic acid pathway and its clinical significance. Metabolism of Fructose and Galactose with its clinical significance
BI3.5	Describe the regulation, functions & integration of carbohydrate metabolism with associated diseases/ disorders.
BI3.6	Describe the pathway of TCA cycle and its regulation.
BI3.7	Enzyme inhibitors of carbohydrate metabolism
BI3.8, 3.10	Interpretation of lab results of glucose and other analytes associated with carbohydrate metabolism.
BI3.9	Mechanism and significance of blood glucose regulation

	CHEMISTRY AND METABOLISM OF LIPIDS
BI4.1	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.
BI4.2	Describe the processes involved in digestion and absorption of dietary lipids and also the key features of their metabolism
BI4.3	Explain the regulation of lipoprotein metabolism & associated disorders.
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.
BI4.6	Describe the therapeutic uses of prostaglandins and inhibitors of eicosanoid synthesis.
BI4.7	Interpret laboratory results of analytes associated with metabolism of lipids.
	CHEMISTRY AND METABOLISM OF PROTEINS
BI5.1	Describe and discuss structural organization of proteins.
BI5.2	Describe and discuss classification and functions of proteins and structure- function relationships in relevant areas eg, hemoglobin and selected hemoglobinopathies
BI5.3	Describe the digestion and absorption of dietary proteins.
BI5.4	Describe common disorders associated with protein metabolism. (Neutral amino acid). Describe common disorders associated with protein metabolism. (Aromatic amino acid). Describe common disorders associated with protein metabolism. (Branch in amino acid). Describe common disorders associated with protein metabolism. (Acidic amino acid). Describe common disorders associated with protein metabolism. (Basic amino acid)
BI5.5	Interpret laboratory results of analytes associated with metabolism of proteins. (Urea cycle and its disorder)
	METABOLISM AND HOMEOSTASIS
BI6.1	Discuss the metabolic processes that take place in specific organs in the body in the fed and fasting states.
BI6.2	Describe and discuss the metabolic processes in which nucleotides are involved.
BI6.3	Describe the common disorders associated with nucleotide metabolism.
BI6.4	Discuss the laboratory results of analytes associated with gout & Lesch Nyhan syndrome.
	VITAMINS AND MINERALS METABOLISM
BI6.5	Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.(Vitamin A) Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.(Vitamin D) Describe the biochemical role of vitamins in the body and explain the manifestations of their deficiency.(Vitamin C)
BI6.6	Describe the biochemical processes involved in generation of energy in cells. Describe the biochemical processes involved in generation of energy in cells. Describe the Electron transport chain and its inhibitors. Describe the oxidative phosphorylation and uncouplers.
BI6.7	Describe the processes involved in maintenance of normal pH, water & electrolyte balance of body fluids and the derangements associated with these.
BI6.8	Discuss and interpret results of Arterial Blood Gas (ABG) analysis in various disorders.
BI6.9	Describe the functions of various minerals in the body, their metabolism and homeostasis.

BI6.10	Enumerate and describe the disorders associated with mineral metabolism. (Iron, Calcium)
	HAEM METABOLISM
BI6.11	Describe the functions of haem in the body and describe the processes involved in its metabolism and describe porphyrin metabolism.
BI6.12	Describe the major types of haemoglobin and its derivatives found in the body and their physiological/ pathological relevance.

PAPER II:

ORGAN FUNCTION TESTS, MOLECULAR BIOLOGY AND OXIDATIVE STRESS AND DISEASE, NUTRITION, EXTRA CELLULAR MATRIX, ONCOGENESIS AND IMMUNITY

	ORGAN FUNCTION TESTS
BI6.13	Describe the functions of the kidney, liver, thyroid and adrenal glands.
BI6.14	Describe the tests that are commonly done in clinical practice to assess the functions of these organs (kidney, liver, thyroid and adrenal glands).
BI6.15	Describe the abnormalities of kidney, liver, thyroid and adrenal glands.
	MOLECULAR BIOLOGY AND OXIDATIVE STRESS AND DISEASE
BI7.1	Describe the structure and functions of DNA and RNA and outline the cell cycle.
BI7.2	Describe the processes involved in replication. Describe the processes involved in repair of DNA. Describe the processes involved transcription. Describe the processes involved in translation mechanisms.
BI7.3	Describe gene mutations and basic mechanism of regulation of gene expression.
BI7.4	Describe applications of molecular technologies like recombinant DNA technology, PCR in the diagnosis and treatment of diseases with genetic basis.
BI7.5	Describe the role of xenobiotics in disease
BI7.6	Describe the anti-oxidant defense systems in the body.
BI7.7	Describe the role of oxidative stress in the pathogenesis of conditions such
	as cancer, complications of diabetes mellitus and atherosclerosis.
	NUTRITION
BI8.1	Discuss the importance of various dietary components and explain importance of dietary fiber.
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 diabetes mellitus, coronary artery disease and in pregnancy.
BI8.4	Describe the causes (including dietary habits), effects and health risks associated with being overweight/ obesity.
BI8.5	Summarize the nutritional importance of commonly used items of food including fruits and vegetables.(macro-molecules & its importance)
	EXTRA CELLULAR MATRIX
BI9.1	List the functions and components of the extracellular matrix (ECM).
BI9.2	Discuss the involvement of ECM components in health and disease.
BI9.3	Describe protein targeting & sorting along with its associated disorders.
	ONCOGENESIS AND IMMUNITY
BI10.1	Describe the cancer initiation, promotion oncogenes & oncogene activation.
BI10.2	Describe various biochemical tumor markers and the biochemical basis of cancer therapy.
BI10.3	Describe the cellular and humoral components of the immune system & describe the types and structure of antibody
BI10.4	Describe & discuss innate and adaptive immune responses, self/non-self recognition and the central role of T-helper cells in immune responses.
BI10.5	Describe antigens and concepts involved in vaccine development.

PRACTICAL

	BIOCHEMICAL LABORATORY TEST
BI3.1	Demonstration of test on Carbohydrate
BI4.1	Demonstration of Test on Lipid
BI5.1	Demonstration of Test on Proteins
BI11.1	Describe commonly used laboratory apparatus and equipments, good safe laboratory practice and waste disposal
BI11.2	Describe the preparation of buffers and estimation of Ph.
BI11.3	Describe the chemical components of normal urine.
BI11.4	Perform urine analysis to estimate and determine normal constituents. Perform urine analysis to estimate and determine abnormal constituents (Sugar, Protein). Perform urine analysis to estimate and determine abnormal constituents (Blood, Bile and Ketone).
BI11.5	Describe screening of urine for inborn errors & describe the use of paper Chromatography.
BI11.6	Describe the principles of colorimetry
BI11.7	Demonstrate & perform estimation of creatinine & calculation of clearance
BI11.8	Demonstrate & perform estimation of serum proteins. Demonstrate & perform estimation of serum albumin and AG ratio.
BI11.9	Demonstrate & perform the estimation of serum total cholesterol and HDL- cholesterol
BI11.10	Demonstrate & perform the estimation of triglycerides and calculation of LDL and VLDL
BI11.11	Demonstrate estimation of calcium and phosphorous
BI11.12	Demonstrate the estimation of serum Total & Direct bilirubin
BI11.13	Demonstrate & perform the estimation of SGPT & SGOT
BI11.14	Demonstrate & perform the estimation of alkaline phosphatase
BI11.15	Describe & discuss composition of CSF
BI11.16	Observe use of commonly used equipments/techniques in biochemistry laboratory including: •Protein electrophoresis & Haemoglobin electrophoresis •PAGE
	Observe use of commonly used equipments/techniques in biochemistry laboratory including: •Autoanalyser •Quality control
	Observe use of commonly used equipments/techniques in biochemistry laboratory including: •DNA isolation from blood/ tissue
BI11.17	Explain the basis and rationale of biochemical tests done in the following conditions: - proteinuria, nephrotic syndrome, edema
	Explain the basis and rationale of biochemical tests done in the following conditions: - thyroid disorders.
BI11.18	Discuss the principles of spectrophotometry.
BI11.19	Outline the basic principles involved in the functioning of instruments commonly used in a biochemistry laboratory and their applications.
BI11.20	Identify abnormal constituents in urine, interpret the findings and correlate these with pathological states.
BI11.21	Demonstrate & perform estimation of glucose Method & interpretation of GTT Demonstrate & perform estimation of urea, Creatinine
BI11.22	Calculate creatinine clearance & A:G ratio
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
BI11.24	Advantages and/ or disadvantages of use of unsaturated, saturated & trans fats in food.

MBBS105 **Biochem.I**

First M.B.B.S. (Main/ Remanded) Examination Month /Year

BIOCHEMISTRY

Paper-I

(Section – A & B)

(Basic Biochemistry, Enzyme, Chemistry And Metabolism Of Carbohydrates, Lipids, Proteins, Homeostasis, Vitamins And Minerals Metabolism, Haem Metabolism)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination.Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

First M.B.B.S. (Main/ Remanded) Examination Month /Year

BIOCHEMISTRY

Paper-I

(Section – A & B)

(General Chemistry and Metabolism, Nutrition, Enzymology, Bioenergetics and Biologic Oxidation, Hormones)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis.

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q1 MCQ **1x10= 10**

1 Cobalt is an essential constituent of the following vitamin?

A. B1
B. B6
C. B12
D. Folic Acid

2 All the following are multienzyme complex except

A. Lactate dehydrogenase
B. Pyruvate dehydrogenase
C. Alpha- ketoglutarate dehydrgenase
D. Fatty acid synthetase

3 Increased carbohydrate consumption increases the dietary requirement for:

A. Thiamine
B. Riboflavin
C. Pyridoxine
D. Folic acid

4 Cholesterol is a precursor of all the following except:
   A. Taurocholate
   B. Calcitriol
   C. Corticosteroids
   D. Calcitonin

5 What type of protein is casein?
   A. Lipoprotein
   B. Phosphoprotein
   C. Glycoprotein
   D. Flavoprotein

6 Which of the following is not a polymer of glucose?
   A. Starch
   B. Glycogen
   C. Inulin
   D. Dextrin

7 Oxidative deamination of glutamate is brought about by the enzyme:
   A. Glutamate dehydrogenase
   B. Glutamine synthase
   C. Glutaminase
   D. Glutamate synthase

8 Nyctalopia is due to the deficiency of:
   A. Vitamin K
   B. Vitamin E
   C. Vitamin B12
   D. Vitamin A

9 Which among the following is an essential fatty acid?
   A. Oleic acid
   B. Linoleic acid
   C. Palmitic acid
   D. Stearic acid

10 Which of the following is a semi-quantitative test
   A. Starch
   B. Glycogen
   C. Inulin
   D. Dextrin

Q2 Structured short notes (attempt any four out of five) 4x5=20

1 What are the key enzymes of Gluconeogenesis?
2 Describe Protein Energy malnutrition
3 Significance of Salvage Pathway

4 Functions and regulation of thyroid hormones
5 Isoenzymes of diagnostic importance

Q3 Structured long question (attempt any two out of three) 2x10= 20

1 With the help of flow chart, describe steps of Urea cycle. Write a note on biochemical causes of ammonia toxicity.
2 Describe the steps of Cholesterol synthesis. What are the important metabolites produced by Cholesterol?
3 Describe the sources, recommended daily allowance, functions and deficiency manifestations of Vitamin C

SECTION B

Q1 MCQ **1x10 =10**

1 Flouride ions inhibit:

A. aldolase
B. enolase
C. glucokinase
D. pyruvate kinase

2 During starvation the main source of energy:

A. Fatty acid
B. Amino acids
C. Ketone bodies
D. Glucose

3 Which is not a transport protein?

A. Hemoglobin
B. transferrin
C. Collagen
D. Albumin

4 Which deposition leads to cataract?

A. Glucose
B. Galactose
C. Sorbitol
D. Sugar amines

5 Which of the following regulates glycolysis steps:-

A. Phospho fructo kinase
B. Hexokinase
C. Pyruvate kinase
D. all of the above

6 The biochemical action of selenium is complementary to the following vitamin:

A. Vitamin C
B. Vitamin E
C. Beta Carotene
D. All Of The Above

7 Enzymes synthesized in inactive form are called

A. Coenzyme
B. Apoenzyme
C. Lysozyme
D. Proenzyme

8 The first product in TCA cycle is:-

A. Succinate
B. Fumarate
C. Citrate
D. Malate

9 Barbiturates inhibit electron chain by inhibiting:-

A. Complex I
B. Complex II
C. Complex III
D. Complex IV

10. Zinc is present in:

A. Carbonic anhydrase
B. xanthine oxidase
C. Glutathione reductases
D. glutathione synthetase

Q2Structured short notes (attempt any four out of five) 4x5=20

1 Significance of Cori cycle
2 Inhibitors of electron transport chain
3 Metabolic fate of tyrosine
4 Significance of Dietary fibers
5 Calcium homeostasis

Q3 Structured long question (attempt any two out of three) 2x10= 20

1. What are the complications of Diabetes mellitus? Discuss the necessary lab investigations for diagnosis and screening of diabetic patient.

2. What is the biological significance of HMP shunt pathway? Explain why deficiency of G6-PD in RBCs leads to hemolysis.

3. Explain the catabolic pathway of Purines. Write a note on biochemical cause, manifestations and treatment of Gout.

MBBS106 **Biochem.II**

First M.B.B.S. (Main/ Remanded) Examination Month /Year

BIOCHEMISTRY

Paper-II

(Section – A & B)

(Organ Funtion Tests, Molecular Biology And Oxidative Stress And Disease, Nutrition, Extra Cellular Matrix, Oncogenesis And Immunity)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

First M.B.B.S. (Main/ Remanded) Examination Month /Year
BIOCHEMISTRY
Paper-II
(Section – A & B)
(Human Genetics and Molecular biology, Immunochemistry, Environmental biochemistry, Acid Base Balance, Biochemistry of Cancer, Clinical Biochemistry)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis.

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION A

Q1 MCQ 1x10=10

1 These cells play a central role in cell-mediated immunity
   A. Neutrophils
   B. Eosinophils
   C. Basophils
   D. T lymphocytes

2 Methylated purines and pyrimidines are present in
   A. mRNA
   B. hnRNA
   C. rRNA
   D. tRNA

3 At a pH of 7.4, ratio of bicarbonate and carbonic acid is:
   A. 1:10
   B. 10:1
   C. 1:20
   D. 20:1

4 This test can be used to determine GFR:
   A. Inulin clearance
   B. Urea clearance
   C. Mannitol clearance
   D. Both A and C

5 Protein chain initiating codon is:
   A. UUU
   B. GGU
   C. AUG
   D. AAA

6 Activation of Renin-angiotensin system stimulates the secretion of:
   A. Anti-diuretic hormone
   B. Aldosterone
   C. Atrial natriuretic peptide
   D. Natriuretic peptide

7 Ketone bodies may be present in urine:
   A. Uncontrolled diabetes mellitus
   B. Diabetes insipidus
   C. Prolonged fasting
   D. A and C

8 CSF glucose may be significantly decreased in all EXCEPT:
   A. Viral meningitis
   B. Bacterial meningitis
   C. Brain tumor
   D. Fungal meningitis

9 Enzymes mainly involved in Xenobiotics metabolism are mainly present in:
   A. Kidney
   B. Liver
   C. Lungs
   D. Brain

10 Which portion of bilirubin is higher in Hemolytic Jaundice?
   A. Conjugated
   B. Unconjugated
   C. Both
   D. None

Q2 Structured short notes (attempt any four out of five) 4x5=20

1 Use of radioisotopes in medicine
2 Lac Operon
3 Tumor markers and their utility
4 Hypersensitivity
5 Polymerase Chain Reaction

Q3 Structured long question (attempt any two out of three) 2x10= 20

1 What are Porphyrias? Describe in brief various types of porphyrias.
2 What are Plasma proteins? Describe in brief different electrophorectic variations in various disorders.
3 Outline the process of DNA replication. Write a note on mechanism of DNA repair

SECTION B

Q1 MCQ 1x10= 10

1 Replication of DNA is:
   A. Conservative
   B. Non Conservative
   C. Semi Conservative
   D. None of the above

2 α-fetoprotein is a marker of
   A. Pancreatic cancer
   B. Hepatocellular carcinoma
   C. Germ cell carcinoma
   D. Both B and C

3 Erythropoietin controls:
   A. White cell production
   B. Red cell production
   C. Platelet production
   D. All of the above

4 Point mutation results from:
   A. deletion of a base
   B. Insertion of a base
   C. Substitution of a base
   D. All of the above

5 Uncontrolled diabetes with ketosis may lead to:
   A. Respiratory alkalosis
   B. Metabolic alkalosis
   C. Respiratory acidosis
   D. Metabolic acidosis

6 The pre dominant cation of serum/ plasma is:
   A. K^+
   B. Ca^{2+}
   C. Na+
   D. Mg^{2+}

7 Type of Immunoglobulin present in highest concentration in the blood of a newborn:
   A. Ig M
   B. Ig G
   C. Ig A
   D. Ig D

8 Technique based on Beer- Lambert's law is:
   A. ELISA
   B. RIA
   C. Ion selective electrode
   D. Colorimetry

9 Circulating antibodies are synthesized by:
   A. B-lymphocytes
   B. T-lymphocytes
   C. Helper cells
   D. Epithelial cells

10 Elevated levels of serum alkaline phosphatase are seen in:
   A. Liver cancer
   B. Prostrate cancer
   C. Bladder cancer
   D. Ovarian cancer

Q2 Structured short notes (attempt any four out of five) 4x5=20

1 Post translational modifications (with examples)
2 Lab diagnosis of myocardial infarction
3 Monoclonal antibodies
4 Biochemistry of Atherosclerosis
5 Free radicals and antioxidants

Q3 Structured long question (attempt any two out of three) 2x10= 20

1 Enumerate the various Liver function tests. Describe the role of Bilirubin estimation in diagnosing different types of Jaundice.
2 What is metabolic acidosis? Discuss its causes and mechanism of compensation.
3 Describe the principle and applications of recombinant DNA technology

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Second MBBS Examination

PHARMACOLOGY

1. GOAL:

The broad goal of the teaching of undergraduate students in Pharmacology is to inculcate a rational and scientific basis of therapeutics.

2. OBJECTIVES:

(a) **Knowledge:** At the end of the course, the student should be able to:

- Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs.
- List the indications, contraindications, interactions and adverse reactions of commonly used drugs.
- Indicate the use of appropriate drug in a particular disease with consideration to its cost, efficacy and safety for:

1) Individual needs.
2) Mass therapy under national health program.

- Describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings.
- List the drugs of addiction and recommend the management.
- Classify environmental and occupational pollutants and state the management issues.
- Indicate causations in prescription of drugs in special medical situations such as pregnancy, lactation, infancy, and old age.
- Integrate the concept of rational drug therapy in clinical pharmacology.
- State the principles underlying the concept of 'Essential Drugs'
- Evaluate the ethics and modalities involved in the development and introduction of new drugs.

(b) **Skills:** At the end of the course, the student should be able to:

- Prescribe drugs for common ailments.
- Recognize adverse reactions and interactions of commonly used drugs.
- Observe experiments designed for study of effects of drugs
- Scan information on common pharmaceutical preparations and critically evaluate drug promotional literature.

(c) **Integration:** Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments and pre-clinical departments

Scheme of Examination

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60 + 40= marks**	
Internal assessment		
Theory	**100**	**100+100 = 200 Total**
Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.

2. The question no1 from each section shall contain 10 multiple choice question of one mark each.

3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each

4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each

5. Each section shall be answered in separate answer book.

6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

SYLLABUS:

4.1 Theory

Paper – I <u>(General Pharmacology, ANS, PNS, CNS, Respiratory System, Autacoids, GIT, AETCOM and Pandemic Module)</u>

(1) General Pharmacology, essential medicines, rational therapy, FDC & OTC drugs
(2) Drug regulations, acts & other legal aspects,
(3) Drug development, phases of clinical trial & GCP
(4) Dietary supplements and nutraceuticals, herbal medicines
(5) Pharmacogenomics and Pharmacoeconomics
(6) Drugs administered in special situations: Pregnancy, Lactation, Paediatrics & Geriatrics.
(7) Drugs acting on autonomic nervous system.
(8) Drugs acting on peripheral nervous system-Local anaesthetics and skeletal muscle relaxants.
(9) Drugs acting on the central nervous system including drug abuse and addiction.
(10) Drugs acting on respiratory system.
(11) Autacoids and other Biogenic Amines and polypeptides.
(12) Drugs acting on gastrointestinal tracts.
(13) Pandemic Module: (2.5)

AETCOM Module: (2.1 to 2.3)

Paper – II <u>(CVS, Drugs acting on Kidney, Haematopoietic system, Antimicrobials, Anticancer drugs, Hormones, Drugs acting on Uterus, Toxicology and Miscellaneous Drugs)</u>

(1) Drugs acting on cardiovascular system.
(2) Drugs acting on kidney & drugs affecting water & electrolyte balance.
(3) Drugs acting on blood and blood forming organs.
(4) Chemotherapy of microbial diseases and parasitic infections.
(5) Antimicrobial stewardship program
(6) Chemotherapy of Neoplastic diseases.
(7) Hormones and hormone antagonists.
(8) Drugs affecting uterine motility.
(9) National health programmes; Immunization, TB, Leprosy, Malaria, HIV, Filaria, Kala-Azar, Diarrheal diseases, Anemia and Nutritional disorders, Blindness, Non-Communicable Diseases, Cancer and Iodine deficiency
(10) Toxicology: Pollutants, Heavy metal poisoning, Insecticides, Pesticides, Chelating agents & treatment of common poisoning.
(11) Miscellaneous drugs:
    a) Drugs used in common skin and eye disorders
    b) Antioxidants, Vitamins & minerals, Vaccines
    c) Enzymes in therapy, Antiseptics and disinfectants

d) Immunomodulators

4.2 Practical:

(1) Oral Viva
(2) Prescription writing,
(3) Prescription audit
(4) Critical evaluation of drug promotional literature
(5) Selection of P- drug
(6) Drug interactions
(7) Pharmacovigilance & Pharmacokinetic exercise
(8) Spotting/OSPE
(9) Administration of drugs through various routes in a simulated environment on mannikins
(10) Experimental pharmacology exercise: Effect of various drugs on dog BP
(11) Clinical Pharmacy exercise
(12) Communication skill

BOOKS:

1. The Pharmacological Basis of Therapeutics - Goodman & Gilman
2. Basic and Clinical Pharmacology - BG Katzung
3. Rang & Dale's Pharmacology
4. Clinical Pharmacology- Bennett PN, Brown MJ, Sharma P
5. Lippincott's Iilustrated Reviews Pharmacology
6. Essential of Medical Pharmacology - KD Tripathi
7. Pharmacology for MBBS – SK Srivastava, Rohan Srivastava

MBBS201 **Pharm.I**

Second M.B.B.S. (Main/ Remanded) Examination Month /Year

PHARMACOLOGY

Paper-I

(Section – A & B)

(General Pharmacology, ANS, PNS, CNS, Respiratory System, Autacoids, GIT, AETCOM and Pandemic Module)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q1. MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2. Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3. Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q1. MCQs 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2. Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3. Structured long question (attempt any two out of three) 2x10= 20

1
2
3

MBBS201 **Pharm. I**

Second M.B.B.S. (Main/ Remanded) Examination Month /Year

PHARMACOLOGY

Paper-I

(Section-A & B)

(General Pharmacology, ANS, PNS, CNS, Respiratory System, Autacoids, GIT, AETCOM and Pandemic Module)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q1. MCQs 1x10=10

1. A premature neonate suffered respiratory distress and was given an antibiotic 100 mg/kg/day orally. Over the next two days his condition worsened, he become dull, stopped feeding, developed abdominal distention and an ashen gray appearance. Which is the most likely antibiotic given to him:
   A. Ampicillin
   B. Chloramphenicol
   C. Erythromycin
   D. Ciprofloxacin

2. A suspected case of poisoning has been brought to the casualty with weakness, fainting, involuntary passage of urine and stools, profuse sweating, salivation, watering from nose and eyes. His pulse is 120/min, low volume, BP 90/60 mm Hg, respiration shallow, pupil constricted, muscles flabby with occasional fasciculations. Which is the most likely type of poisoning:
   A. Belladonna
   B. Barbiturate
   C. Anticholinesterase
   D. Dicophane (DDT)

3. A 35-year-old male presented with an attack of acute gout. He was treated with a 10-day course of naproxen. His blood uric acid level is high. What future line of treatment is most appropriate:
   A. No regular medication. Treat attacks of acute gout when they occur with naproxen.
   B. Regular long-term treatment with naproxen

C. Regular long-term treatment with allopurinol
D. Start with allopurinol + naproxen for 2 months followed by long-term allopurinol treatment

4. The most prominent and dose related side effect of salbutamol is:
   A. Rise in blood pressure
   B. Muscle tremor
   C. Hyperglycaemia
   D. Central nervous system stimulation

5. The following is a skeletal muscle relaxant that acts as a central α2 adrenergic agonist:
   A. Tizanidine
   B. Brimonidine
   C. Chlormezanone
   D. Quinine

6. The drug of choice for rapid correction of PSVT in known asthmatic is**:**
   A. Adenosine
   B. Esmolol
   C. Neostigmine
   D. Verapamil

7. The most effective antiemetic for controlling cisplatin induced vomiting is:
   A. Prochlorperazine
   B. Ondansetron
   C. Metoclopramide
   D. Promethazine

8. The following antiulcer drug does not act by reducing the secretion of or neutralizing gastric acid:
   A. Magaldrate
   B. Sucralfate
   C. Misoprostol
   D. Omeprazole

9. Which one of the following is the drug of the first choice in case management of status asthmaticus patients**:**
   A. Nebulized salbutamol
   B. Oral salbutamol
   C. Nebulised atropine
   D. Oral atropine

10. Injection of adrenaline along with a local anaesthetic serves the following purpose:
    A. Lowers the concentration of the local anaesthetic to produce nerve block
    B. Prolongs the duration of local anaesthesia
    C. Increases the anaesthetised area
    D. Reduces the local toxicity of the local anaesthetic

Q2. Structured Short notes (attempt any four out of five) 4x5=20

1. Define bioavailability. Describe in detail about factors affecting Bioavailability.
2. Compare and Contrast reversible and irreversible antagonism

3. Describe pharmacotherapy of Organophosphorus poisoning
4. Describe the role of non-maleficence as a guiding principle in patient care
5. Explain Pharmacological basis of use of Adrenaline in Anaphylactic shock

Q3. Structured Long Question (attempt any two out of three) 2x10=20

1. A 45-year-old asthmatic is admitted to hospital at 6 a.m. because of a severe attack of asthma. She has been treated with salbutamol and beclomethasone inhalers supplemented by a modified-release preparation of theophylline, 300mg at night. She has clinical evidence of a severe attack and does not improve with nebulized salbutamol and oxygen. Treatment with intravenous aminophylline is considered.

a) What is needed to be done in this patient before administering iv aminophylline?
b) What are the dangerous side effects which can occur on overdose of aminophylline?
c) Write the pharmacological actions of aminophylline?

2. A 35-year-old pregnant woman has a history of rheumatoid arthritis which has been managed successfully with NSAIDs. However, she has recently visited her general practitioner complaining of burning epigastric pain worsened by food intake.

a) What has happened to this patient? Which type of adverse effect is it?
b) Classify the drugs used in Peptic Ulcer.
c) Write the Mechanism of action, Uses and Adverse effects of Proton pump inhibitors
d) Which of the antiulcer medication is most likely contraindicated in this patient?

3. Enlist the different routes of drug administration. Write the advantages and disadvantages of sublingual, intravenous and oral routes. Add a note on Novel routes of drug administration.

Section B

Q1 .MCQ 1x10=10

1. Alkalinization of urine hastens the excretion of:

   A. Weakly basic drugs

   B. Weakly acidic drugs

   C. Strong electrolytes

   D. Nonpolar drugs

2. If the total amount of a drug present in the body at a given moment is 2.0 g and its plasma concentration is 25 μg/ml, its volume of distribution is:

   A. 100 L

   B. 80 L

   C. 60 L

   D. 50 L

3. Neostigmine is preferred over physostigmine for treating myasthenia gravis because:

   A. It is better absorbed orally

   B. It has longer duration of action

   C. It has additional direct agonistic action on nicotinic receptors at the muscle end plate

   D. It penetrates blood-brain barrier

4. The following is **not** a feature of second generation antihistaminic:
   A. No impairment of psychomotor performance
   B. High anti motion sickness activity
   C. Absence of anticholinergic/anti 5-HT actions
   D. Additional mechanisms of antiallergic action

5. A patient of chronic bronchial asthma was maintained on oral prednisolone 20 mg/day for 3 months. It was decided to switch him over to inhaled beclomethasone dipropionate 200 μg 4 times a day. What should be done to the oral prednisolone medication after starting inhaled beclomethasone:
   A. It should be stopped immediately
   B. Its dose should be tapered from the next day
   C. It should be given at the same dose for one week and then tapered
   D. Its dose should be doubled for one week and then tapered

6. Select the skeletal muscle relaxant that is commonly used for endotracheal intubation despite causing histamine release, K+ efflux from muscles and cardiovascular changes:
   A. Pipecuroniun
   B. Succinylcholine
   C. Pancuronium
   D. Cisatracurium

7. Which of the following is a poor surface anaesthetic:
   A. Procaine
   B. Lignocaine
   C. Tetracaine
   D. Benoxinate

8. The minimal alveolar concentration of an inhalational anaesthetic is a measure of its:
   A. Potency
   B. Therapeutic index
   C. Diffusibility
   D. Oil: water partition coefficient

9. The first-choice drug for nonsteroidal anti-inflammatory drug associated gastric ulcer is:
   A. Omeprazole
   B. Misoprostol
   C. Ranitidine
   D. Sucralfate

10. Patients treated with the following drug should be cautioned not to consume alcoholic beverages:
    A. Mebendazole
    B. Metronidazole
    C. Methimazole
    D. Metamizol

Q2 Structured short notes (attempt any four out of five) 4x5=20

1. Compare and contrast between first order and zero order kinetics of drug elimination.
2. Comment on Indication, advantages and disadvantages of following FDC's:-
    a) Lignocaine + Adrenaline
    b) Levodopa + Carbidopa
3. Describe pharmacotherapy of Acute paracetamol poisoning
4. Explain why?
    a) Loperamide should be avoided in infective diarrheas
    b) FDCs containing drugs in cough syrup is irrational
5. Describe the pharmacological basis of use of Valproic acid as an antiepileptic agent.

Q3. Structured Long Question (attempt any two out of three) 2x10=20

1. Describe in detail Factors modifying drug action with examples.
2. Classify Antidepressant Drugs. Describe the advantages, indications and contraindications of Selective Serotonin Reuptake Inhibitors (SSRIs)
3. Classify Anti-parkinsonism drugs. Describe in brief about different anti-parkinsonism drugs with their mechanism of action and adverse effects.

MBBS202 **Pharm.II**

Second M.B.B.S. (Main/ Remanded) Examination Month /Year

PHARMACOLOGY

Paper-II

(Section – A & B)

(CVS, Drugs acting on Kidney, Haematopoietic system, Antimicrobials, Anticancer drugs, Hormones, Drugs acting on Uterus, Toxicology and Miscellaneous Drugs)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q 1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Second M.B.B.S. (Main/ Remanded) Examination Month /Year

PHARMACOLOGY

Paper-II

(Section-A & B)

(CVS, Drugs acting on Kidney, Haematopoietic system, Antimicrobials, Anticancer drugs, Hormones, Drugs acting on Uterus, Toxicology and Miscellaneous Drugs)

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For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q1. MCQ 1x10=10

1. Potentiation of bradykinin appears to play a role in the following effects of angiotensin converting enzyme inhibitors except:
   A. Fall in BP in the short term
   B. Fall in BP in the long term
   C. Cough in susceptible individuals
   D. Angioedema in susceptible individuals

2. Furosemide acts by inhibiting the following in the renal tubular cell:
   A. Na+-K+-2Cl– cotransporter
   B. Na+-Cl– symporter
   C. Na+-H+ antiporter
   D. Na+ K+ ATPase

3. A patient of iron deficiency anaemia has been put on iron therapy. What should be the rate of rise in haemoglobin level of blood so that response is considered adequate:
   A. 0.05 – 0.1 g% per week
   B. 0.1 – 0.2 g% per week
   C. 0.5 – 1.0 g% per week
   D. More than 1.0 g% per week

4. Clavulanic acid is combined with amoxicillin because:
   A. It kills bacteria that are not killed by amoxicillin
   B. It retards renal excretion of amoxicillin
   C. It counteracts the adverse effects of amoxicillin
   D. It inhibits beta lactamases that destroy Amoxicillin

5. Biological response modifiers like GM-CSF are used in conjunction with anticancer drugs for the following purpose(s):
   A. To enhance antitumour activity of the drug
   B. To prevent hypersensitivity reactions to thedrug
   C. To hasten recovery from drug induced myelosuppression
   D. Both 'A' and 'C' are correct

6. Insulin release from pancreatic β cells is augmented by the following except:
   A. Ketone bodies
   B. Glucagon
   C. Vagal stimulation
   D. Alfa adrenergic agonists

7. A 57-year-old woman with moderately severe rheumatoid arthritis was treated with etanercept. Which of the following proteins is the direct target of etanercept?
   A. Cyclophilin
   B. Interferon α
   C. Interleukin-11 (IL-11)
   D. Tumor necrosis factor-α (TNF-α)

8. A drug that is useful in angina but causes constipation, edema, and increased cardiac size is
   A. Atenolol
   B. Hydralazine
   C. Isosorbide dinitrate
   D. Verapamil

9. The following is true about use of prednisolone in malignant diseases **except**:
   A. It is curative in acute childhood leukaemia
   B. It is used in Hodgkin's disease
   C. It controls hypercalcemia in patients with bony metastasis
   D. It affords symptomatic relief in most cancer Patients

10. Features of methylcobalamin include the following:
    A. It is an active coenzyme form of vit B12
    B. It is required for the synthesis of S-adenosylmethionine
    C. It is specifically indicated for correcting neurological defects of vit B12 deficiency
    D. All of the above

Q2. Structured Short notes (attempt any four out of five) 4x5=20

1. Describe the mechanism of action, uses and adverse effects of Statins
2. Compare and Contrast Heparin and Warfarin
3. Describe pharmacotherapy of Diabetic Ketoacidosis
4. Describe in brief uses and adverse effects of Calcium Channel Blockers
5. Explain the role of Dual Anti-Platelet therapy in thromboembolic disorders

Q3. Structured Long Question (attempt any two out of three) 2x10=20

1. A 52-year-old male factory worker weighing 60 kg reports to the hospital with cough and expectoration, mild chest pain, weakness and fatigue for the last one month. In addition, he has developed low grade fever for the last one week. The sputum was found to be positive for AFB and X-ray chest showed a 5 cm cavitary lesion in the right middle lobe and fibrotic changes in the upper lobe. No history of previous drug treatment.
   a) What is your provisional diagnosis?
   b) What should be the regimen of antitubercular drugs for this patient?
   c) Describe the mechanism of action, indications and adverse effects of Rifampicin.

2. During routine medical checkup a 50-year male office executive with sedentary lifestyle was diagnosed to have developed type 2 diabetes mellitus. His fasting and post-meal blood glucose was 130 mg/dl and 190 mg/dl respectively, HbA1C was 7.8%, BP was 130/82 mm Hg and body mass index was 27 kg/m2. He was asymptomatic and investigations revealed no end organ damage. He was advised suitable diet, exercise and other lifestyle modifications.
   a) Should he be prescribed an antidiabetic medication as well?
   b) If so, which drug/combination of drugs should be selected, and why?
   c) What advice will you give while prescribing above selected drug/drugs?
   d) Mention the adverse effects associated with it/them.

3. Classify Diuretic drugs. Describe the mechanism of action, indications and adverse effects of Loop Diuretics.

Section B

Q1. MCQ 1x10=10

1. Infusion of potassium chloride is indicated in digitalis toxicity when the manifestation(s) is/are:
   A. Vomiting, hyperapnoea and visual disturbance
   B. Pulsus bigeminus with heart rate 110/min in a patient on maintenance digoxin therapy
   C. Ventricular tachycardia in a child who has accidentally ingested 10 digoxin tablets
   D. 2:1 A-V block with occasional ventricular Extrasystoles

2. A patient of congestive heart failure was being treated with furosemide and digoxin. He developed urinary tract infection. Which of the following antimicrobials should be avoided:
   A. Ampicillin
   B. Gentamicin
   C. Norfloxacin
   D. Cotrimoxazole

3. A 60-year-old patient presented with anorexia, weakness, paresthesia and mental changes. His tongue was red, tendon reflexes were diminished, haemoglobin was 6 g% with large red cells and neutrophils had hypersegmented nuclei. Endoscopy revealed atrophic gastritis. Deficiency of which factor is likely to be responsible for his condition:
   A. Folic acid
   B. Vitamin B12
   C. Pyridoxine
   D. Riboflavin

4. The following strategy will promote rather than curb emergence of antibiotic resistant micro-organisms:
   A. Whenever possible use broad spectrum antibiotics
   B. Prefer a narrow spectrum antibiotic to a broad-spectrum one if both are equally effective
   C. Prefer short and intensive courses of antibiotics
   D. Use antibiotic combinations for prolonged therapy

5. Mesna is administered with cyclophosphamide and ifosphamide to:
   A. Potentiate their cytotoxic action
   B. Retard their renal excretion
   C. Block their emetic action
   D. Ameliorate cystitis caused by them

6. The following thyroid inhibitor interferes with peripheral conversion of thyroxine to triiodothyronine:
   A. Propyl thiouracil
   B. Methimazole
   C. Carbimazole
   D. Radioactive iodine

7. Resistance to acyclovir is most commonly due to mutations in a viral gene that encodes a protein that:
   A. Converts viral single-stranded RNA into double stranded DNA
   B. Phosphorylates acyclovir
   C. Transports acyclovir into the cell
   D. Transports acyclovir out of the cell

8. Mental retardation, microcephaly, and underdevelopment of the midface region in an infant is associated with chronic heavy maternal use during pregnancy of which of the following?
   A. Cocaine
   B. Ethanol
   C. Heroin
   D. Methylenedioxymethamphetamine (MDMA)
9. The most important mechanism of anti-inflammatory action of glucocorticoids is:
   a) Inhibition of lysosomal enzymes
   b) Restriction of recruitment of inflammatory cells at the site of inflammation
   c) Antagonism of action of interleukins
   d) Suppression of complement function

10. Compared to erythromycin, azithromycin has:
    a) Extended antimicrobial spectrum
    b) Better gastric tolerance
    c) Longer duration of action
    d) All of the above

Q2. Structured short notes (attempt any four out of five) 4x5=20

1. Define Teratogenicity. Comment on FDA Drugs Categories used in pregnancy.
2. Enlist Contraindications of Fibrinolytics
3. Describe pharmacotherapy of myocardial infarction
4. Explain the role of :-
   a. Anticoagulants in COVID-19
   b. Phototherapy (PUVA therapy) in Psoriasis
5. Explain briefly various types of Viral vaccines with example.

Q3. Structured Long Question (attempt any two out of three) 2x10=20

1. Classify antiretroviral drugs. Write first-line Antiretroviral drug regimens for HIV-1 infected adults. Explain in breif HIV treatment principles & guidelines.
2. Enumerate methods of female and male contraception. Describe mechanism of action, adverse effects and contraindications of hormonal contraception in females.
3. Describe the actions, indications, contraindications and adverse effects of Glucocorticoids.

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

PATHOLOGY

1. GOAL:

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge of the mechanisms and causes of disease, in order to enable him/her to achieve complete understanding of the natural history and clinical manifestations of disease.

2.**OBJECTIVES:**

- **Knowledge :**At the end of the course, the student shall be able to :

- Describe the 'structure and ultra structure' of a cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations;
- Explain the 'pathophysiological' processes which govern the maintenance of 'homeostasis', mechanisms of their disturbance and the morphological and clinical manifestations associated with it.
- Describe the mechanisms and patterns to 'tissue response to injury' such that he/she can appreciate the pathophysiology of 'disease processes and their clinical manifestations'.
- Correlate normal and altered 'morphology' (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

- **Skills :**At the end of the course, the student shall be able to :-

- Describe the rationale and principles of technical procedures of the 'diagnostic laboratory tests' and interpretation of the results;
- Perform the simple bed-side tests on blood, urine and other biological fluid samples;
- Draw a rational scheme of investigations aimed at diagnosing and managing the cases of 'common disorders'
- Understand 'biochemical/physiological disturbances' that occur as a result of disease in collaboration with pre-clinical departments.

- **Integration:** At the end of training he/she shall be able to integrate the 'causes of diseases' and relationship of different 'etiological factors' (social, economic and environmental) that contribute to the 'natural history of diseases most prevalent in india'.

3. SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200+100=300Total**
Practical + Viva	**60+40=100 marks**	
Internalassessment		
Theory	**100**	**100+100=200Total**
Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each each section of both the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.

7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

SYLLABUS:

Theory

Paper-I (General Pathology, Cell injury, Cell adaptation, Inflammation, Repair, Regeneration, Genetics, Haemeostasis, Thrombosis, circulatory disturbance, Neoplasia, Immunopathology, Nutritional deprivation disease, Radiation injury, Hematology, blood banking, Clinical pathology,Infectious disease, AETCOM)

(Section- A) General Pathology

Introduction to Pathology Cell Injury

1. Cell injury: Causes and Mechanism: Ischemic, Toxic.
2. Reversible cell injury: Types, morphology: Swelling, vacuolation, hyaline, fatty change.
3. Irreversible cell injury: Types of Necrosis
4. Intracellular accumulation
5. Cell death
6. Gangrene
7. Cellular adaptations
8. Cellular aging and apoptosis

Amyloidosis and Calcification

9. Calcification: Dystrophic and Metastatic
10. Amyloidosis: classification, Pathogenesis, Morphology

Inflammation and Repair

11. Acute inflammation: Features, causes, vascular and cellular events.
12. Morphologic variants of acute inflammation
13. Inflammatory cells and Mediators
14. Chronic inflammation: Causes, types, nonspecific and Granulomatous with examples
15. Wound healing by primary and secondary union, factors promoting and delaying the process
16. Healing at specific sites including bone healing

Circulatory Disturbances

17. Oedema: Pathogenesis and types
18. Normal haemostasis
19. Thrombosis and Embolism: Formation, Fate and Effects
20. Infarction: Types, common sites, Gangrene
21. Shock: Pathogenesis, Types, Morphologic changes
22. Hyperemia, congestion, hemorrhage

Growth Disturbances and Neoplasia

23. Atrophy, Hypertrophy, Hyperplasia, Hypoplasia, Metaplasia, Malformation, Agenesis, Dysplasia
24. Neoplasia : Classification, Histogenesis, Biologic Behaviour : Benign and Malignant; Carcinomaand Sarcoma
25. Molecular basis of cancer
26. Carcinogenesis : Environmental carcinogens, chemical, viral, occupational, Heredity and cellularoncogenes
27. Tumour and Host Interactions : Systemic effects including paraneoplastic syndromes, Tumorimmunology

AETCOM: Module 2.7, 2.8

(Section- B)

Infectious Diseases

28. Mycobacterial Diseases : Tuberculosis and Leprosy
29. Bacterial diseases : Pyogenic, Typhoid, Diphtheria, Gram negative infection, Bacillary dysentery,Syphilis
30. Viral : Polio, Herpes, Rabies, Measles; Rickettsial
31. Parasitic Diseases : Malaria, Filaria, Amebiasis, Kala-azar, Cysticercosis, Hydatid

Immunopathology

32. Immune system: organisation, cells, antibodies and regulation of immune responses.
33. Hypersensitivity: types and examples, Antibody and cell mediated tissue injury with examples.
34. HIV and AIDS
35. Auto-immune disorders like systemic lupus erythematosis; organ specific and non-organ specificsuch as polyarteritisnodosa, Hashimoto's disease.
36. Organ transplantation : Immunologic basis of Rejection and Graft versus host reaction, HLA system

Genetic and paediatric diseases

37. Cytogenetic abnormalities and mutations in childhood
38. Tumor and tumour-like conditions in infancy and childhood
39. Storage disorders ininfancy and childhood

Environmental and nutritional diseases

40. Air pollution, tobacco and alcohol
41. Starvation
42. Obesity
43. Protein energy malnutrition

Basic diagnostic cytology

44. Role of cytology and its application in clinical care
45. Exfoliative cytology

Haematology

46. Hematopoiesis, Anticoagulants
47. Anaemia : classification and clinical features; clinical and lab. approach to diagnosis

48. Nutritional anaemias : Iron deficiency anaemia, iron metabolism, Folic Acid/Vit B 12 deficiency anaemia including pernicious anaemia
49. HemolyticAnaemias : Classification and investigation
50. Hereditary hemolytic anaemias : Thalassemia, sickle cell anaemia
51. Hereditary hemolytic anaemias : hereditary spherocytosis, G-6-PD deficiency
52. Acquired hemolytic anaemias
53. HemolyticAnaemias : Autoimmune, Alloimmune, Drug induced Microangiopathic and Malaria
54. Aplastic Anaemia,
55. Hemostatic disorders : Platelet deficiency; ITP, Drug induced, secondary
56. Coagulopathies : Coagulation factor deficiency; hemophilia, DIC and anticoagulant control,Vitamin K deficiency
57. Leukocytic disorders :Leukocytosis, leukopenia, leukemoid reaction
58. Acute and chronic Leukemia : Classification, Diagnosis
59. Multiple myeloma
60. Blood transfusion: grouping and cross matching, untoward reactions, blood components,autologous,transfusion, transmissible infections including HIV and hepatitis

PAPER-II (Cardiovascular system, hepatobiliary system, Genitourinary Tract, Respiratory system, Ophthalmic and ENT pathology, GIT, Reticuloendothelial system, Breast, Endocrine system, Skeletal system, Nervous system)

(Section – A)

Systemic Pathology Cardiovascular Pathology

1. Rheumatic fever and Rheumatic Heart Disease : Pathogenesis, Morphology and effects
2. Infective Endocarditis : Causes, Pathogenesis and Morphology
3. Atherosclerosis and Ischemic Heart Disease; Myocardial Infarction
4. Pericarditis and other pericardial diseases
5. Cardiomyopathy
6. Aneurysms
7. Heart failure
8. Acute coronary syndromes
9. Syphilis

Respiratory Pathology

10. Structure of Bronchial tree and alveolar walls, normal and altered lung function; concept of obstructive and restrictive lung disorders
11. Inflammatory diseases of bronchii : chronic bronchitis, bronchial asthma, bronchiectasis, chronic obstructive lung disease
12. Pneumonias : Lobar, Broncho, Interstitial
13. Pulmonary suppuration including lung abscess :Etiopathogenesis and Morphology
14. Pulmonary Tuberculosis : Primary and Secondary, Morphologic types including pleuritis
15. Tumors: Benign; Carcinoid, Malignant; Squamouscell, Oatcell, Adeno, etiopathogenesis.
16. Occupational lung disorders :anthracosis, silicosis, asbestosis, mesothelioma

Urinary Tract Pathology

17. Renal histology
18. Glomerulonephritis : Classification, Primary Proliferative and Non Proliferative
19. Secondary Glomerulonephritis : SLE, Purpura, Polyarteritis, Amyloidosis, Diabetes
20. IgA nephropathy
21. Diseases affecting the tubular interstitium
22. Nephrotic Syndrome
23. Polycystic kidney
24. Acute Renal Failure : Acute tubular and cortical necrosis
25. Progressive renal failure and end stage renal disease
26. Pyelonephritis, Reflux Nephropathy, Interstitial Nephritis
27. Renal tumors : Renal cell carcinoma, Nephroblastoma
28. Renal vascular disorders, kidney changes in Hypertension
29. Urinary bladder : cystitis, carcinoma
30. Urolithiasis and Obstructive Uropathy

Pathology of the Gastro-Intestinal Tract

31. Oral Pathology :Leukoplakia; Carcinoma oral Cavity and Esophagus
32. Peptic ulcer :etiopathogenesis and complications; gastritis: types
33. Tumors of stomach : Benign; Polyp, Leiomyoma, Malignant; Adenocarcinoma, Lymphoma
34. Inflammatory diseases of small intestine : Typhoid, Tuberculosis, Crohn's, Appendictis
35. Inflammatory diseases of appendix and large intestine : Amoebic colitis, Bacillary dysentery,Ulcerative Colitis
36. Tumours and Tumor like condition of the large and small intestine: Carcinoma
37. Pancreatic tumors : Endocrine, Exocrine and periampullary

(Section – B)

Liver and Biliary Tract Pathology

1. Jaundice : Types, Pathogenesis and Differentiation
2. Hepatitis : Acute and Chronic, Etiology, Pathogenesis and Pathology
3. Cirrhosis: Alcoholic
4. Portal Hypertension : Types including non-cirrhotic portal fibrosis and Manifestations
5. Concept of hepatocellular failure

Lymphoreticular System

6. Lymphadenitis : nonspecific, Granulomatous
7. Hodgkin's and Non-Hodgkin's Lymphomas : Classification, Morphology
8. Diseases of the spleen : Splenomegaly causes and effects

Reproductive System

9. Diseases of cervix : cervicitis, cervical carcinoma, etiology, types and cytologic diagnosis
10. Diseases of uterus :endometritis, endometrial hyperplasia and carcinoma, adenomyosis, smoothmuscle tumors,leiomyomas and leiomyosarcomas
11. Trophoblastic disease :Hydatidiform mole, Choriocarcinoma
12. Diseases of the breast : Mastitis, abscess, Fibrocystic disease, Neoplastic lesions : Fibroadenoma,Carcinoma, Phyllodestumor, gynecomastia

13. Prostate : Nodular Hyperplasia and Carcinoma,prostatitis
14. Ovarian and testicular tumors
15. Carcinoma of penis

Skeletal System

16. Bone – general considerations
17. Osteomyelitis : Acute, Chronic, Tuberculous, Mycetoma
18. Metabolic diseases : Rickets/Osteomalacia, Osteoporosis, Hyperparathyroidisism
19. Tumors :Primary, Osteosarcoma, Osteoclastoma, Ewing's Sarcoma, Chondrosarcoma; soft tissue tumors
20. Arthritis : Rheumatoid, Osteo and tuberculous
21. Paget's disease

Skin

- Squamous cell carcinoma, basal cell carcinoma
- Nevus, melanoma

Endocrine Pathology

22. Diabetes Mellitus : Types, Pathogenesis, pathology
23. Nonneoplastic lesions of thyroid : Iodine deficiency goiter, autoimmune thyroiditis, thyrotoxicosis,myxedema
24. Adrenal diseases : Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla
25. Hyperparathyroidism
26. Cushing's syndrome

Neuropathology

27. Inflammatory disorders : Pyogenic and tuberculous meningitis and its csf findings
28. CNS tumors – primary :glioma and meningioma (excluding histopathology) and metastatic

Eye

(1) Retinoblastoma

29. Practical

The procedure to be demonstrated and practices are: -

Haematology

1. How to draw blood – Demonstration
2. Anticoagulants and their use – Demonstration
3. Drawing of blood film – Demonstration and Practical
4. Staining (Leishman) – Demonstration and Practical
5. Focussing the slide under microscope and identification of cells – Demonstration and Practical
6. ESR by Westergreen pipette – Demonstration
7. Total WBC count – Demonstration and Practical
8. Total RBC count – Demonstration and Practical
9. Packed cell volume by wintrobe's tube – Demonstration
10. Haemoglobin estimation – Demonstration and Practical

11. Bleeding time and Clotting time – Demonstration
12. Differential count – Demonstration and Practical
13. |Reticulocyte count – Slide Discussion
14. Platelet count – Demonstration
15. Osmotic fragility test – Demonstration and Discussion
16. Coomb's test – Discussion
17. Prothrombin time – Demonstration
18. Bone marrow examination – Demonstration of procedure & Slide Discussion
19. Bone marrow charts – Discussion
20. Blood grouping – ABO & Rh – Demonstration and Practical
21. Peripheral blood picture in anemias
22. Thyroid function tests, renal function tests or liver function tests

Clinical Pathology

23. Urine examination physical and chemical examination
24. Use of different uristix and their interpretation – Demonstration
25. Microscopic examination of urine – Demonstration
26. CSF examination – Demonstration of procedure and cell count and discussion
27. Sputum examination – Discussion
28. Seman analysis – Discussion
29. Pleural fluid and ascitic fluid

Instruments

Demonstration and use.

Histopathology & Cytopathology

- Techniques of histopathology & Cytopathology (Including FNAC) – Demonstration
- Tissue processing – Demonstration
- H&E staining and other special staining – Demonstration
- Special stain - Demonstration
- Demonstration of HP & Cytology slides – along with tutorial classes in systemic pathology

System	Specimens	HPSlide
Cell injury	Cell injury and amyloidosis	Cell injury and amyloidosis
Inflammation		
Circulatory disorders	Infarction	Infarction
Basic diagnostic cytology		
Cardio –Vascular	MitralstenosisAtheromaaorta,Left ventricular hypertrophy, Fibrinous pericarditis	
Respiratory	Lobar pneumonia, Bronchiectasis, Emphysema, Pulmonary tuberculosis &miliarytuberculosis,Bronchogenic carcinoma	Tuberculosis of lung, Bronchictasis
Gastro-Intestinal	Peptic ulcer, Gastric carcinoma, Typhoid ulcer of small intestine, Tubercular ulcer ofsmallintestine,colorectalcancer,UC, Crohn'sdisease	Pleomorphic salivary adenoma, Adenocarcinoma, TB instestine, Acute appendicitis
Renal	Granular contracted kidney, Large white kidney, Hydronephrosis, Renal cell carcinoma, Adult polycytic kidney, TCC	Clear cell carcinoma, TCC bladder

	bladderwilm'stumour	
Bone	Osteomyelitis–sequestrum,TBspine, Osteogenicsarcoma,Gaintcelltumour	Osteogenicsarcoma,Gaint celltumour
FemaleGenital	Fibroiduterus,Carcinomacervix,Dermoid tumour of ovary, Papillary serous cyst adeno carcinoma, Mucinous cyst adenoma ovary, Vesicular mole	Proliferative endometrium secretary endometrium, Leiomyoma, Mucinous cystadenoma, Vesicular mole,Benigncysticteretoma
Hepatic-Biliary	Micro-nodular cirrhosis, Fatty liver, Metastatic liver, Gall stones	Fatty liver, Chronic ccholecystitis
FemaleBreast	Carcinomabreast,Fibroadenoma	Fibroadenoma. Duct carcinoma
MaleGenital	Carcinomapenis,Seminomaoftestis, Benign hyperplasia of prostate, Undercended testis, Teretoma testis	Seminoma, Benign hyperplasia of prostate
LymphNode and spleen	Lyphnode-HodgkinandNHL,TB lymphnode, enlarged spleen	Metastaticdeposit,TB lymphnode
Endocrine	Thyroidadenomapapillarycarcinoma	Colloidgoiter
Skin		Melanoma Basal cell carcinoma, Squmous cell carcinoma
SoftTisssue		Lipoma, Capillary hemangioma
Central Nervous System		Neurilemmoma

BOOKS:

Core Books

- Pathological Basis of Diseases- Robbins – latest edition.
- Pathology – B.N.Dutta – latest edition
- Manual of basic techniques for Health Laboratory – WHO 1980, Reprint 1995.
- Pathology – Rubin and Farber
- A handbook of Medical Laboratory Technology- VH Talib
- Clinical Haematology in Medical Practice –De Grachy
- Decie and Lewis practical Haematology - Lewis, Bain, Bates - latest edition

Reference Books

1. Muir's text book of Pathology
2. General Pathology – Y.M. Bhende : Popular Prakashan
3. Basic Histopathology – A text and colour atlas – P. Wheater and G. Burlitt
4. Andersons Pathology – Kissane et al
5. Todd and Sanfords Clinical diagnosis by laboratory methods
6. Cell tissue and disease. The basis of Pathology – Neislle Woolf
7. Pathology illustrated - Mac Farlon latest edition
8. Medical Laboratory Technology - Methods and interpretation - Raminik Sood - Latest Edition
9. Textbook of pathology - Harshmohan - Latest Edition
10. Textbook of Haematology - Tejinder Singh - Latest Edition
11. Practical Pathology - Uma Chaturvedi and Tejinder Singh - Latest Edition
12. Boyd's Textbook of Pathology Vol. I, Vol. II - Latest Edition

MBBS203 **Patho.-I**

Second MBBS (Main/ Remanded) examination Month /Year

PATHOLOGY

Paper-I

(Section – A & B)

(General Pathology, Cell injury, Cell adaptation, Inflammation, Repair, Regeneration, Genetics, Haemeostasis, Thrombosis, circulatory disturbance, Neoplasia, Immunopathology, Nutritional deprivation disease, Radiation injury, Hematology, blood banking, Clinical pathology,Infectious disease, AETCOM)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q 3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Second MBBS (Main/Remanded) examination Month/Year

PATHOLOGY

Paper-I

(Section – A & B)

(General Pathology, Cell injury, Cell adaptation, Inflammation, Repair, Regeneration, Genetics, Haemeostasis, Thrombosis, Circulatory disturbance, Neoplasia, Immunopathology, Nutritional deprivation disease, Radiation injury,Hematology, blood banking, Clinical pathology, Infectious diseases, AETCOM)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q1 MCQ 1x10=10

1. Out of various free radical species, the following radical is most reactive –
   A. Superoxide (O2)
   B. Hydrogen peroxide (H2O2)
   C. Hydroxyl (OH-)
   D. Nitric oxide (NO)

2. Apoptosis has the following features except –
   A. There is cell shrinkage in apoptosis
   B. There are no acute inflammatory cells surrounding apoptosis
   C. There may be single cell loss or affect clusters of cells
   D. Apoptosis is seen in pathologic processes only

3. In autoimmune haemolytic anaemia, the following type of immunologic tissue injury is involved –
   A. Type I (Anaphylactic)
   B. Type II (cytotoxic)
   C. Type III (immune complex)
   D. Type IV (cell mediated)

4. Transudate differs from exudate in having the following except –
   A. No inflammatory cells
   B. Low glucose content
   C. Low protein content
   D. Low specific gravi

5. The infarct of following organ is invariably haemorrhagic –
   A. Infarct kidney
   B. Infarct spleen
   C. Infarct lung
   D. Infarct heart

6. Typhoid fever is an example of –
   A. Acute inflammation
   B. Chronic nonspecific inflammation
   C. Chronic granulomatous inflammation
   D. Chronic suppurative inflammation

7. Tubercle bacilli in caseous lesions are best demonstrated in –
   A. Caseous centre
   B. Margin of necrosis with viable tissue
   C. Epithelioid cells
   D. Langhans giant cells

8. Hamartoma refers to –
   A. Tumor differentiating towards more than one cell line
   B. Tumour arising from totipotent cells
   C. Mass of disorganized but mature cells indigenous to the part
   D. Mass of ectopic rests of normal tissue

9. Patient presented with cold clammy skin, weak pulse and tachycardia, what is probable diagnosis –
   A. Hypovolemic slock
   B. Hyperplasia
   C. Cardiac edema
   D. Diabetec coma

10. 40 years female presented with breast lump with axillary lymphadenopathy, most specific diagnostic test is –
   A. ESR
   B. Hemogram
   C. x-ray chest
   D. FNAC

Q2 Structured short notes (attempt any four out of five) 4x5= 20

1. Chronic venous congestion of liver
2. Apoptosis
3. What is informed consent?
4. Differentiate between benign and malignant tumors.
5. Metastatic VS dystrophic calcification

Q3 Structured long question (attempt any two out of three) 2x10=20

1. Define oedema, describe etiopathogenesis of edema.
2. Classify amyloidosis, describe physical and chemical characteristic of amyloid.
3. Define inflammation. Write in brief the sequence of vascular events in inflammation.

Section B

Q1 MCQ 1x10= 10

1. Hypercalcaemia as a paraneoplastic syndrome is observed in the following tumours except –
   A. Squamous cell carcinoma lung
   B. Small cell carcinoma lung
   C. Renal cell carcinoma
   D. Breast cancer

2 Between CO and O2 haemoglobin has –
   A. Greater affinity for former
   B. Greater affinity for both
   C. Equal affinity for both
   D. No affinity for the former

3 Chronic ITP is characterized by the following features except –
   A. Splenomegaly
   B. Reduced platelet lifespan
   C. Reduced number of megakaryocytes in the bone marrow
   D. Demonstration of anti-platelet lgG antibody

4. Which of the following is not included in TTP triad?
   A. Anti-platelet antibodies
   B. Thrombocytopenia
   C. Microangiopathic haemolytic anaemia
   D. Fibrin microthrombi

5. Leucocyte alkaline phosphatase (LAP) scores are elevated in –
   A. Acute Myeloid Leukemia
   B. Chronic Myeloid Leukemia
   C. Myeloid metaplasia
   D. Myeloid leukemoid reaction

6. Cytoplasmic anti-neutrophil cytoplasmic antibodies (C-ANCA) is seen in –
   A. Polyarteritis nodosa
   B. Wegener's granulomatosis
   C. Leucocytoclastic vasculitis
   D. Giant cell arteritis

7. The features of tetralogy of Fallot are as under except –
   A. Ventricular Septal Defect (VSD)
   B. Displacement of aorta to right to override the VSD
   C. Pulmonary stenosis
   D. Left ventricular hypertrophy

8. All of the following cause left –sided heart failure except-
   A. Cor pulmonale
   B. Systemic hypertension
   C. Mitral stenosis
   D. Aortic stenosis

9. 25 years female presented with butterfly rash, joint pain, fene white is probably diagnosis
   A. Systemic Lupus Erthyromatous
   B. Turner syndrome
   C. Rheumatoid arthritis
   D. Iron deficiency anaemia

10. Patient presented with neck rigidity, convulsion, fever. Cerebrospinal fluid (CSF) findings are– Increased protein raised cell count with lymphocytosis and lobcreb formation. What is the diagnosis
   A. Pyogenic meningitis
   B. Tubercular meningitis
   C. Kernicterus
   D. Viral meningitis

Q2 Structured short notes (attempt any four out of five) 4x5=20

1. Delayed hypersensitivity reaction
2. Hemophilia
3. WHO classification of acute leukemia
4. Ethical considerations in pathology
5. Benedict's test

Q3 Structured long question (attempt any two out of three) 2x10=20

1. Define and classify anemia. Describe Peripheral Blood film findings and laboratory investigations of megaloblastic anaemia.
2. Define and classify neoplasia, describe the characteristic of malignant cell.
3. Define cell injury and describe its etiology, pathogenesis and mechanism in detail.

MBBS204 **Patho.-II**

Second MBBS (Main/ Remanded) examination Month /Year

PATHOLOGY

Paper-II

(Section – A & B)

(Cardiovascular system, hepatobiliary system, Genitourinary Tract, Respiratory system, Ophthalmic and ENT pathology, GIT, Reticuloendothelial system, Breast, Endocrine system, Skeletal system, Nervous system,)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Second MBBS (Main/Remanded) examination Month/Year

PATHOLOGY

Paper-II

(Section – A & B)

(Cardiovascular system, hepatobiliary system,Genitourinary Tract, Respiratory system, Ophthalmic and ENT pathology, GIT, Reticuloendothelial system, Breast, Endocrine system, Skeletal system, Nervous system,)

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q1 MCQ 1x10=10

1. Non-caseating sarcoid-like epithelioid cell granulomas are seen in –

   A. Silicosis

   B. Asbestosis

   C. Coal-workers pneumoconiosis

   D. Chronic berylliosis

2 Most common cyst arising from dental tissues is –

   A. Radicular cyst

   B. Dentigerous cyst

   C. Eruption cyst

   D. Gingival cyst

3. The nature of lesion in Barrett's esophagus is –

   A. Congenital anomaly

   B. Inflammatory disease

   C. Metaplastic process

   D. Neoplastic lesion

4. Familial hypercholesterolemia is
   A. Autosomal recessive
   B. X-linked recessive
   C. Autosomal co-dominant
   D. Non- mendelian disorder

5. Which type of asthma occurs in late adult life –
   A. Atopic asthma
   B. Intrinsic asthma
   C. Mixed asthma
   D. Allergic asthma

6. Sjogren's syndrome produces the following pathological change in the eye –
   A. Uveitis
   B. Phthisis bulbi
   C. Keratoconjunctivitis
   D. Glaucoma

7. Ackerman's tumour is –
   A. Spindle cell carcinoma of larynx
   B. Verrucous carcinoma of larynx
   C. Adenocarcinoma of larynx
   D. Sarcoma of larynx

8. A 6 years boy presented with generalized oedema, massive proteinuria and hypoalbuminemia what is the probable diagnosis –
   A. Nephrotic syndrome
   B. Nephritic syndrome
   C. Congestive heart failure
   D. Cirrhosis of liver

9. 50 years old female presented with complaints of frequency of micturition and increased thirst. On urine examination sugar ++ what is probable diagnosis
   A. Diabetes mellitus
   B. Diabetes insipidus
   C. Hypertension
   D. Pancreatitis

10. In chronic RHD, the most common valvular deformities are –
    A. Mitral stenosis alone
    B. Mitral insufficiency alone
    C. Mitral and aortic stenosis combined
    D. Mitral stenosis and insufficiency

Q2 Structured short notes (attempt any four out of five) 4x5= 20

1. Pap smear
2. Complication of diabetes
3. Hashimoto's thyroiditis
4. Ewing's sarcoma
5. Etiopathogenesis of emphysema

Q3 Structured long question (attempt any two out of three) 2x10=20

1. Describe pathophysiology and clinical presentation of nephrotic syndrome
2. Describe briefly risk factors and pathogenesis of atherosclerosis.
3. A 48 year old obese woman complains of severe ache in right upper quadrant of the abdomen with radiation to interscapular area and yellow discoloration of sclera for 2 days. She has also been having nausea and vomiting. She gives history of intermittent dull pain in the upper abdomen and bloating for the last 6 months, lasting for 1-2 days and gets relieved after taking some home remedies but she did not consult any physician for this. She has also been having intermittent malabsorption and flatulence, especially after meal for the last 6 months. On examination, she has pallor +, icterus ++, pedal oedema +, pulse 90/ min, blood pressure 130/90 mm hg. On deep palpation of the abdomen, there is pain in right hypochondrium. However, there is no fever, or any hepatosplenomegaly.
    1. Describe the clinical correlation with pathogenesis of the features.
    2. What is probable diagnosis?
    3. How will you investigate and confirm the diagnosis?

Section B

Q1 MCQ 1x10=10

1. The most common malignant salivary gland tumour in children is –
    A. Acinic cell tumour
    B. Adenoid cystic carcinoma
    C. Mucoepidermoid carcinoma
    D. Adenocarcinoma

2. The histologic hallmark of diagnosis of acute appendicitis is –
    A. Mucosal ulceration
    B. Impacted foreign body
    C. Neutrophilic infiltrate in muscularis
    D. Thrombosed blood vessels

3. Intra-abdominal desmoplastic small cell tumour is a –
    A. Benign tumour
    B. Fibromatosis
    C. Tumour-like lesion
    D. Highly malignant tumour

4. Tubular adenoma of breast is mainly composed of –
    A. Closely-packed ductules
    B. Ductal epithelial hyperplasia
    C. Lobular hyperplasia
    D. Lactational hyperplasia

5. Most common cancer of the stomach –
    A. Lymphomas
    B. Carcinoids
    C. Hyperplastic
    D. Adenocarcinoma

6. Sheehan's syndrome is –
   A. Irradiation damage of pituitary gland
   B. Scarred pituitary adenoma
   C. Post partum pituitary necrosis
   D. Surgical removal of pituitary gland
7. The cell of origin of Ewing's sarcoma is –
   A. Endothelial cell
   B. Marrow cell
   C. Osteoblast
   D. Primitive neuroectodermal cell

8. Common cause of meningitis in neonates with neural tube defects is –
   A. Escherichia coli
   B. Neisseria meningitides
   C. Streptococcus pneumonia
   D. Staphylococcus aureusm

9. Conn's syndrome is
   A. Chronic hypercortisolism
   B. Adrenogenital syndrome
   C. Secondary hyperaldostereronism
   D. Primary hyperaldostereronism

10. Most common form of pitutary adenoma is
   A. Somatotrophs
   B. Lactotroph
   C. Gonadotroph
   D. Corticotroph

Q2 Structured short notes (attempt any four out of five) 4x5=20

1. Chronic hepatitis
2. Fibroadenoma
3. Diabetic nephropathy
4. Pleomorphic adenoma
5. Acute myocardial infarction

Q3 Structured long question (attempt any two out of three) 2x10=20

1. Define and classify breast carcinoma. Discuss etiopathology, histologic features and diagnosis of DCIS
2. Describe Inflammatory bowel disease and differentiate between ulcerative and chrons disease.
3. Describe etiopathogenesis and clinical features of chronic pyelonephritis.

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

MICROBIOLOGY

1. GOAL:

The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the 'natural history of infectious disease' in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

2. OBJECTIVES :

(a) **Knowledge :**At the end of the course, the student shall be able to :

i) State the 'infective micro-organisms' of the human body and describe the 'host parasite relationship';

ii) List pathogenic micro-organisms (bacteria, viruses, parasites, fungi) and describe the 'pathogenesis of the diseases' produced by them;

iii) State or indicate the modes of transmission of 'pathogenic and opportunistic organisms' and their sources, including insect vectors responsible for transmission of infection;

iv) Describe the mechanisms of 'immunity' to infections;

v) Acquire knowledge on suitable 'antimicrobial agents' for treatment of infections and scope of 'immunotherapy' and different 'vaccines' available for prevention of communicable diseases;

vi) Apply methods of 'disinfection and sterilization' to control and prevent hospital and community acquired infections;

vii) Recommend 'laboratory investigation' regarding bacteriological examination of food, water, milk and air.

(b) **Skills :**At the end of the course, the student shall be able to :

i) Plan and interpret 'laboratory investigations' for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent;

ii) Identify the 'common infectious agents' with the help of laboratory procedures and use 'antimicrobial sensitivity tests' to select suitable antimicrobial agents;

iii) Perform commonly employed 'bed side tests' for detection of infectious agents such as blood film for malaria, filarial, gram staining and Acid Fast Bacilli (AFB) staining and stool sample for ova cyst etc.

iv) Use the correct method of collection, storage and transport of clinical material of microbiological investigations.

C **Integration :**The student shall understand infectious diseases of national importance in relation to theclinical therapeutic and preventive aspects.

3. SCHEME OF EXAMINATION:s

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60+40= 100 Marks**	
Internal assessment		
Theory	**100**	**100 +100 = 200 Total**
Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.

2. The question no1 from each section shall contain 10 multiple choice question of one mark each.

3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each

4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each

5. Each section shall be answered in separate answer book.

6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.

7. Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.

8. University Examination: Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

SYLLABUS

4.1 Theory

Paper – I

(Section – A)

General Microbiology, Immunology and Hospital Infection Control & AETCOM in Microbiology

General Microbiology

1. Introduction and History
2. Microscopy
3. General Bacteriology
   - 3.1 Bacterial Taxonomy
   - 3.2 Morphology and Physiology of Bacteria
   - 3.3 Laboratory Diagnosis of Bacterial Infections
     - Specimen Collection
     - Direct Detection (Staining Methods and others)
     - Culture, Identification and Antimicrobial Susceptibility Test
     - Molecular Diagnosis and Typing Methods
   - 3.4 Bacterial genetics
   - 3.5 Antimicrobial agents, antimicrobial resistance
   - 3.6 Pathogenesis of Bacterial Infections
   - 3.7 Overview of bacterial infections
4. General virology and overview of viral infections
5. General parasitology and overview of parasitic infections
6. General mycology and overview of fungal infections
7. Normal Human Microbiota
8. Epidemiology of infectious diseases

Immunology

1. Immunity
2. Antigen
3. Antibody
4. Antigen-antibody reaction
5. Complement
6. Components of immune system-Organs, cells and products
7. Immune responses: Cell-mediated and antibody-mediated
8. Hypersensitivity
9. Autoimmunity
10. Immunodeficiency disorders
11. Transplant and cancer immunology
12. Immunoprophylaxis

Hospital Infection Control

1. Health care associated infections.
2. Major Healthcare-associated infection Types
3. Sterilization and disinfection
4. Biomedical Waste Management
5. Needle Stick injury
6. Antimicrobial Stewardship
7. Environmental Surveillance (Bacteriology of Water, Air, and Surface)

AETCOM Module: 2.4, 2.5, 2.6

(Section – B)
Bloodstream and Cardiovascular system Infections, Gastrointestinal & Hepatobiliary System Infections

Bloodstream and Cardiovascular system Infections

1. Cardiovascular system infections (infective endocarditis and acute rheumatic fever and others)
2. Bloodstream infections

- **Bacterial Infections**
  1. Enteric fever (Salmonella typhi and S. paratyphi)
  2. Rickettsial Infections
  3. Miscellaneous Bacterial Bloodstream Infections: Brucellosis, Leptospirosis and Borreliosis

- **Viral Infections**
  1. HIV/AIDS
  2. Viral hemorrhagic fever (VHF) Arboviral VHF (Dengue, Chikungunya and others) Filoviral VHF (Ebola and Marburg virus), Hantaviral and other Agents of VHF

- **Parasitic Infections**
  1. Malaria and Babesiosis
  2. Visceral Leishmaniasis and Trypanosomiasis
  3. Lymphatic Filariasis

- **Fungal Infections**
  Systemic Candidiasis and Systemic Mycoses

Gastrointestinal (GI) Infections

Gastrointestinal infective syndromes

Bacterial Infections

- Food Poisoning: *S. aureus, Bacillus cereus, Clostridium botulinum* and others
- Gastrointestinal Infection due to Enterobacteriaceae: Diarrheagenic Escherichia coli, Shigellosis, Nontyphoidal salmonellosis and Yersiniosis
- Cholera, halophilic Vibrio and Aeromonas infections
- Miscellaneous bacterial infections of gastrointestinal system: *Helicobacter, Campylobacter and*
- *Clostridium difficile infections*

- **Viral Infections**
  Viral gastroenteritis: Rotaviruses and others

- **Parasitic Infections**
  1. Intestinal Protozoan Infections: Intestinal amoebiasis, Giardiasis, Coccidian Parasitic Infections , Balantidiasis, Blastocystosis and others
  2. Intestinal Helminthic Infections
- Intestinal Cestode Infections: Diphyllobothrium, Taenia, Hymenolepis and others
- Intestinal Trematode Infections: *Fasciolopsis buski*, Schistosoma mansoni, S. japonicum and others
- Intestinal Nematode infections: Trichuris, Enterobius, hookworm, Strongyloides. Ascaris and others

Hepatobiliary System Infections

Infective Syndromes of hepatobiliary system and abdomen

Viral Infections

- Viruses Causing Hepatitis: Hepatitis viruses, yellow fever and others

- **Parasitic infections**
  a. Parasitic Infections of Hepatobiliary System
  b. Amoebic Liver Abscess, Hydatid Disease (Echinococcosis), Trematode
  c. infections (Fasciola hepatica, Clonorchis and Opisthorchis) and Others

Paper–II
(Section – A)

Skin, Soft Tissue and Musculoskeletal System Infections, Respiratory Tract Infections & Central Nervous system Infections

Skin, Soft Tissue and Musculoskeletal System Infections

Infective syndromes of skin, soft tissue and musculoskeletal systems

- **Bacterial Infections**
  Staphylococcal Infections
  Beta-hemolytic Streptococcal Infections
  Gas gangrene (*Clostridium perfringens*) and infections due to Non-sporing Anaerobes
  Leprosy *(Mycobacterium leprae)*
  Miscellaneous Bacterial Infections of Skin and Soft **Tissues:** Anthrax (*Bacillus anthracis*), Actinomycosis, Nocardiosis, Nonvenereal Treponematoses and others

- **Viral Infections**
  Viral Exanthems and other Cutaneous Viral Infection
  Herpesviruses (herpes simplex, varicella-zoster and HHV- 6 and 7 infections), poxviruses (smallpox, molluscum contagiosum), parvovirus, measles, rubella, coxsackieviruses and others

- **Parasitic Infections**
  Parasitic Infections of Skin, Soft Tissue and Musculoskeletal System
  Cutaneous leishmaniasis, cysticercosis, tissue Nematodes (filarial tissue Nematodes, *Dracunculus medinensis, Trichinella spiralis)* and larva Migrans

- **Fungal Infections**
  Fungal Infections of Skin, Soft Tissue and Musculoskeletal System
  Superficial fungal infections, subcutaneous fungal infections, candidiasis (cutaneous and mucosal) and *Penicillium marneffei* infection

Respiratory Tract Infections

Infective syndromes of respiratory tract

- **Bacterial Infections**
  Bacterial pharyngitis: Streptococcus pyogenes pharyngitis, Diphtheria and others
  Bacterial Lobar Pneumonia: Pneumococcal pneumonia,haemophilus influenzae pneumonia and others
  Bacterial Atypical (Interstitial) Pneumonia**:** *Mycoplasma, Chlamydia, Legionella* and others
  Tuberculosis & Non-tuberculous mycobacteria Infections
  Pertussis (Bordetella pertussis)
  Infections due to Non-fermenting Gram – Negative Bacilli: Pseudomonas, Acinetobacter, Burkholderia and others

- **Viral Infections**
  1. Myxovirus Infections of respiratory tract: Influenza, parainfluenza, mumps, Respiratory syncytial virus and others
  2. Coronavirus infections including COVID-19
  3. Miscellaneous Viral Infections of Respiratory Tract: Rhinovirus, Adenovirus and Infectious

Mononucleosis (Epstein-Barr Virus)

- **Parasitic and Fungal Agents**
  Parasitic and Fungal Infections of Respiratory Tract
  Parasitic Infections: Paragonimiasis and others
  Fungal Infections: Zygomycosis, Aspergillosis, Pneumocystosis and Others

Central Nervous system Infections

Infective Syndromes of Central Nervous System

- **Bacterial Infections**
  1. Bacterial meningitis
- Acute bacterial (pyogenic) meningitis: Neisseria meningitidis, Streptococcus pneumoniae, Streptococcus agalactiae, Haemophilus influenzae and Listeria
- Chronic bacterial meningitis: Tubercular meningitis, spirochaetal meningitis, Lyme disease and others
  2. Tetanus

- **Viral Infections**
  1. Viral Meningitis and Myelitis: Poliomyelitis, Coxsackievirus Infections, and others
  2. Viral Encephalitis and Encephalopathy Rabies, HSV Encephalitis, Arboviral Encephalitis (Japanese Encephalitis and West Nile), Nipah and Hendra, Slow Virus and Prion Disease and others

- **Parasitic and Fungal Infections**
  Parasitic and Fungal Infections of Central Nervous System
  1. Parasitic Infections: Neurocysticercosis, Free-living Amoeba Infections,
  (a) Toxoplasmosis and others
  2. Fungal Infections: Cryptococcal Meningitis and others

(Section – B)

Genitourinary & sexually-transmitted infections & Miscellaneous including pandemic module
Urogenital Tract Infections

1. Infective Syndromes of Urinary Tract and sexually-transmitted infections
- Bacterial Infections: Enterobacteriaceae, Enterococcus and others
- Viral (BK)Virus), Parasitic (Schistosoma Haematobium) and Fungal Infections
  2 Infective Syndromes of Genital Tract
- Ulcerative Genital Disease: Syphilis, lymphogranuloma venerum, granuloma inguinale, soft chancre and genital herpes
- Gonorrhea and non-gonococcal urethritis (*Chlamydia trachomatis* and others),
- Vulvovaginitis (Trichomoniasis, bacterial vaginosis, vaginal candidiasis
- Other Genital Tract Infections of Females and Males

Miscellaneous

1. Ocular and Ear Infections
2. Congenital Infections Cytomegalovirus Infections, Congenital Varicella, Neonatal Herpes, Congenital Rubella, Congenital Toxoplasmosis, Congenital Syphilis, Zika Virus Infections and others
3. Organisms with Oncogenic Potential Human papilloma virus, Kaposi sarcoma, HTLV and HIV, Epstein-Barr virus, Hepatitis B and C, and others
4. Zoonotic infections: Classification, plague, Tularemia, Bite Wound Infections
5. Opportunistic infections

6. Transplant Infections
7. Emerging and re-emerging infections
8. Microbial Agents of Bioterrorism
9. Laboratory Acquired Infection
10. National Health Programmes for Communicable Disease
11. Vector-borne infections and Ectoparasite infestations
12. Transfusion-transmitted infections
13. Pandemic Module

Practical

- Smear preparation of bacterial growth from culture media for diagnosis along with problem solving exercise – Gram Staining
- Sputum smear for diagnosis along with problem solving exercise - ZN Staining
- Examination of parasite found in stool along with problem solving exercise – Stool examination
- Hospital infection control practices
- Spotting

Books

Core Books:

1. Essentials of Medical Microbiology by Apurba S Sastry , Sandhya Bhat (Latest edition)
2. Complete Microbiology for MBBS by CP Baveja & V Baveja (Latest edition)

Reference Books

- Mackie and McCartney's Medical Microbiology-Vol-I and Vol-II (Latest edition)
- Review of Medical Microbiology-Jawetz (Latest edition)
- Roitt's Essentials Immunology – Ivan R. Roitt (Latest edition)
- Diagnostic Microbiology – Bailey and Scott (Latest edition)
- Koneman's Color Atlas andTB of Diagnostic Microbiology (Latest edition)
- Text book of Medical Mycology – Dr. Jagdish Chander (Latest edition)
- Text Book of Parasitology – KD Chattereji (Latest edition)

MBBS205 **Micro.-I**

Second MBBS (Main/ Remanded) examination Month /Year

Microbiology

Paper-I

(Section – A & B)

General Microbiology, Immunology and Hospital Infection Control, Bloodstream and Cardiovascular system Infections, Gastrointestinal & Hepatobiliary System Infections & AETCOM in Microbiology

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

SECTION A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Write short notes on (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Long answer questions (attempt any two out of three) 2x10= 20

1
2
3

Section B

Bloodstream and Cardiovascular system Infections, Gastrointestinal & Hepatobiliary System Infections

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Write short notes on (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Long answer questions (attempt any two out of three) 2x10= 20

1
2
3

MBBS205 **Micro.-I**

Second MBBS (Main/ Remanded) examination Month / Year

Microbiology

Paper – I

(Section– A & B)

General Microbiology, Immunology and Hospital Infection Control, Bloodstream and Cardiovascular system Infections, Gastrointestinal & Hepatobiliary System Infections & AETCOM in Microbiology

Time: 3 hrs

Maximum Marks: 100

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For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION A

Q.1 MCQ 1x10 = 10

1) Which of the following statement is true
   A. Solid media are enrichment media
   B. Nutrient broth is basal media
   C. Agar adds nutrient to media
   D. Chocolate agar is selective media

2) HLA molecules A, B and C belong to which MHC class?
   A. Class I
   B. Class II
   C. Class III
   D. Class IV

3) The term for enhancement of phagocytosis by coating of foreign particles with serum proteins is:
   A. Opsonization.
   B. Agglutination.
   C. Solubilization.
   D. Chemotaxis

4) A 50 year old male presented with effortless perfuse diarrhoea having rice watery stool. Recommended transport medium for stool specimen suspected to contain Vibrio cholerae is:
   A. Buffered glycerol saline medium
   B. Venkatraman – Ramakrishnan medium.
   C. Nutrient broth
   D. Blood agar

5) Which of the following is characteristic of variable domains of immunoglobulins?
   A. They occur on both the H and L chains.
   B. They represent the complement-binding site.
   C. They are at the carboxy-terminal ends of the molecules.
   D. They are found only on H chains

6) Adenosine deaminase deficiency is seen in the following:
   A. Common variable immunodeficiency
   B. Severe combined immunodeficiency
   C. Chronic granulomatous disease
   D. Nezelof syndrome

7) Which of the following is most resistant to antiseptics?
   A. Spore
   B. Prion
   C. Cyst
   D. Fungus

8) Heat labile instruments for use in surgical procedure can be best sterilized by:
   A. Absolute alcohol
   B. Ultra violet rays
   C. Chlorine releasing compounds
   D. Ether

9) Microbiological waste should be segregated in which color bags?
   A. Yellow
   B. Red
   C. Blue
   D. Black

10) A Patient is admitted since 5 days. He develops fever after placement of a urinary catheter for >2days. Urine culture revealed Escherichia coli($\geq 10^{5/}$ml). What is the surveillance diagnosis?
   A. Healthcare-associated CAUTI
   B. Healthcare-associated non-CAUTI
   C. Community – acquired CAUTI
   D. Community-acquired non-CAUTI

Q 2 Write short notes on (attempt any four out of five) 4 x 5 = 20

1. Hand Hygiene
2. Natural Killer cells.
3. Bacterial Capsule.
4. Graft versus host reaction.
5. What are the responsibilities of patients and doctors in shared decision making?

Q 3 Long answer questions (attempt any two out of three) 2 x 10 = 20

1. Enumerate the methods of gene transfer and describe the mechanisms of drug resistance in bacteria in detail.
2. Define and classify sterilization. Write about sterilization by moist heat in detail.

3. Define and classify Antigen Antibody reactions. Describe in detail about Agglutination tests with clinical examples.

SECTION B

Q 1 MCQ 1 x10 = 10

1) Which of the following is not a liver fluke?
   A. Clonorchis sinensis
   B. Opisthorchis Viverrini
   C. Fasciola hepatica
   D. Fasciolopsis buski

2) The following statements are true regarding *Clostridium perfringens* except:
   A. It is the commonest cause of gas gangrene
   B. It is normally present in human faeces
   C. The principal toxin of *C. perfringens* is the alpha toxin
   D. Gas gangrene producing strains of *C. perfringens* produces heat resistant spores

3) Which is known as Australia antigen?
   A. HBsAg
   B. HBeAg
   C. HBcAg
   D. HBV DNA

4) All of the following are true about *V. cholera* O139 except:
   A. Clinical manifestations are similar to O1 El tor
   B. First discovered in Chennai
   C. Produces O139 lipopolysaccharide
   D. Epidemiologically indistinguishable from O1 El tor

5) A diabetic patient developed cellulitis due to *S.aureus*, which was found to be methicillin resistant on the antibiotic sensitivity testing. All the following antibiotics will be appropriate except:
   A. Vancomycin
   B. Imipenem
   C. Teicoplanin
   D. Linezolid

6) A 20 year old man presented with haemorrhagic colitis. The stool sample grows *Escherichia coli* in pure culture. The following serotype of *E. coli* is likely to be the causative agent:
   A. 0 157:H7
   B. 0 159:H7
   C. 0 107:H7
   D. 0 55:H7

7) A young boy had a flea bite while working in a wheat grain godown. After 5 days he developed fever and had axillary lymphadenopathy. A smear was sent to the laboratory to perform a specific staining. Which one of the following staining method would help in the identification of the suspected pathogen:
   A. Albert staining
   B. Zeihl-Neelson staining
   C. McFadyean's staining
   D. Wayson staining

8) Food poisoning associated with contaminated Chinese fried rice:
   A. Staphylococcus aureus
   B. Bacillus cerus
   C. Clostridium perfringens
   D. Vibrio cholera

9) Which is the infective form of the malaria parasite to man?
   A. Merozoite
   B. Sporozoite
   C. Trophozoite
   D. Gametocyte

10) Antibodies against which of the following antigen appear in typhoid carrier?
   A. Vi antigen
   B. O antigen
   C. H antigen
   D. Capsular antigen

Q.2 Write short notes on (attempt any four out of five) 4x 5 = 20

1. Pyogenic liver abscess
2. How you will maintain confidentiality pertaining to patient identify on laboratory results.
3. Enterohemorrhagic Escherichia coli.
4. Nontyphoidal salmonellae
5. Halophilic vibrio.

Q.3 Long answer questions (attempt any two out of three) 2 x 10 = 20

1. A 15 year old boy presents with history of fever with headache, malaise and coated tongue of8 days duration. On examination boy was found to have stepladder pattern of pyrexia, bradycardia andsoft palpable spleen.
   a. What is the probable diagnosis?
   b. Write the mode of infection, pathogenesis
   c. Write down lab diagnosis in detail.
2. A 8year-old girl came to the paediatric OPD for school health check- up. On examination, she had pallor. Peripheral blood smear revealed microcytic, hypochromic anemia. Stool microscopy (saline mount) showed round to oval non-bile stained egg with segmented ovum (four blastomeres)
   a. Identify the disease and the causative agent.
   b. Write briefly about the life cycle of the etiological agent.
   c. What are the various diagnostic modalities?
3. A group of patients presented to the emergency department with chief complaints of fever, vomiting and diarrhea. All of them had attended a birthday party 4-6 hours back.
   a. What is your probable clinical diagnosis?
   b. What are the etiological agent, pathogenesis and clinical manifestations?
   c. Describe the laboratory diagnosis in detail.

MBBS206 **Micro.-II**

Second MBBS (Main/ Remanded) examination Month /Year

Microbiology

Paper-II

(Section – A & B)

Skin, Soft Tissue and Musculoskeletal System Infections, Respiratory Tract Infections & Central Nervous system Infections, Genitourinary & sexually-transmitted infections & Miscellaneous including pandemic module

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Write short notes on (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Long answer questions (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Write short notes on (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Long answer questions (attempt any two out of three) 2x10= 20

1
2
3

MBBS206 **Micro.-II**

Second MBBS (Main/ Remanded) examination Month / Year

Microbiology

Paper – II

(Section – A & B)

Skin, Soft Tissue and Musculoskeletal System Infections, Respiratory Tract Infections & Central Nervous system Infections, Genitourinary & sexually-transmitted infections & Miscellaneous including pandemic module

Time: 3 hrs

Maximum Marks: 100

Use a separate answer book for each section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section – A

Q.1 MCQ 1x10 = 10

1. Scalded skin syndrome is mediated by:
   A. Hemolysin
   B. Coagulase
   C. Enterotoxin
   D. Epidermolytic oxin

2. Bejel is caused by:
   A. Treponema pertenue
   B. Treponema endemic
   C. Treponema pallidum
   D. Treponema carateum

3. Subacute sclerosing panencephalitis (SSPE) S A complication following which viral infection?
   A. Mumps
   B. Measles
   C. Rubella
   D. Influenza

4. Organism that does not affect nail:
   A. Trichophyton
   B. Epidermophyton
   C. Microsporum
   D. Candida albicans

5. According to CDC recommendation, the people with influenze-like illness remain at home until how much time after they are free of fever (<100oF) without the use of fever – reducing medications.
   A. At least 24 Hours
   B. At least 48 Hours
   C. At least 7 days
   D. At least 10 days

6. *The agent of primary atypical pneumonia is :*
   A. Legionella pneumophila
   B. Klebsiella pneumoniae
   C. Mycoplasma pneumoniae
   D. Streptococcus pneumoniae

7. The capsule of *Cryptococcus neoformans* in a CSF sample is best seen by
   A. Gram's stain
   B. Indian ink preparation
   C. Giemsa stain
   D. Methanamine - silver stain

8. A 25- Year-old female has developed fever, sore throat and lymphadenopathy accompanied with atypical lymphocytosis and an increase in sheep cell agglutinins. The diagnosis is most likely:
   A. Hepatitis
   B. Infectious mononucleosis
   C. Chickenpox
   D. HSV infection

9. Which of the following is not used for clinical diagnosis of COVID-19 diseases:
   A. Real time OPCR
   B. Truenat
   C. Antigen detection
   D. Antibody detection

10. Neonatal meningitis acquired through infected birth canal is due to:
   A. S. pyogenes
   B. Viridians streptococci
   C. S. agalactiae
   D. S. pneumoniae

Q 2 Write short notes on (attempt any four out of five) 4 x 5 = 20

1. Acute laryngotracheobronchitis (croup)
2. Aspergillosis
3. Pulmonary anthrax
4. Dermatophytosis
5. Cutaneous larva migrans

Q 3 Long answer Question (attempt any two out of three) 2 x 10 = 20

1. A 7-year-old girl was admitted to the hospital with complaints of high-grade fever, headache, vomiting, altered mental status, seizure and neck rigidity. CSF sample was collected by lumbar puncture in a sterile container and sent to the laboratory for biochemical analysis, direct microscopic test, culture and sensitivity testing.
   a. What is the probable clinical diagnosis?
   b. What are the etiological agents, pathogenesis and clinical manifestations of this disease?
   c. Describe the laboratory diagnosis in detail?

2. Rajesh, a 28 – year- old male, was admitted to the hospital with complaints of low-grade fever, loss of weight and appetite and chronic cough with expectoration for past 6 months, Sputum examination revealed long, slender and beaded acid-fast bacilli
   a. What is your provisional diagnosis?
   b. Mention the laboratory diagnosis in detail .
   c. Mention briefly about drug resistance that can occur in this etiological agent.

3. A 55-year-old male was admitted to the hospital with complaints of severe pain in the lateral aspect of his left calf and small amount of pus discharge from the ingrown hair. On physical examination, the local area was found to be red warm and tender. Pus was aspirated and was subjected to gram staining, Gram staining showed gram-positive cocci in clusters. Culture on blood agar showed golden yellow pigmented beta haemolytic colonies.
   a. What is the clinical diagnosis and its causative organism?
   b . List the infections caused by this organism
   c. Briefly discuss the laboratory diagnosis.

SECTION B

Q 1 Multiple choice questions 1 x 10 = 10

1. Which csulture medium is preferred for processing of urine specimens?
   A. TCBS agar
   B. CLED agar
   C. Chocolate agar
   D. XLD agar

2. Wrong about Bacterial vaginosis is:
   A. Discharge has offensive smell
   B. pH> 4.5
   C. Causative agent is Chlamydia trachomatis
   D. Clue cell is diagnostic

3. Which of the following is the most common etiological agent of UTI?
   A. Escherichia coli
   B. Klebsiella
   C. Proteus
   D. Enterobacter

4. Gonococcal infection in females, all are true, except:
   A. Less severe than male
   B. Mucopurulent cervicitis is the most common presentation in females
   C. Vulvovaginitis is seen frequently
   D. Fitz- Hugh- Curtis syndrome seen

5. All of the following are oncogenic RNA viruses except:
   A. Hepatitis B virus
   B. Hepatitis C virus
   C. HIV
   D. Varicella-zoster virus

6. Rat bite fever is caused by:
   A. Borrelia recurrentis
   B. Streptobacillus moniliformis
   C. Yersinia pestis
   D. Leptospira

7. A 28-year-old female was admitted with high grade fever, vomiting, flank pain with increased frequency of micturition for the past 3 days. What is your clinical diagnosis.
   A. Pneumonia
   B. Malaria
   C. UTI
   D. Pharyngitis

8) Bipolar staining is characteristic of:
   A. Yersinia pestis
   B. Shigella
   C. Klebsiella
   D. Proteus

9 Highest risk of carcinoma cervix (squamous cell) is associated with which of the following HPV Serotypes
   A. Serotypes 6 and 11
   B. Serotypes 16 and 18
   C. Serotypes 2 and 4
   D. Serotypes 27 and 57

10. A 23-year old male having a history of sexual exposure with a commercial sex worker is presented to a STD clinic with painless hard indurated genital ulcer and painless hard lymph node. What is the clinical diagnosis?
   A. Syphilis
   B. LGV
   C. Herpes Genitals
   D. Donovanosis

Q2. Write short notes on (attempt any four out of five) **4 x 5 = 20**

1. Rat – bite fever
2. Enumerate the organism with oncogenic potential
3. Congenital toxoplasmosis
4. Significant bacteriuria
5. Bacterial vaginosis

Q3. Long answer Questions (Attempt any two out of three) **2 x 10 = 20**

1. A young female patient presented with history of fever with chills. Patient also had complaints of dysuria and suprapubic pain for last 2 days.
   a. What is the most probable clinical condition
   b. Enumerate the causative bacterial pathogens.
   c. Describe the step-wise laboratory diagnosis of above-mentioned clinical condition
2. A 27-year woman had developed mucopurulent discharge, following by development of dysuria and urethral irritation. She had a history of multiple sexual partners. Microscopy of the urethral swab revealed sterile pyuria and presence of compact inclusion bodies which are later stained by lugol's iodine.
   a. What is the most probable etiological diagnosis?
   b. What are the other manifestations produced by the causative agent?
   c. How is this infection diagnosed in the laboratory?
3. A 23-year-old male having a history of sexual exposure with a commercial sex worker is presented to a STD clinic with painless hard indurated genital ulcer and painless hard lymph node.
   a. What is the clinical diagnosis?
   b. What are the other manifestations produced by the causative agent?
   c. Discuss the laboratory diagnosis

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Third Professional Part-I Examination

Forensic Medicine and Toxicology

1. GOAL:

The broad goal of the teaching of undergraduate students in Forensic Medicine is to produce a physician who is well informed about medico legal responsibilities in the practice of medicine. He/She shall also be capable of making observations and inferring conclusions by logical deductions to set inquiries on the right track in criminal matters and connected medico legal problems. He/She should acquire knowledge of the law in relation to medical practice, medical negligence, and respect for codes of medical ethics.

2. OBJECTIVES:

(a) **Knowledge**: At the end of the course, the student shall be able to :

i. Identify the basic medico legal aspects of hospital and general practice;

ii. Define the medico legal responsibilities of a general physician while rendering community service either at a rural primary health centre or an urban health centre;

iii. Appreciate the physician's responsibilities in criminal matters and respect for the Codes of medical ethics;

iv. Diagnose, manage and identify also legal aspects of common acute and chronic poisoning

v. Describe the medico legal aspects and findings of post-mortem examination in case of death due to common conditions and poisonings;

vi. Detect occupational and environmental poisoning, prevention and epidemiology of common poisoning, and their legal aspect particularly pertaining to Workmen Compensation Act'

vii. Describe the general principles of analytical toxicology

(b) **Skills** : At the end of the course, the student shall be able to :

i. Make observations and logical inference in order to initiate inquiries in criminal matters and medico legal problems;

ii. Diagnose and treat common emergencies in poisoning and manage chronic toxicity;

iii. Observe the principles of medical ethics in the practice of his profession.

(c) **Integration :** Department shall provide an integrated approach toward allied disciplines like Pathology, Microbiology, Radiology, Medicine, Surgery, Trauma, Hospital administration etc. to impart training regarding medico-legal responsibilities of physicians at all levels of health care. Integration with relevant disciplines will provide a scientific basis for clinical toxicology e.g., Medicine, Pharmacology etc.

3. SCHEME OF EXAMINATION:

Theory	**100 Marks**	**100 + 100= 200 Total**
Practical + Oral	**60+40 = 100 marks**	
Internal assessment		
Theory	**100**	**100+100= 200Total**
Practical	**100**	

Theory- One paper of 100 marks (One Multiple choice Question of 10 marks in each section of the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.

2. The question no1 from each section shall contain 10 multiple choice question of one mark each.

3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each

4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

4. SYLLABUS:

1.1 Theory

(Section A)

History of Forensic Medicine

(1) Introduction and definition
(2) Origin and development of Forensic medicine in India and abroad

Medical law and Ethics

(1) Code of Medical Ethics 2002 conduct
(2) Etiquette and ethics in medical practice-Unethical practice
(3) Functions and role of National Medical Commission and State Medical Council/Indian Medical Register
(4) Duties of Medical practitioners towards Society and patients.
(5) Rights and privileges of a medical practitioner-Penal Erasure/Infamous Conduct/Disciplinary Procedures/Warning Notice and Penal erasure
(6) Euthanasia
(7) Discuss Medical negligence-Civil and Criminal/Contributory negligence/Vicarious Liability/Res Ipsa Loquitor. Prevention of medical negligence.
(8) Therapeutic privilege/Malingering/Therapeutic Misadventure/Professional Secrecy
(9) Consent-Types and it's medico-legal aspect.

Legal Procedure

(1) Definitions
(2) Legal Procedure in India
(3) Court procedures: Summons/Conduct money/Examination in Chief, cross-examination, re-examination
(4) Criminal courts and their powers, Evidence, Witness
(5) Offences in Court: Perjury
(6) Dying Declaration & Dying Deposition

Identification

(1) Define and describe Corpus Delicta
(2) Race, Sex Determination, Age, Complexion and Features, Hair, Anthropometry and Dactylography, Foot Prints, Deformities, Scars, Tattoo-Marks, Occupation marks, Handwriting, Clothes, and personal Articles, Speech, and Voice, Gait, Ticks, Manner and Habit, Mental Power, Memory, and Education, Superimposition
(3) Miscellaneous methods of identification, DNA Fingerprinting Identification of criminals, unknown persons, dead bodies from remains-hairs, scars, tattoos, poroscopy and superimposition.

Postmortem Examination (Autopsy)

(1) Aims and objectives
(2) Different Types
(3) Procedure and incisions
(4) Examination of mutilated bodies and fragments, Examination of bones, Conflagrated human remains
(5) Discuss Obscure and Negative autopsy
(6) Post-mortem artefacts
(7) Preservation of Viscera.

Exhumation

(1) Definition
(2) Objectives of exhumation, Rules for exhumation, Examination, Time of exhumation

Examination of Biological Stains and Hair

(1) Introduction
(2) Theory of Inheritance
(3) Blood, Semen, Examination of saliva Stains,Hairs and fibers, Examination of other Biological Stains and Tissues
(4) Collection and Preservation for Laboratory Examinations
(5) Reporting on laboratory examination

Death in its Medico-Legal Aspects

(1) Define, describe and discuss Death and its types
(2) Natural and Un-natural Death
(3) Modes and manner of death,
(4) Sudden death,
(5) Signs of Death,
(6) Time Since Death,
(7) Presumption of Death,
(8) Presumption of Survivorship

Asphyxial Death

(1) Define, classify and describe Asphyxia
(2) Discuss different types of Hanging and Strangulation, PM findings,
(3) Describe and discuss Traumatic Asphyxia, Obstruction of mouth and nose, Suffocation, Sexual Asphyxia
(4) Describe and discuss Types, pathophysiology,PM findings in Drowning/diatom test/gettler's test

Starvation

Clinical features,PM findings and Medico-legal aspects of Starvation

Thermal Deaths

44. Describe the clinical features, PM findings and medico-legal aspects of injuries due to: Heat hyperpyrexia, Heatstroke, Sunstroke, Heat exhaustion, Heat cramps Hypothermia, Frostbite, Trench foot, Immersion foot
45. Describe types of injuries, clinical features, pathophysiology,PM findings and medico-legal aspect in case of Burns/Scalds/Lightening/Electrocution/Radiations

Injury And Wounds

1) Define Injury, Assault and Hurt/IPC pertaining to Injuries
2) Describe accidental, suicidal and homicidal injuries
3) Describe Simple, Grievous and Dangerous Injuries
4) Differentiate Antemortem and Postmortem injuries
5) Describe healing of injury and fracture of bones with it's medico-legal aspect.

Mechanical Injuries

1. Define, describe and classify different types of mechanical injuries: Bruises (Contusions), Abrasions, Lacerated, Incised, Incised looking, Stab, Self-inflicted and fabricated wounds
2. Describe different types of firearms and Ammunition,
3. Describe and discuss wound ballistics-Different types of Firearm injuries, Blast injuries.

The Medico-legal Aspects of Wounds

(1) Examination of injured Persons, Nature of Injury
(2) Examination of exhibits
(3) Causes of Death from Wounds
(4) The power of volitional Acts in a Victim after Receiving a Fatal Injury
(5) Difference between wounds inflicted during and afterlife

Traffic Injuries

(1) Road Injuries, Railway Injuries, Aircraft Injuries

Regional Injuries

(1) Describe and discuss injuries to head-Scalp wounds,Fracture skull,Intracranial hemorrhages, Coup and countercoup injuries.
(2) Injuries to Neck, Chest, Abdomen, Limbs, Genitalia, Spinal cord and Skeleton
(3) Injuries related to Fall from height and vehicular injuries-Primary and Secondary impact

Impotence, Sterility, and Artificial Insemination

(1) Impotence and Sterility in male and female/Sexual dysfunction
(2) Artificial Insemination, Test tube babies, Surrogate Birth, Semen Banking
(3) Assisted Conception, Carriage, and Delivery - Examination and medico-legal significance.

Virginity, Pregnancy, and Delivery

(1) Virginity-Hymen and it's types and it's medico-legal importance
(2) Pregnancy, Delivery - Signs and medico-legal significance.
(3) Signs of Recent and Remote delivery in living and dead.
(4) Precipitate labor, Superfoetation, Superfecundation

Sexual Offences

(1) Types : Natural and Unnatural sexual offenses,
(2) Rape-Various sections of IPC regarding Rape(Sec 375)/Punishment for Rape(Sec 376)
(3) Sexual perversions
(4) Examination of the victim of an alleged case of Rape
(5) Examination of Accused and victim of Sodomy
(6) AIDS linked medico-social aspect

Legitimacy and Legal Aspects of Marriage Annulment

(1) Cases in which Questions of Legitimacy may arise
(2) Legal Aspects of marriage annulment
(3) Disputed Paternity and Maternity

Infanticide

(1) Definition
(2) The Abandoning of Infants, Concealment of Birth, Sudden Infant Death Syndrome (SIDS), Battered Baby Syndrome,Non – Accidental Injury of Children

Abortion and Medical Termination of Pregnancy

(1) Define and classify-Methods of procuring MTP
(2) MTP Act-1971
(3) Evidence of Abortion-In living and dead
(4) Criminal Abortion and the Duties of the Registered Medical Practitioners.

Medico-Legal Aspects of Sterilization

(1) Introduction, Vasectomy, Tubectomy, and medico-legal aspect

Forensic Psychiatry

(1) Causes of Mental Health, Indications of Mental Health
(2) Classification of mental Diseases, Diagnosis of Mental Health, Feigned Mental Health, Violent Behavior, Post-traumatic stress disorder (PTSD)
(3) Assessment of Dangerousness, Restraint of the mental person
(4) Civil and Criminal Responsibility
(5) Indian Mental Health Act,1987

Law in Relation to Medical Men

(1) The Indian Medical Council Acts, State Medical Council - Formation & functions.
(2) The Indian medical council act, The WMA Declaration of Hunger Strikers (1991),
(3) Physicians' Responsibility in Criminal Matters, Duties of a Physician, Professional Negligence,
(4) Medico legal aspects of AIDS, Responsibility of Medical Practitioner for Negligent acts of nurses or students,
(5) The Consumer Protection Act, Rights of an Unborn Child,
(6) The Human Organ Transplantation Act Bill, Donation of Cornea, The Delhi Artificial insemination Act,
(7) Malingering or Feigned Diseases, World Medical Association Resolution on Human Rights,
(8) The Declaration of Geneva, International code of Medical ethics, Doctors, and Media,
(9) Role of Forensic Personnel, Human Experimentation,

Torture and Human Rights

(1) Definition, Reasons for Torture, Types of torture, Sequel of Torture
(2) Management of Torture, Victims
(3) Medico-legal and Ethical Aspects of Torture
(4) Legal issues in relation to Family violence, violation of human rights,NHRC and doctors

Forensic Laboratory Investigation

1) Locard's Exchange Principle

2) Collection of different types of specimen and tissues in living and dead-Body fluids (Blood,urine,semen,faeces,saliva),Skin,Nails,Tooth pulp,Vaginal smears,Viscera preservation.
3) Newer techniques-DNA Profiling/Facial Reconstruction/Polygraph Test/Narcoanalysis/Brain Mapping/Digital and Virtual Autopsy

AETCOM Module: 3.1, 3.2

(Section-B)
TOXICOLOGY
General Toxicology

(1) History and Definition- poison and drug/Forensic Toxicology
(2) Classification of poisons,
(3) Toxicokinetics and Toxicodynamics-Post Absorptive Behavior of Poisons, Routes of Elimination of poison, Action of poisons
(4) Diagnosis and management of common poisoning-Decontamination, Elimination, Antidote therapy, Enhanced elimination.
(5) Modern Analytical Techniques-Thin Layer Chromatography, Gas Chromatography, Liquid Chromatography, Atomic Absoption Spectroscopy.
(6) Duty of a Medical Practitioner in a Case of Suspected Poisoning,
(7) Preservation of samples and viscera in case of poisoning.

Corrosive Poisons

(1) Inorganic Acids (Mineral Acids)
a. Sulphuric Acid, Nitric Acid, Hydrochloric Acid, Hydrofluoric Acid,

(2) Organic Acids
a. Oxalic Acid, Carbolic Acid, Picric Acid, Salicylic Acid, Acetyl Salicylic Acid (Aspirin), Acetic Acid, Tartaric Acid, Citric Acid

(3) Alkalies
a. Ammonia, Potassium Hydroxide, Sodium Hydroxide, Ammonium Carbonate
b. Potassium Carbonate, Sodium Carbonate, Calcium Hydroxide

Non-metallic Poisons and their Componds

Phosphorus, Phosphoretted Hydrogen, Organophosphorous and Allied poisons, Triothrocresyl phosphate, Phosphine, Chlorine, Bromine, Iodine, Boron

Metallic poisons and Their Compounds

a. Arsenic, Antimony,Mercury, Copper, Lead, Thallium, Zinc, Bismuth, Silver, Iron, Manganese, Tin
b. Chromium, Potassium, Aluminium, Magnesium, Barium, Sodium beryllium, Cadmium, Gold
c. Platinum nickel and cobalt, Osmium radioactive substances

Organic Irritant Poisons (Plant)

(1) Vegetable Poisons, Ricinus Communis, Croton Tiglium, Abrus Precatorius, Ergot, Capsicum annum, Semicarpus Anacardium
(2) Calotropis Giganted and Calotropis Procera, Plumbago and Plumbagao Zeylanica Veratrum

(3) Colchicum autumnal

Organic Irritant Poisons (Animal)

(1) Animal poisons, Cantharides (Lytta), Snakes (Phidia), Poisonous Insects

(2) Fish poisoning, Ptomaines,

Mechanical Irritant Poisons

(1) Powdered glass, Diamond powder, Needles, Chopped animal hairs, Vegetable hairs

Somniferous Cerebral Poisons

Opium (Afim)

(1) Phenanthrene Group

(2) Benzyl Isoquinoline Group

Inebriant Cerebral Poisons

(1) Alcohol, Denatured spirit, Methyl alcohol, Methyl Bromide, Ethylene glycol, Amyl alcohol, Amyl Nitrate

(2) Metacetaldehyde, Formaldehyde, Ether, Ethyl chloride, Chloroform, Avertin, Carbon

(3) Tetrachloride

(4) Tetrachlorethane, DDT or Chlorophenothane, Endrin, Bromoform, Iodoform, Chloral hydrate

(5) Sulphonal barbiturate, Veronal, Mandrax, Thalidomide, Tranquillisers, Anthihistamine, Amphetamine sulphate, Non Steroidal Anti inflammatory Agents, Cinchophen sulphonamide, Aniline, Coal-Tar Naphtha

(6) Naphthalene, Benzene, Nitrobenzene, Dinitrobenzene, Dinitrophenol, Dinitrocresol, Trinitrotoluene

(7) Nitroglycerin, Petroleum oil of Turpentine, Eucalyptus oil

Deliriant cerebral poisons

(1) Dhatura fastuosa, Henbane Indian hemp, (Cannabis), Cocaine

(2) Worm-wood, Camphor, Poisonous Fungi, Poisonous Food Grains

Spinal Poisons

(1) Kuchila (Nux-vomika), Calabar Bean, Yellow or Carolina Jessamine or Jasmine

Cardiac poisons

(1) Tobacco, Lobelia, India Tobacco, Jaborandi, Digitalis or Foxglove, Quinine,White or Sweet-Scented Oleander

(2) Exile or Yellow Oleander, Aconite, Monk's Hood, Wolfsbane or Blue Rocket

(3) Hydrocyanic Acid,Asphyxiants (Irrespirable Gases), Carbon dioxide, Carbon monoxide, Carbon disulphide, Hydrogen Sulphide, Nitrogen Monoxide, Sulphur Dioxide, War Gases

Peripheral (Neural) Poisons

(1) Common or spotted Hemlock, Curare

Miscellaneous

(1) Mycotoxins, Poisoning by Hormones

Appendices

Appendix –I(Relevant parts/sections)

(1) The Indian Evidence Act (Act of 1872)

(2) The Code of Criminal Procedure, 1973 (Act No. 2 of 1974)

(3) The Indian Penal Codes

(4) The Mental Health Act 1987

Appendix – II

(1) Certificate of Illness,

(2) Certificate of Death,

Appendix– II A

(1) Forms Required by the India Lunacy Act. 1912

Appendix– III

(1) Some Useful information

Appendix– IV

(1) Workmen's Compensation Act 1923

Appendix– V

(1) Indices of long Bones Helpful in Identifying Race (In a tabulated form)

Appendix – VI

(1) The Treatment of Common Acute Poisoning

Appendix– VII

(1) Postmortem Detection of Torture

1.2 Practical

Clinical Forensic Medicine

- Examination of an individual for Age and preparation of MLR
- Examination of an individual for Age and Sex and preparation of MLR
- Exam of an Injured(Medico-legal Injury Report)
- Preparation of Postmortem exam report, (10 PMs of various types will be witnessed by students in group of 20)
- Exam of cases of Alcohol Consumption and preparation of MLR
- Exam. In cases of Poisoning
- Exam. Of Victims of Sexual Offences
- Exam. Of Accused of Sexual Offences
- Examination of Bundle of Bones
- Demonstration of Court Procedure.
- Weapons-Types, Injury caused by them
- Identification and medico-legal significance of Poisons.
- Soft specimens of medico-legal importance
- Exam of Fetal product and how to calculate age.
- P.M. Instrument.
- Models and charts in Museum
- Exam of Blood Group
- Exam of Stains
- Ethics and State Medicine, expiation with illustration

BOOKS:

(1) Viva in forensic medicine and toxicology.Ed3.1993 - Gupta, LC and Mody, NK.

(2) Essentials of forensic medicine and toxicology. Ed 21. 2002 - Reddy, KS Narayan.

(3) Amrit Medical Jurisprudence and Toxicology.Ed23.2010 - Mathiharan,K and Patnaik,K
(4) Anatomy and physiology of eye. Ed 2. 2006 - Khurana, AK.
(5) Simpson`s forensic medicine.Ed12.2003 - Shepherd, Richard.
(6) Davidson`& principles of medicine.Ed20.2006 - Monaghan, John.
(7) Embalming: history, theory & practice.Ed3.2000 - Mayer,Robert G.
(8) Text book of forensic medicine & toxicology.Ed4.2008 - Vij, Krishna.
(9) Acute poisoning diagnosis and management. Ed2.1993 - Proudfoot, AT.
(10) Essential of Forensic medicine & Toxicology. ED 27. 2008 - Reddy, Narayan KS.
(11) Human Embryology.Ed8.2007 - Singh, Inderbir.
(12) Clinical and Operative method in ENT and Head and Surgery.2005 - Hazarika,Produl and Nayak,Dipak Ranjan.
(13) Textbook of Forensic medicine & toxicology.Ed2.2010 - Rao,G Nagesh Kumar.
(14) Forensic medicine.Ed2. 2007 - Guharaj, PV
(15) Manual of obstetrics.Ed2.2005 - Daftary, Shirish N.

MBBS301 **Foren. Med.**

Third MBBS Part-I (Main/ Remanded) examination Month /Year

FORENSIC MEDICINE & TOXICOLOGY

(Section – A & B)

(Forensic Medicine including Medical Jurisprudence & state medicine, Toxicology including treatment of Poisonings, Medicolegal duties of Medical officer in poisoning cases and AETCOM)

Time: Three hours

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any 4 out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part-I (Main/ Remanded) examination Month /Year

FORENSIC MEDICINE & TOXICOLOGY

(Section – A & B)

(Forensic Medicine including Medical Jurisprudence & state medicine, Toxicology including treatment of Poisonings, Medicolegal duties of Medical officer in poisoning cases and AETCOM)

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section- A

Q.1 MCQ 1x10= 10

1. Infamous conduct comprises of all except :
   A. Adultery
   B. Advertising
   C. Examining a patient without consent
   D. Procuring criminal abortion

2. Professional death sentence is :
   A. Imprisonment for life
   B. Rigorous imprisonment
   C. Erasing of name from medical register
   D. Death by hanging

3. During an operation if a pair of scissors is left in the abdomen the doctrine is applicable for:
   A. Res Ipsa Loquitor
   B. Res Integra
   C. Res Gestac
   D. Res Judicata

4. Cephalic index of 80-85 belongs to :
   A. Indians
   B. Mongolians
   C. Europeans
   D. Negroes

5. Most useful for sex determination is :
   A. Skull
   B. Femur
   C. Tibia
   D. Pelvis

6. First permanent tooth to erupt is :
   A. Incisor
   B. Canine
   C. Premolar
   D. Molar

7. Gastric lavage is contraindicated in which of the following:
   A. Barbiturate poisoning
   B. Kerosene poisoning
   C. Paracetamol poisoning
   D. Carbolic acid

8. Treatment of snake bite is all except :
   A. Firm bandage to occlude lymphatics
   B. Incision over wound
   C. Reassure the patient
   D. Immobilization of bitten part

9. BAL is useful for treatment of poisoning due to all except :
   A. Cadmium
   B. Lead
   C. Mercury
   D. Arsenic

10. Basophilic stippling is seen in which of the following cells:
   A. Neutrophils
   B. RBC's
   C. Basophils
   D. Eosinophils

Q.2 Structured short notes (Attempt any four out of five) 4x5= 20

1. Grievous hurt
2. Magistrate inquest
3. Positive signs of pregnancy
4. Definition of infanticide
5. What is the ethical standard in dealing with medical errors?

Q.3 Structured Long Notes (Attempt any two out of three) 2 x10= 20

1. A bundle of bones sent to you for Medicolegal examination.
   a) How will you examine?
   b) Write your opinion regarding possible medicolegal questions.
2. Describe the mechanism of action, clinical features and treatment of Organophosphorus insecticide poisoning.
3. Describe the signs, symptoms, fatal dose, treatment and post-mortem findings in a case of Methyl Alcohol poisoning.

Section- B

Q.1 Multiple choice questions 1x10= 10

1. An old lady with mitral stenosis underwent hysterectomy for uterine fibroid and died after developing pulmonary edema. The order of cause of death in international certificate is:
   A. Mitral stenosis, pulmonary edema, hysterectomy
   B. Pulmonary edema, mitral stenosis, hysterectomy
   C. Pulmonary edema, hysterectomy, mitral stenosis
   D. Hysterectomy, pulmonary edema, mitral stenosis

2. Study of death in all its aspects is known as :
   A. Eugenics
   B. Thanatology
   C. Dactylography
   D. Tricology

3. Which of the following is not a post mortem change:
   A. Algor mortis
   B. Rigor mortis
   C. Atria mortis
   D. Livor mortis

4. All are fetures of somatic death, except:
   A. Cessation of respiration
   B. Cessation of heart
   C. Non-responding muscles
   D. No response to external stimuli

5. NOT important in brain death:
   A. EEG
   B. ECG
   C. Absence of brainstem reflex
   D. Body Temperature

6. Xenograft is transplantation of tissue:
   A. From a different species
   B. From same species
   C. From genetically identical twins
   D. From one part of body to another

7. All the following are found in brain dead patients except :
   A. Deep tendon reflex
   B. Absent pupillary reflexes
   C. Complete apnea
   D. Heart unresponsive to atropine

8. In brain death which of the organs cannot be transplanted:
   A. Brain
   B. Heart
   C. Liver
   D. Kidney

9. Gordon's classification of death signifies:
   A. Mechanism of death
   B. Causes of death
   C. Modes of death
   D. Manner of death

10. Cyanide poisoning causes:
   A. Histotoxic anoxia
   B. Anoxia anoxia
   C. Anemic anoxia
   D. Stagnant anoxia

Q.2 Structured short notes (Attempt any four out of five) 4x5= 20

1. Antidote
2. Carboluria
3. Chronic lead poisoning
4. Suis
5. Marking nut

Q3 Structured Long Notes (Attempt any two out of three) 2x10 = 20

1. A 20-year-old lady of a case of suspected poisoning brought to the emergency in unconscious state then
   a) What are the medic- legal duties of a MO while treating a such case of suspected poisoning?
   b) Describe general principles of treatment of acute poisoning.
2. Discuss the different types of Skull Fractures. Add a note on Coup and Contra Coup Injuries.
3. Enumerate various types of violent asphyxial death. What are the post mortem appearances of a typical case of suicidal hanging?

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

OPHTHALMOLOGY

1. GOAL:

The broad goal of the teaching of students in ophthalmology is to provide such knowledge and skills to the students that shall enable him to practice asa clinical and as a primary eye care physician and also to function effectively asa community health leader to assist in the implementation of NationalProgramme for the prevention of blindness and rehabilitation of the visuallyimpaired.

2. OBJECTIVES:

(a) **Knowledge:** At the end of the course, the student should have knowledge of:

i. Common problems affecting the eye:
ii. Principles of management of major ophthalmic emergencies
iii. Main systemic diseases affecting the eye
iv. Effects of local and systemic diseases on patient's visionand the necessary actionrequired to minimise the sequalae ofsuch diseases;
v. Adverse drug reactions with special reference to ophthalmicmanifestations;
vi. Magnitude of blindness in India and its main causes;
vii. National programme of control of blindness, its implementation atvarious levels and integration with other national health programs
viii. Eye care education for prevention of eye problems
ix. Role of primary health centre in organization of eye camps
x. Eye bank organization

(b) **Skills**: At the end of the course, the student should be able to:

i. Elicit a history pertinent to general health and ocular status;
ii. Assist in diagnostic procedures such as visual acuity testing,examination of eye, Schiotz tonometry, Staining for Corneal pathology,confrontation perimetry, Subjective refraction including correction ofpresbyopia and aphakia, direct ophthalmoscopy and conjunctival smearexamination and Cover test.
iii. Diagnose and treat common problems affecting the eye;
iv. Assist/observe therapeutic procedures such as subconjunctivalinjection, Corneal/Conjunctival foreign body removal, Carbolic cautery forcorneal ulcers,Nasolacrimal duct syringing and tarsorraphy;
v. Provide first aid in major ophthalmic emergencies;
vi. Assist to organise community surveys for visual check up;
vii. Assist to organise primary eye care service through primary health centres;
viii. Use effective means of communication with the public and individual tomotivatefor surgery in cataract and for eye donation;
ix. Establish rapport with his seniors, colleagues and paramedicalworkers, so as to effectively function as a member of the eye care team.

(c) **Integration:** The undergraduate training in Ophthalmology will provide anintegratedapproach towards other disciplines especiallyneurosciences, Otorhino-laryngology, General Surgery andMedicine.

3. SCHEME OF EXAMINATION:

Theory	**100 Marks**	**100 + 100= 200 Total**
Practical + Viva	**60+40 = 100 marks**	
Internal assessment		
Theory	**100**	**100+100=200 Total**
Practical	**100**	

Theory- One paper of 100 marks (One Multiple choice Question of 10 marks in each section of the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
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   A student, who fails in II M.B.B.S. Examination, shall not be allowed to appear in III M.B.B.S. part I examination unless he passes all subjects of II M.B.B.S. examination.
   Passing in III M.B.B.S. Part-I Examination is not compulsory before entry for III M.B.B.S. Part II training, However passing of III MBBS Part-I is compulsory for being eligible for III MBBS Part-II examination.

4. SYLLABUS:

4.1 Theory

Paper (Section – A)

Common Disease of Eye

(1) Conjunctiva

a. Classification of Conjunctivitis
b. Mucopurulant Conjunctivitis
c. Membranous Conjunctivitis Spring Catarrh
d. Degenerations : Pinguecula and Pterygium
e. Symptomatic conditions : Hyperemia, Sub conjunctival Haemorrhage,

(2) Cornea : Corneal Ulcers : Bacterial, Fungal, Viral, Hypopyon

a. Interstitial Keratitis
b. Keratoconus
c. Pannus
d. Corneal Opacities
e. Keratoplasty

(3) Sclera : Episcleritis

a. Scleritis
b. Staphyloma

(4) Uvea : Classification of Uveitis

a. Gen. Etiology, Investigation and Principles Management of Uveitis

b. Acute & Chronic Iridocyclitis
c. Panophthalmitis
d. End Opthhalmitis
e. Choroiditis

(5) Lens
a. Cataract – Classification & Surgical management of cataract
b. Including Preoperative Investigation
c. Anesthesia
d. Aphakia
e. IOL Implant

(6) Glaucoma
a. Aqueous Humor Dynamics
b. Tonometry
c. Factors controlling Normal I.O.P.
d. Provocative Tests
e. Classifications of Glaucoma
f. Congenital Glaucoma
g. Angle closure Glaucoma
h. Open Angle Glaucoma
i. Secondary Glaucoma

(7) Vitreous
a. Vitreous Opacities
b. Vitreous Haemorrhage
c. Vitrectomy- Anterior and posterior

(8) Intraocular Tumours
a. Retinoblastoma
b. Malignant Melanoma

(9) Retina
a. Retinopathies : Diabetic, Hypertensive Toxaemia of Pregnancy, Age related macular degeneration
b. Retinal Detachment
c. Retinitis Pigmentosa, Eale's disease, Cystoid macular oedema, Macular Holes

(10) Optic nerve
a. Optic Neuritis
b. Papilloedema
c. Optic Atrophy

(11) Optics
a. Principles : V.A. testing Retinoscopy, Ophthalmoscopy
b. Ref. Errors
c. Refractive surgery
d. Contact lens, Spectacles

(12) AETCOM Module: 3.3 and 3,4

(Section – B)

(1) Orbit
a. Proptosis – Aetiology, Clinical Evaluation, Investigations & Principles of Management

b. Endocrinal Exophthalmos
c. Orbital Haemorrhage, Orbital cellulitis

(2) Lids
a. Inflammations of Glands
b. Blepharitis
c. Trichiasis, Entropion
d. Ectropion
e. Symblepharon
f. Ptosis
g. Basal cell and squamous cell carcinoma

(3) Lacrimal System
a. Watering Eye
b. Dry Eye
c. Naso Lacrimal Duct Obstruction
d. Dacryocystitis

(4) Ocular Mobility
   a. Extrinsic Muscles
   b. Movements of Eye Ball
   c. Squint : Gen. Aetiology, Diagnosis and principles of Management
   d. Paralytic and Non Paralytic Squint
   e. Heterophoria
   f. Diplopia, Amblyopia

(5) Miscellaneous
   a. Colour Blindness
   b. Lasers in Ophthalmology – Principles

(6) Ocular Trauma : Blunt Trauma
   a. Perforating Trauma
   b. Chemical Burns
   c. Sympathetic Ophthalmitis

Principles of Management of Major Opthalmic Emergencies
   (1) Acute Congestive Glaucoma
   (2) Corneal Ulcer
   (3) Intraocular Trauma
   (4) Chemical Burns
   (5) Sudden Loss of vision
   (6) Acute Iridocyclitis
   (7) Secondary Glaucomas

Main Systemic Diseases Affecting the Eye
   (1) Tuberculosis
   (2) Syphilis
   (3) Leprosy
   (4) AIDS
   (5) Diabetes
   (6) Hypertension

Drugs

(1) Antibiotics
(2) Steroids
(3) Glaucoma Drugs
(4) Mydriatics
(5) Visco elastics

Community Ophthalmology

(1) Blindness : Definition Causes & Magnitude
(2) N.P.C.B. and Integration of N.P.C.B. with other health control programs
(3) Preventable Blindness
(4) General Eye care
(5) Role of PHC's in Eye Camps
(6) Nutritional: Vit. A. Deficiency

4.2 Practical

(1) History taking & Eye examination
(2) Surgical techniques
a. Cataract
i. ECCE
ii. ICCE
iii. IOL Implantation
iv. Phaco-emulsification
v. Pterigium
vi. Chalazion
vii. Glaucoma
viii. Foreign Body Removal
ix. Enucletion
x. Keratoplasty
xi. Basic of squint, L 10
(3) Instruments
a. OPD
i. Operative
ii. Basic Examination and Diagnostic instruments
- Tonometer, Sac Syringing, Slip Lamp.
- Optics – Lenses – Spheres, Cylinders, Prisms
- Pinhole, Slit, Maddox Rod & Maddox wing
- Red & Green Glasses

iii. Ophthalmoscopy
iv. Retinoscopy
v. Contact Lenses
vi. Colour Vision
b. Surgical Instruments

MBBS302 **Ophthal.**

Third MBBS Part-I (Main/ Remanded) examination Month /Year

Ophthalmology

(Section – A & B)

(Diseases of eye- cornea, conjunctiva, sclera, uvea, lens, vitreous, tumors, glaucoma Retina, optic nerve, optics, Orbit, lids, lacrimal system, ocular mobility, trauma, emergencies, drugs, community ophthalmology, Systemic diseases affecting eyes and AETCOM)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part-I (Main/ Remanded) examination Month /Year

Ophthalmology

(Section – A & B)

(Diseases of eye- cornea, conjunctiva, sclera, uvea, lens, vitreous, tumors, glaucoma Retina, optic nerve, optics, Orbit, lids, lacrimal system, ocular mobility, trauma, emergencies, drugs, community ophthalmology, Systemic diseases affecting eyes and AETCOM)

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section – A

Q.1 MCQ 1X10=10

1. What is the angle subtended by top most letter of Snellen' chart at distance of 6 meter:
   A. 5min
   B. 20min
   C. 50min
   D. 30min

2. Which of the following is an example of compound myopic, against the rule astigmatism?
   A. - 2D Sph -2D cyl at 180 degree.
   B. - 2 D Sph – 1 D Cyl at 90 degree.
   C. + 2D Sph -2Dvcyl at 90 degree.
   D. 2D Cyl at 90 degree.

3. Which of the following is not included in the global vision 2020 program?
   A. Cataract.
   B. Refractive error.
   C. Trachoma.
   D. Glaucoma.

4. Superior oblique muscle is supplied by?
   A. 3rd Cranial nerve
   B. b.4th Cranial nerve
   C. c.6th Cranial nerve
   D. d.7th Cranial nerve

5. Which of the following is normal intra ocular pressure of right eye?
   A. 22
   B. 7
   C. 15
   D. 5

6. Corneal endothelium is derived from
   A. Neutral crest
   B. Ectoderm
   C. Mesoderm
   D. Endoderm

7. Herbert's pits are seen in:
   A. Trachoma
   B. Herpetic conjunctivitis
   C. Ophthalmia neonatorum
   D. Spring catarrh

8. The capsule of the crystalline lens is thinnest at:
   A. Anterior pole
   B. None
   C. Equator
   D. Posterior pole

9. Which of the following chart is used to identify color blindness?
   A. Snellen's chart
   B. Ishihara chart
   C. Jaeger's chart
   D. Maddox rod test

10. Which of the following is not a feature of paralytic squint:
   A. Diplopia
   B. Compensatory head posture
   C. Amblyopia
   D. Secondary deviation is than primary deviation

Q2. Short notes (attempt any four out of five) 4X5=20

1. Types of cataracts
2. Draw a schematic diagram of eye with labeling all the structure
3. Lens induced glaucoma
4. Proptosis
5. Bacterial corneal ulcer

Q3. Structured long questions (attempt any two out of three) 2X10=20

1. Classification of Uveitis and clinical features
2. Difference between myopia and hypermetropia
3. Visual pathway and its lesions

SECTION B

Q1. MCQ 1X10 =10

1. Which of the following is the wing shaped fold of the conjunctiva encroaching upon the cornea?
   A. Cataract
   B. Allergic conjunctivitis
   C. Pterygium
   D. Bacterial conjunctivitis

2. A lesion in the left parietal lobe is most likely to affect which visual field quadrant in the left eye
   A. Uppertemporal
   B. Lower temporal
   C. Upper nasal
   D. Lower nasal

3. Which of the following is not a cause of hypertensive retinopathy
   A. Vasoconstriction
   B. Arteriosclerotic changes
   C. Increased vascular permeability
   D. Vasodilation

4. Loss of eyelashes is called as
   A. Tylosis
   B. Madarosis
   C. Trichiasis
   D. Ectropion

5. The crystalline lens derives its nutrition from
   A. Blood vessel
   B. Connective tissue
   C. Aqueous humor
   D. Zonules

6. Amsler sign is seen in
   A. Fuchs heterochromic iridocyclitis
   B. Posner schlossman syndrome
   C. Uveal effusion syndrome
   D. Cystoid macular edema

7. A patient presents with unilateral ptosis with hypotropia in the same eye. He was given an IVinjection, following which the symptoms go away . Which of the following is the most likelydiagnosis?
   A. Myasthenia gravis
   B. 6^{th} Nerve palsy
   C. 3^{rd} Nerve disease
   D. Horner syndrome

8. Term ametropia refers to all except
   A. Hypermetropia
   B. Emmetropia
   C. Astigmatism
   D. Myopia

9. The most common cause of myopia is
   A. Increase antero-posterior diameter of the eye ball
   B. Increased thickness of the lens
   C. Increased viscosity of vitreous humor
   D. Increased viscosity of aqueous humor

10. Which test is used to diagnose dry eye with a tear strip
   A. Schirmer test
   B. Tear film break up time
   C. Rose Bengal staining
   D. Tear osmolarity test

Q2. Short notes (attempt any four out of five) 4X5=20

1. Retinoblastoma
2. Stye v/s chalazion
3. Orbital cellulitis
4. Staphyloma
5. Acute Uveitis

Q3. Structured long questions (attempt any two out of three) 2x10=20

1. Diabetic retinopathy
2. Primary open angle glaucoma
3. Extra ocular muscles and its applied

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Third MBBS

Part-I Examination

OTORHINOLARYNGOLOGY

1 GOAL:

The broad goal of the teaching of undergraduate students in Otorhinolaryngology is that the undergraduate students have acquired adequate knowledge and skills for optimally dealing with common disorders and emergencies and principles of rehabilitation of the impaired hearing.

2 OBJECTIVES:

2.a Knowledge: At the end of the course, the student shall be able to :

2.a.i Describe the basic 'pathophysiology' of common Ear, Nose and Throat (ENT) diseases and emergencies;

2.a.ii Adopt the rational use of 'commonly used drugs' keeping in mind their adverse reactions;

2.a.iii Suggest 'common investigative procedures' and their interpretation

2.b Skills: At the end of the course, the student shall be able to:

2.b.i Examine and 'diagnose common Ear, Nose and Throat (ENT) problems' including the premalignant and malignant disorders of the head and neck;

2.b.ii Manage Ear, Nose and Throat (ENT) problems at the 'first level of care' and be able to refer whenever necessary;

2.b.iii Assist/ carry out 'minor surgical procedures' like earsyringing, ear dressing, nasal packing etc.

2.b.iv Assist in certain procedures such as tracheostomy, endoscopies and removal of foreign bodies.

2.c Integration: The undergraduate training in Ear, Nose and Throat (ENT) will provide an integrated approach towards other disciplines especially Neuro Sciences, Ophthalmology and General Surgery.

3 SCHEME OF EXAMINATION:

Theory	**100 Marks**	**100 + 100= 200 Total**
Practical + Viva	**60+40 = 100 marks**	
Internal assessment		
Theory	**100**	**100+100 =200 Total**
Practical	**100**	

Theory- One paper of 100 marks (One Multiple choice Question of 10 marks in each section of

Notes:

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Passing in III M.B.B.S. Part-I Examination is not compulsory before entry for III

M.B.B.S. Part II training, however passing of III MBBS Part-I is compulsory for being eligible for III MBBS Part-II examination.

4. Syllabus

4.1 Theory

Section 1: Anatomy, Physiology and Pathology

1. **Anatomy and Physiology of Ear**
   - Anatomy of Ear
   - Physiology of Hearing

   - **Anatomy and Physiology of Auditory Tube**
     - Anatomy of Auditory Tube
     - Physiology of Auditory Tube
     - Examination of Auditory Tube

   - **Anatomy and Physiology of Nose and Paranasal Sinuses**
     - Anatomy of Nose
     - Anatomy of Paranasal Sinuses
     - Physiology of Nose
     - Physiology of Paranasal Sinuses

   - **Anatomy and Physiology of Oral Cavity and Salivary Glands**
     - Oral Cavity
     - Salivary Glands

   - **Anatomy and Physiology of Pharynx**
     - Pharynx
     - Nasopharynx
     - Oropharynx
     - Laryngopharynx (Hypo pharynx)
     - Oesophagus
     - Physiology of Swallowing

   - **Anatomy and Physiology of Larynx**
     - Anatomy of Larynx
     - Functions of Larynx

2. **Anatomy of Head**

   Skull
   - Temporal Bone
   - Frontal Bone

- Maxilla
- Sphenoid Bone
- Ethmoid Bone
- Pterygopalatine Fossa
- Mandible
- Cranial Nerves

- **Pathophysiology**
  - Infections/Microorganisms
  - Allergy and Immunology
  - Tumour Biology

Section 2: Clinical Skills and Diagnostic and Therapeutic Procedures in ENT

a) **History and Examination--General Set-Up**
- Otorhinolaryngology--Introduction
- History Taking
- Physical Examination
- General Set-Up
- Outpatient Department Instruments

b) **Otologic Symptoms and Examination**
- Ear Symptoms
- Physical Examination of Ear Otoscopy
- Siegelization (Pneumatic Otoscopy)
- Otoscopic Examination in Children
- Otomicroscopic Examination
- Examination of Eustachian Tube
- Functional Examination of Ear
- Otalgia (Earache)
- Otorrhea
- Ear Polyp
- Tinnitus

c) **Hearing Evaluation**
- Audiology and Acoustics
- Methods of Hearing Evaluation
- Tuning Fork Hearing Tests
- Pure Tone Audiometry
- Speech Audiometry
- Impedance Audiometry/Tympanometry
- Brainstem-Evoked Response Audiometry
- Otoacoustic Emissions
- Auditory Steady State Response

d) **Hearing Loss-Principles of Management**
- Pathophysiology of Hearing Loss/Deafness
- History Taking in cases of Hearing Loss
- Conductive Hearing Loss
- Sensorineural Hearing Loss

e) **Nasal Symptoms and Examination**

- History Taking
- Examination
- Diagnostic Nasal Endoscopy
- Nasal Obstruction

1. **Oral Symptoms and Examination**
   - History Taking and Examination of Oral Cavity
   - Screening of Pre-malignant and Mallory lesions
2. **Pharyngeal Symptoms and Examination**
   - Evaluation of Pharynx
   - Nasopharynx
   - Oropharynx
   - Throat Examination in children
   - Evaluation of Oesophagus
   - Dysphagia
3. **Smell and Taste**
   - Olfaction
   - Gustation
   - Chemosensory System
4. **Topical Medications in Otorhinolaryngology**
   - Ear Drops
   - Topical Nasal Medicines
   - Topical Oral and Throat Medicines
5. **Laryngeal Symptoms and Examination**
   - Laryngeal Symptoms and Clinical Examination
   - Endoscopic Examination of Larynx
   - Hoarseness of Voice
6. **Neck Symptoms and Examination**
   - Neck Symptoms and Examination
   - Examination of Lymph Nodes of Neck
   - Clinical Features of Common Neck Lesions
   - Diagnostic Tests for the Neck Swellings
7. **Diagnostic Imaging**
   - Conventional Radiology
   - Computerized Tomography
   - Magnetic Resonance Imaging
   - Positron Emission Tomography
   - Interventional Radiology
   - Applications of CT, MRI and Ultrasound
   - CT Anatomy of Ear, Nose Throat, Head and Neck
   - CT and MRI Criteria for Secondary Neck Nodes
8. **Microbiological and Histological Investigations**
   - Microbiological Investigations in Ear, Nose and Throat
   - Histopathological Investigations in Ear, Nose and Throat

9. **Human Immunodeficiency Virus Infection**
   - Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
   - Ear, Nose Throat, Head and Neck Manifestations of HIV/AIDS

Section 3: Community Medicine

10. **Health Hazards of Air, Water, Noise, Radiation and Pollution**
    - Air Pollution
    - Water Pollution
    - Noise Pollution
    - Radiation
11. **National programs for prevention of deafness, cancer noise and environmental pollution**
    - Prevention and Control of Deafness
    - Prevention and control of Noise Pollution
    - National Programs for Prevention and Control of Cancer
    - National Programs for Prevention and Control of Environmental Pollution

Section 4: Attitude, Ethics and Communication (AETCOM) 3.3 and 3.1

12. **Informed Consent**
    - Informed Consent
13. **Counselling**
    - Oral Cancer
    - Tobacco Use
    - Tobacco Control Legislation
    - Harmful Use of Alcohol
14. Counselling

Section 5: Emergencies in Otorhinolaryngology (ENT)

15. **Foreign Bodies in Ear, Nose and Throat**
    - Foreign Bodies Ear
    - Foreign Bodies Nose
    - Rhinolith
    - Foreign Bodies Food Passage
    - Foreign Bodies Respiratory Passage
16. **Epistaxis**
17. **Stridor and Airway Emergencies**
    - Stridor
    - Airway Emergencies
18. Tracheostomy Tracheostomy
    - Tracheostomy Tubes
    - Cricothyrotomy (Laryngotomy or Coniotomy)
    - Percutaneous Dilatation Tracheostomy
19. **Kerosene Ingestion**
    - Kerosene
    - Kerosene Ingestion/Poisoning

Section 6: Management of Diseases of Ear

20. **Diseases of the External Ear**
    - Disorders of Auricle
    - Disorders of External Auditory Canal
    - Disorders of External Ear Involving
    - Tympanic Membrane

21. **Acute Otitis Media Otitis Media with Effusion**
    - Acute Otitis Media
    - Recurrent Acute Otitis Media
    - Acute Necrotizing Otitis Media
    - Otitis Media with Effusion (Nonsuppurative OM)
    - Aero-Otitis Media (Otitic Barotrauma)

22. **Chronic Suppurative Otitis Media and Cholesteatoma**
    - Atelectasis and Adhesive Otitis Media
    - Chronic Suppurative Otitis Media
    - Atticoantral CSOM or Cholesteatoma
    - Tubotympanic (Muscosal) CSOM or CSOM without cholesteatoma

23. **Sensorineural Hearing Loss**
    - Labyrinthitis
    - Ototoxicity
    - Noise Trauma
    - Sudden Sensorineural Hearing Loss
    - Presbycusis
    - Genetic Sensorineural Hearing Loss
    - Immune- Mediated Sensorineural Hearing Loss
    - Degree of Hearing Loss
    - The only Hearing Ear
    - Nonorganic Hearing Loss

24. **Otosclerosis**
    - Otosclerosis
    - Stapedectomy/ Stapedotomy

25. **Facial Nerve and its Disorders**
    - Pertinent Anatomy of Facial Nerve
    - Clinical Evaluation of Facial Palsy
    - Pathophysiology of Facial Nerve Injury
    - Differences Between upper and Lower Motor Neuron Palsy
    - Investigations of Facial Nerve Paralysis
    - Causes of Facial Nerve Paralysis
    - Sequelae/Complication of Facial Nerve palsy
    - Bell's Palsy
    - Ramsay Hunt Syndrome or Herpes Zoster Oticus (Varicella-Zoster Virus)
    - Temporal Bone Fracture
    - Moebius Syndrome
    - Iatrogenic or Surgical Trauma

- Hyperkinetic Disorders of Facial Nerve
- Surgical Treatment of Facial Nerve Palsy

26. **Evaluation of Dizzy Patient**

- Evaluation of Dizzy Patient- General Outline
- Spontaneous Nystagmus
- Vestibulo-Ocular Reflex
- Fistula Test
- Valsalva Maneuver
- Dix-Hallpike Positional Test
- Rotation Test
- Investigations in Dizzy Patient
- Caloric Test
- Vestibulospinal Tests
- Cerebellar Tests
- Hyperventilation
- Orthostatic Hypotension
- Special Vestibular Investigations
- Differences between central and peripheral vertigo and Nystagmus

27. **Vestibular Disorders including Meniere's Diseases**

- Peripheral vestibular Disorder
- Central Vestibular Vertigo

Section 7: Management of Diseases of Nose and Paranasal Sinuses

28. **Acute and Chronic Rhinosinusitis**

- Infections of Nasal Vestibule
- Rhinosinusitis
- Complications of Rhinosinusitis
- Atrophic Rhinits

29. **Nasal Polyps**

- Nasal Polyps
- Hypertrophied Turbinates.
- Rhinosporidiosis
- Fungal Sinusitis

30. **Allergic Rhinitis and Atopic Dermatitis.**

- Allergic Rhinitis.
- Allergic Rhinitis in children
- Atopic Dermatitis in Children

31. **Vasomotor Rhinitis.**

- Non Allergic Rhinitis.
- Types of Non Allergic Rhinitis.
- Idiopathic or Vasomotor Rhinitis

32. Disorders of Nasal Septum.

- Fracture of Nasal Septum

- Deviated Nasal Septum
- Septal Haematoma
- Septal Abscess
- Perforation of nasal Septum
- Nasal Synechia
- Choanal Atresia

33. Trauma to Face and Neck.

- General Principles of Management
- Maxillo-facial Injuries
- Fractures of Nasal bone and Septum
- Zygoma
- Orbit Fractures
- Naso-maxillary complex Fractures.
- Fractures of Mandible.
- Laryngo-tracheal Trauma

34. Tumours of Nose and Para-nasal Sinuses.

- Benign tumours of nose and Para-nasal Sinuses.
- Sinonasal Malignant tumours.
- Malignancy of Maxillary sinuses.
- Malignancy of Ethmoid Sinuses
- Malignancy of Frontal sinus
- Malignancy of Sphenoid sinus
- Olfactory Neuroblastoma

Section 8: Management of Diseases of Oral Cavity and Salivary Glands.

35. Oral Mucosal lesions

- Red/White Lesions
- Vesiculo-bullous lesions/ Ulcerative Lesions
- Lesions of Tongue

36. Neoplasm of Oral Cavity.

- Benign Tumours of Oral Cavity
- Carcinoma of Oral Cavity
- Carcinoma Lip
- Carcinoma Gingiva/Alveolar Ridge
- Carcinoma oral Tongue
- Carcinoma Floor of Mouth
- Carcinoma Buccal Mucosa
- Carcinoma Hard Palate
- Carcinoma Retro Molar Trigone
- Kaposi's Sarcoma

37. Disorders of Salivary Glands.

- Diseases of Salivary Glands
- Infections of Salivary Glands
- Granulomatous Lesions of Salivary Glands
- Obstructive Disorders of Salivary Glands

- Neoplasms of Salivary Glands
- Benign Tumours of Salivary Glands
- Malignant Tumours of Salivary Glands
- Miscellaneous Disorders of Salivary Glands

Section 9: Management of Diseases of Pharynx and Oesophagus

38. Pharyngitis and Adeno-Tonsillar diseases

- Pharyngitis and Tonsillitis
- Adenoids
- Nasopharyngitis

39. Abscesses in Relation to Pharynx

- Abscesses in Relation to Pharynx
- Peritonsillar Abscess(Quinsy)
- Parapharyngeal Space Abscess or Pharyngo-maxillary Abscess or Lateral Pharyngeal Space Abscess
- Acute Retropharyngeal Abscess
- Chronic Retropharyngeal Abscess or Prevertebral Space Abscess
- Ludwig's Angina
- Masticator Space Abscess
- Trismus

40. Tumours of Nasopharynx

- Tumours of Nasopharynx
- Juvenile Nasopharyngeal Angiofibroma
- Nasopharyngeal Carcinoma
- Teratoma
- Thornwaldt's Diseases

41. Oropharyngeal Tumours

- Malignant tumours of Oropharynx.
- Carcinoma Base of Tongue
- Carcinoma Tonsil
- Carcinoma of Soft Palate.
- Carcinoma of Posterior Pharyngeal Wall.
- Benign swellings of Oropharynx
- Para-pharyngeal Tumours.
- Stylalgia

42. Malignancy of Hypopharynx

- Cancer of Hypopharynx
- Carcinoma Pyriform Sinus
- Carcinoma Post Cricoid
- Carcinoma Posterior Pharyngeal wall.

43. Disorders of Oesophagus.

- Perforation of Oesophagus.
- Corrosive burns
- Gastro-Oesophageal Reflux Diseases

- Benign Strictures
- Hiatus Hernia
- Schatzki Ring
- Plummer Vinson Syndrome
- Crico Pharyngeal Spasm
- Diffuse Oesophageal Spasm.
- Nut Craker Oesophagus
- Cardiac Achalasia
- Scleroderma or Progressive Systemic Sclerosis
- Zenker's Diverticulum.
- Glomus Hystericus Pharyngius
- Benign Neoplasms
- Carcinoma Oesophagus.

Section 10: Management of Diseases of Larynx

44. Acute or Chronic Laryngitis

- Acute Laryngitis
- Acute Laryngo-Tracheo-Bronchitis
- Pediatric Epiglottitis
- Laryngeal Diphtheria
- Chronic Non-Specific Laryngitis
- Laryngo-pharyngeal Reflux
- Atrophic laryngitis
- Tuberculosis of Larynx
- Rhinoscleroma
- Edema of Larynx

45. Benign Tumours of Vocal Cord

- Non Neoplastic Swellings of Vocal Cord Mucosa
- Vocal Nodule
- Vocal Cord Polyp
- Rienke's Edema
- Contact Ulcer or Granuloma
- Vocal Cord Scars or Sulcus Vocalis
- Intubation Granuloma
- Leukoplakia or Keratosis
- Saccular swellings of Larynx
- Recurrent Respiratory Papillomatosis
- Haemangioma of Larynx
- Phonomicrosurgery

46. Neurological Disorders of Larynx.

- Neurological Disorders of Larynx.
- Unilateral Recurrent Laryngeal Nerve Paralysis
- Bilateral Recurrent Laryngeal Nerve Paralysis
- Unilateral Superior Laryngeal Nerve Paralysis
- Bilateral Superior Laryngeal Nerve Paralysis
- Unilateral Combined Paralysis of Recurrent and Superior Laryngeal Nerve.

- Bilateral Combined Paralysis of Recurrent and Superior Laryngeal Nerve.
- Congenital Vocal Cord Paralysis.
- Phonosurgery

47. Malignancy of the Larynx

- Glottic Cancer
- Supraglottic Cancer
- Subglottic Cancer
- Organ Preservation Surgery
- Post Laryngectomy Vocal Rehabilitation.

Section 11: Operative Instruments and Procedures

48. Surgical Instruments

- Mastoid and Ear Microsurgery.
- Surgeries of Nose and Paranasal Sinuses.
- Mouth Gags and Retractors
- Adeno-tonsillectomy
- Endoscopes.

49. Myringotomy and Myringoplasty

- Myringotomy and Tympanostomy tubes
- Tympanoplasty
- Myringoplasty
- Ossiculoplasty

50. Mastoidectomy

- Mastoidectomy
- Cortical Mastoidectomy
- Radical Mastoidectomy
- Modified Radical Mastoidectomy

51. Operations of Nose and Para Nasal Sinuses

- Operations of Nose and Para Nasal Sinuses
- Endoscopic Sinus Surgery
- Antral Puncture or Proof Puncture
- Caldwall Luc Operations
- Surgery of Nasal Septum
- Submucous Resection of Nasal Septum.
- Endonasal Septoplasty

52. Adeno-Tonsillectomy.

- Pre-Operative Assessment of Adeno-Tonsillectomy.
- Indications for Tonsillectomy.
- Indications for Adenoidectomy
- Contraindications for Tonsillectomy/Adenoidectomy.
- Surgical Techniques of Adeno-Tonsillectomy
- Pre-Operative Preparations for Adeno-Tonsillectomy.
- Anaesthesia for Adeno-Tonsillectomy.
- Positions of patient for Adeno-Tonsillectomy

- Surgical Instruments for Adeno-Tonsillectomy
- Operative Steps for Adeno-Tonsillectomy
- Post-operative care of Adeno-Tonsillectomy
- In Patient versus Out Patient Adeno-Tonsillectomy
- Complications of Adeno-Tonsillectomy

4.2 Practical

Instruments

1 Thudicum nasal speculum
2 Killiani self retaining nasal speculum
3 Tielley lichwitz antrum puncture trocar and cannula
4 Higginson's rubber syrings
5 Ballenger's swivet knife
6 Walsham's forceps
7 Lucs forceps
8 Tilleys forceps
9 St. Clair Thomson post nasal mirror
10 Simpson's aural syrings
11 Jobson's Horne probe and rings curette
12 Siegle pneumatic speculum
13 Tuning fork
14 Barany noise box
15 Head mirror
16 Toynbee's ear speculum
17 Boyle Davis mouth gag
18 Lac's tongue depressor
19 Draffin's bipod metallic stand
20 Eve's tonsillar snare
21 St. Clare Thomson Adenoid curette with/without cage
22 Trousseau's tracheal dilator
23 Jackson's metallic tracheostomy tube
24 Direct laryngoscope
25 Chevalier Jackson's oesophagoscope
26 Negus bronchoscope

Operative Procedures

1 Tonsillectomy
2 Adenoidectomy
3 Septoplasy
4 Caldwell-Luc operation
5 Myringoplasty
6 Modified Radical mastoidectomy
7 Radical mastoidectomy
8 Biopsy for diagnosis of carcinoma of tongue
9 Direct larygnoscopy
10 Oesophgoscopy
11 Bronchoscopy

12 Neck node biopsy
13 FESS

Radiology

1 X-Ray paranasal sinus
  1.a Water's view
  1.b Caldwell view
  1.c Lateral view
2 X-ray nasopharynx – lateral view
3 X-ray mastoid
  a Oblique lateral view
  b Town's view
4 X-ray neck
  a Lateral view
  b Anteroposterior view

Specimen

1 TEXT BOOKS :

Prescribed Books

1 Diseases of ENT – Mohd Maqbool
2 Diseases of ENT – Bhargava & Shah
3 Short practice of ENT – K.K. Ramalingam
5 Diseases of ENT – Dhingra
6 Fundamentals of Laryngology-Boice and Poparella
7 Fundamentals of Oto laryngology – Boice
8 Diseases of E.N.T. – B.K. Roy Chaudhary
9 Disease of the Ear, Nose and Throat – S.K. Dey
10 Diseases of Ear, Nose and Throat – Simpson & Hall

Reference Books

1 Logan Turner's Diseases of Ear, Nose and Throat
2 Disease of Ear, Nose and Throat – Scott Brown
3 Disease of Ear, Nose and Throat – Ballenegers

Third MBBS Part-I (Main/Remanded) Examination Month/Year
Otorhinolaryngology
(Section – A & B)
(Ear, Nose and Paranasal sinuses, Throat-Pharynx and Larynx and AETCOM)
Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

SECTION A

Q1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10=20

1
2
3

SECTION B

Q1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10=20

1
2
3

Third MBBS Part-I (Main/Remanded) Examination Month/Year
Otorhinolaryngology
(Section – A & B)
(Ear, Nose and Paranasal sinuses, Throat-Pharynx and Larynx and AETCOM)
Maximum Marks: 100

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(Any Question having parts should be answered as whole at one place only)
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Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION A

Q1 MCQ 1X10=10

1 Regarding cholesteatoma, which of the following is true?
A. It consists of squamous epithelium
B. It is a malignant tumour
C. It may metastasise to distant sites
D. It is mainly treated medically

2 Communication between middle ear and eustachian tube is obliterated surgically in:
A. Cortical mastoidectomy
B. Radical mastoidectomy
C. Modified radical mastoidectomy
D. Bondy's mastoidectomy

3 The cough response caused while cleaning the ear canal is mediated by stimulation of:
A. 5^{th} CN
B. Branches of the 7^{th} CN
C. 8th CN
D. 10^{th} CN

4 Otoacoustic emissions are produced by:
A. Inner hair cells
B. Basilar membrane
C. Auditory nerve
D. Outer hair cells

5 A 21 year old woman presents with two day history of sore throat and dysphagia. On examination she is pyrexial with halitosis and cervical lymphadenopathy. What is the likely

causative organism for her condition?

A. Epstein- Barr virus
B. Agranulocytosis
C. Corynebacterium diphtheriae
D. Group A beta haemolytic streptococcus

6 Pyriform fossa lies:

A. Medial to aryepiglottic fold
B. Lateral to aryepiglottic fold
C. Inferior to aryepiglottic fold
D. Superior to aryepiglottic fold

7 A 10 year old girl presented with pain between the eyes, frontal headache, and discharge from the nose, post nasal drip and high fever; what is the provisional diagnosis?

A. Acute frontal sinusitis
B. Acute ethmoidal sinusitis
C. Acute sphenoidal sinusitis
D. Chronic ethmoidal sinusitis

8 Nasal septal hematoma:

A. It is only associated with trauma
B. It is a collection of blood between nasal mucosa and perichondrium
C. It is mostly unilateral
D. It is mainly treated by aspiration

9 Sluder's neuralgia:

A. Decongestants resolves the pain temporarily
B. It is synonymous to posterior ethmoid neuralgia
C. Pain localized on both sides of face
D. Due to compression of deviated septum and inferior turbinate

10 Post tonsillectomy haemorrhage within 24 hrs is known as :

A. Primary Haemorrhage
B. Secondary Haemorrhage
C. Reactionary Haemorrhage
D. Tertiary Haemorrhage

Q2. Short Notes (attempt any four out of five): 4x5= 20

1. Carhart's notch
2. Rhinosporidiosis
3. Otosclerosis
4. Atrophic rhinitis
5. Faucial diphtheria

Q3 Long Questions (attempt any two out of three) 2x10= 20

1. Define cholesteatoma. Discuss its etiopathogenesis, clinical features & management.
2. Discuss indications and management of tracheostomy.
3. Enumerate causes of nasal obstruction. Discuss the etiopathogenesis, clinical features and management of antro choanal polyp.

SECTION B

Q1 MCQ 1x10=10

1. All are true for Gradenigo's syndrome except:
   A. Associated with conductive hearing loss
   B. It is seen in petrositis
   C. It leads to involvement of the 5th and 6th cranial nerves
   D. It is characterized by retro-orbital pain
2. In the right middle ear pathology, weber's test will be:
   A. Lateralized to right side
   B. Positive
   C. Lateralized to left side
   D. Normal
3. Type B tympanogram is found in:
   A. Normal person
   B. Tympanosclerosis
   C. Otosclerosis
   D. Secretary otitis media
4. Augmentation power of the sound wave by the tympanic membrane is:
   A. 14 times
   B. 1.4 times
   C. 18 times
   D. 17 times
5. A 27 year old female patient presented with painful and difficult swallowing, on indirect laryngoscopy, there is pooling of saliva in right pyriform sinus with swollen right arytenoid, the most likely diagnosis is:
   A. Adenocarcinoma of pyriform sinus
   B. Squamous cell carcinoma of pyriform sinus
   C. Squamous cell carcinoma of larynx
   D. Squamous cell carcinoma of postcricoid
6. A new born baby presented with weak cry and hoarseness, the most probable diagnosis:
   A. Laryngomalacia
   B. Subglottic stenosis
   C. Vocal cord palsy
   D. Tracheomalacia
7. Thronwaldt's cyst is seen in:
   A. Floor of mouth
   B. Oropharynx
   C. Nasopharynx
   D. Hypopharynx
8. Allergic rhinitis:
   A. It is an Ig E mediated
   B. Rarely associated with bronchial asthma
   C. Productive cough is the main symptom
   D. It is not uncommon disease

9. Inflammation of the external nose:
   A. Furunculosis is due to streptococcus infection
   B. Furunculosis cannot be complicated by cavernous sinus thrombosis
   C. Needs many investigations for diagnosis
   D. Infections should be treated with antibiotics

10. Brown sign is seen in:
   A. Glomus tumor
   B. Meniere's disease
   C. Acoustic neuroma
   D. Otosclerosis

Q2 Short Notes (attempt any four out of five): 4x5=20

1. Juvenile multiple papilloma larynx
2. Rhinoscleroma
3. Tuning fork test
4. Quinsy
5. Types of tympanoplasty

Q3. Long Questions (attempt any two out of three) 2x10=20

1 Enumerate causes of hoarseness of voice. How will you manage a case of glottic carcinoma?

2 Discuss differential diagnosis of discharging ear. Write management of atticoantral type of chronic supportive otitis media.

3 Define Miniere's disease and its etiopathogenesis, clinical features and management.

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

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The questions should be task oriented rather than write a short note on xxx.
Include:-
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Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

COMMUNITY MEDICINE

1. GOAL :

The broad goal of the teaching of undergraduate students in CommunityMedicine is to prepare them to function as community and first level physiciansin accordance with the institutional goals.

2. OBJECTIVES

(a) **Knowledge:** At the end of the course, the student should be able to :-

i. Describe the health care delivery system including rehabilitation of thedisabled in the country;
ii. Describe the National Health Programmes with particular emphasis onmaternal and child health programmes, family welfare andpopulation control and programmes relevant to current health situation.
iii. List epidemiological methods and describe their application to communicableand non-communicable diseases in the community or hospital situation.
iv. Apply biostatistical methods and techniques;
v. Outline the demographic pattern of the country and appreciate theroles of the individual, family, community and socio-cultural milieu in healthand disease.
vi. Describe the health information systems.
vii. Enunciate the principles and components of primary health care and thenational health policies to achieve the goal of 'Health for All'.
viii. Identify the environmental and occupational hazards and their control.
ix. Describe the importance of water and sanitation in human health.
x. To understand the principles of medical sociology, health economics, health administration,health education in relation to community.

(b) **Skills:** At the end of the course, the student should be able to :-

i. Use epidemiology as a scientific tool to make rational decisions relevantto community and individual patient intervention.
ii. Collect, analyse, interpret and present simple community and hospital baseddata.
iii. Diagnose and manage common health problems and emergencies at theindividual, family and community levels keeping in mind the existing healthcare resources and in the context of the prevailing socio-cultural beliefs.
iv. Diagnose and manage maternal and child health problems and advise acouple and the community on the family planning methods available incontext of the national priorities.
v. Diagnose and manage common nutritional problems at the individual andcommunity level.
vi. Plan, implement and evaluate a health education programme with the skillto use simple audio-visual aids.
vii. Interact with other members of the health care team and participate in theorganisation of health care services and implementations of national healthprogrammes.

(c) **Integration:** Develop capabilities of synthesis between cause of illness in theenvironment or community and individual health and respond with leadershipqualities to institute remedial measures for this.

3. SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60+40=100 marks**	
Internal assessment		
Theory	**100**	**100 +100 = 100 Total**
Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory papers)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.

3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

Passing in III M.B.B.S. Part-I Examination is not compulsory for entry to III M.B.B.S. Part II training, However passing of III MBBS Part-I is compulsory for being eligible for III MBBS Part-II examination.

4. SYLLABUS:

Number	COMPETENCY The student should be able to
	Topic: Concept of Health and Disease
CM1.1	Define and describe the concept of Public Health
CM1.2	Define health; describe the concept of holistic health including concept of spiritual health and the relativeness & determinants of health
CM1.3	Describe the characteristics of agent, host and environmental factors in health and disease and the multi factorial etiology of disease
CM1.4	Describe and discuss the natural history of disease
CM1.5	Describe the application of interventions at various levels of prevention
CM1.6	Describe and discuss the concepts, the principles of Health promotion and Education, IEC and Behavioral change communication (BCC)
CM1.7	Enumerate and describe health indicators
CM1.8	Describe the Demographic profile of India and discuss its impact on health
CM1.9	Demonstrate the role of effective Communication skills in health in a simulated environment
CM1.10	Demonstrate the important aspects of the doctor patient relationship in a simulated environment
CM2.1	Describe the steps and perform clinico socio-cultural and demographic assessment of the individual, family and community
CM2.2	Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status
CM2.3	Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behavior
CM2.4	Describe social psychology, community behaviour and community relationship and their impact on health and disease
CM2.5	Describe poverty and social security measures and its relationship to health and disease
CM3.1	Describe the health hazards of air, water, noise, radiation and pollution
CM3.2	Describe concepts of safe and wholesome water, sanitary sources of water, water purification processes, water quality standards, concepts of water conservation and rainwater harvesting
CM3.3	Describe the aetiology and basis of water borne diseases /jaundice/hepatitis/ diarrheal diseases
CM3.4	Describe the concept of solid waste, human excreta and sewage disposal
CM3.5	Describe the standards of housing and the effect of housing on health

CM3.6	Describe the role of vectors in the causation of diseases. Also discuss National Vector Borne disease Control Program
CM3.7	Identify and describe the identifying features and life cycles of vectors of Public Health importance and their control measures
CM3.8	Describe the mode of action, application cycle of commonly used insecticides and rodenticides
CM4.1	Describe various methods of health education with their advantages and limitations
CM4.2	Describe the methods of organizing health promotion and education and counselling activities at individual family and community settings
CM4.3	Demonstrate and describe the steps in evaluation of health promotion and education program
CM5.1	Describe the common sources of various nutrients and special nutritional requirements according to age, sex, activity, physiological conditions
CM5.2	Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families and the community by using the appropriate method
CM5.3	Define and describe common nutrition related health disorders (including macro-PEM, Micro-iron, Zn, iodine, Vit. A), their control and management
CM5.4	Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment
CM5.5	Describe the methods of nutritional surveillance, principles of nutritional education and rehabilitation in the context of sociocultural factors
CM5.6	Enumerate and discuss the National Nutrition Policy, important national nutritional Programs including the Integrated Child Development Services Scheme (ICDS) etc
CM5.7	Describe food hygiene
CM5.8	Describe and discuss the importance and methods of food fortification and effects of additives and adulteration
CM6.1	Formulate a research question for a study
CM6.2	Describe and discuss the principles and demonstrate the methods of collection, classification, analysis, interpretation and presentation of statistical data
CM6.3	Describe, discuss and demonstrate the application of elementary statistical methods including test of significance in various study designs
CM6.4	Enumerate, discuss and demonstrate Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion
	Topic: Epidemiology
CM7.1	Define Epidemiology and describe and enumerate the principles, concepts and uses
CM7.2	Enumerate, describe and discuss the modes of transmission and measures for prevention and control of communicable and noncommunicable diseases
CM7.3	Enumerate, describe and discuss the sources of epidemiological data
CM7.4	Define, calculate and interpret morbidity and mortality indicators based on given set of data
CM7.5	Enumerate, define, describe and discuss epidemiological study designs
CM7.6	Enumerate and evaluate the need of screening tests
CM7.7	Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures
CM7.8	Describe the principles of association, causation and biases in epidemiological studies
CM7.9	Describe and demonstrate the application of computers in epidemiology
	Topic: Epidemiology of communicable and non- communicable diseases
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
CM8.2	Describe and discuss the epidemiological and control measures including the use of essential laboratory tests at the primary care level for Non Communicable diseases (diabetes, Hypertension, Stroke, obesity and cancer etc.)
CM8.3	Enumerate and describe disease specific National Health Programs including their

	prevention and treatment of a case
CM8.4	Describe the principles and enumerate the measures to control a disease epidemic
CM8.5	Describe and discuss the principles of planning, implementing and evaluating control measures for disease at community level bearing in mind the public health importance of the disease
CM8.6	Educate and train health workers in disease surveillance, control & treatment and health education
CM8.6	Educate and train health workers in disease surveillance, control & treatment and health education
Topic: Demography and vital statistics	
CM9.1	Define and describe the principles of Demography, Demographic cycle, Vital statistics
CM9.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates
CM9.3	Enumerate and describe the causes of declining sex ratio and its social and health implications
CM9.4	Enumerate and describe the causes and consequences of population explosion and population dynamics of India.
CM9.5	Describe the methods of population control
CM9.6	Describe the National Population Policy
CM9.7	Enumerate the sources of vital statistics including census, SRS, NFHS, NSSO etc
	Topic: Reproductive maternal and child health
CM10.1	Describe the current status of Reproductive, maternal, newborn and Child Health
CM10.2	Enumerate and describe the methods of screening high risk groups and common health problems
CM10.3	Describe local customs and practices during pregnancy, childbirth, lactation and child feeding practices
CM10.4	Describe the reproductive, maternal, newborn & child health (RMCH); child survival and safe motherhood interventions
CM10.5	Describe Universal Immunization Program; Integrated Management of Neonatal and Childhood Illness (IMNCI) and other existing Programs.
CM10.6	Enumerate and describe various family planning methods, their advantages and shortcomings
CM10.7	Enumerate and describe the basis and principles of the Family Welfare Program including the organization, technical and operational aspects
CM10.8	Describe the physiology, clinical management and principles of adolescent health including ARSH
CM10.9	Describe and discuss gender issues and women empowerment
Topic: Occupational Health	
CM11.1	Enumerate and describe the presenting features of patients with occupational illness including agriculture
CM11.2	Describe the role, benefits and functioning of the employees state insurance scheme
CM11.3	Enumerate and describe specific occupational health hazards, their risk factors and preventive measures
CM11.4	Describe the principles of ergonomics in health preservation
CM11.5	Describe occupational disorders of health professionals and their prevention & management
Topic: Geriatric services	
CM12.1	Define and describe the concept of Geriatric services
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
CM13.1	Define and describe the concept of Disaster management
CM13.2	Describe disaster management cycle

CM13.3	Describe man made disasters in the world and in India
CM13.4	Describe the details of the National Disaster management Authority
Topic: Hospital waste management	
CM14.1	Define and classify hospital waste
CM14.2	Describe various methods of treatment of hospital waste
CM14.3	Describe laws related to hospital waste management
Topic: Mental Health	
CM15.1	Define and describe the concept of mental Health
CM15.2	Describe warning signals of mental health disorder
CM15.3	Describe National Mental Health program
Topic: Health planning and management	
CM16.1	Define and describe the concept of Health planning
CM16.2	Describe planning cycle
CM16.3	Describe Health management techniques
CM16.4	Describe health planning in India and National policies related to health and health planning
Topic: Health care of the community	
CM17.1	Define and describe the concept of health care to community
CM17.2	Describe community diagnosis
CM17.3	Describe primary health care, its components and principles
CM17.4	Describe National policies related to health and health planning and millennium development goals
CM17.5	Describe health care delivery in India
Topic: International Health	
CM18.1	Define and describe the concept of International health
CM18.2	Describe roles of various international health agencies
CM19.1	Define and describe the concept of Essential Medicine List (EML)
CM19.2	Describe roles of essential medicine in primary health care
CM19.3	Describe counterfeit medicine and its prevention
Topic: Recent advances in Community Medicine	
CM20.1	List important public health events of last five years
CM20.2	Describe various issues during outbreaks and their prevention
CM20.3	Describe any event important to Health of the Community
CM20.4	Demonstrate awareness about laws pertaining to practice of medicine such as Clinical establishment Act and Human Organ Transplantation Act and its implications
	Aetcom module
	3.1, 3.4 and 3.5

5. BOOKS:

1. Park's Textbook of Preventive and Social Medicine
2. Textbook of Community Medicine. Preventive and Social Medicine - Sunderlal, Adarsh, Pankaj.
3. Methods in Biostatistics for medical students and research workers - BK Mahajan.
4. J Kishore's National health programs of India - National policies and legislations related to health.

MBBS304 **Comm.Med.-I**

Third MBBS Part-I (Main/ Remanded) examination Month /Year

Community Medicine

Paper-I

(Section – A & B)

(Concept of health, General Epidemiology, Biostatistics, Environmental Health, Nutrition, Genetics and community health, sociology and community health, health educationand AETCOM)

Time: 3 hrs.

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q.2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q.3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part I (Main/ Remanded) Examination Month / Year

Community Medicine

Paper-I

(Section –A & B)

(Concept of health, General Epidemiology, Biostatistics, Environmental Health, Nutrition, Genetics and community health, sociology and community health, health educationand AETCOM)

Time: 3 hrs.

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q.1 MCQ 1X10=10

1. In 'Iceberg phenomenon', submerged portion does not consist of:
   A. Latent period
   B. Carriers
   C. Undiagnosed cases
   D. Healthy Population

2. Which of the following is the most logical sequence?
   A. Impairment-Disease-Disability-Handicap
   B. Disease-Impairment-Disability-Handicap
   C. Disease-Impairment-Handicap-Disability
   D. Disease-Handicap-Impairment-Disabilit

3. Reference protein is-
   A. Egg
   B. Milk
   C. Pulses
   D. Fish

4. Twin fortified salt" contains:
   A. Iodine + Fluorine
   B. Iodine + Calcium

C. Iodine + Iron
D. Iodine + Chlorine

5. PQLI is-
   A. IMR, Life expectancy, literacy
   B. MMR, Life expectancy, literacy
   C. MMR, IMR, Life expectancy
   D. IMR, Life expectancy at 1 year of age, Socio-economic status.

6. In fresh bleaching powder available chlorine is-
   A. 20%
   B. 30%
   C. 33%
   D. 40%

7. If land is available the ideal method of waste disposal is-
   A. Composting
   B. Incineration
   C. Controlled tipping
   D. None

8. Bitot's spots are found in-
   A. Measles
   B. Mumps
   C. Vit.A deficiency
   D. Diphtheri

9. The limiting amino acids in wheat is-
   A. Alanine & threonine
   B. Lysine & threonine
   C. Alanine
   D. Tyrosine & methionine

10. Human Development Index (HDI) does not include:
    A. Mean years of schooling
    B. Life expectancy at age 1
    C. Real GDP per capita
    D. Adult literacy rate

Q.2 Structured short notes (attempt any four out of five) 4x5=20
1. Human development index.
2. Measures of dispersion
3. Iodine deficiency disorder
4. Secondary attack rate.
5. Identify physicians role and responsibility to the community

Q.3 Structured long question (attempt any two out of three) 2x10=20
1. Describe the epidemiology, prevention and Control of diabetes mellitus.
2. Describe the National Tuberculosis Elimination Programme with recent updates.
3. What are the Components of reproductive and child health. Discuss in detail about adolescent health.

Section B

Q1 Multiple Choice Questions 1x10=10

1. Expectation of life, free of disability is known as-
   A. Park's index
   B. Sullivan's index
   C. Smith's index
   D. Life index

2. DALY is –
   A. Disease adjusted life year.
   B. Disability adjusted life year
   C. Disease associated life year.
   D. Disability associated life year.

3. The recommended level of fluorides in drinking water in India is accepted as:
   A. 1.0.5 to 0.8 mg per liter
   B. 2.1 to 2 mg per liter
   C. 3 to 6 mg per liter
   D. 4.7 to 12 mg per liter

4. Decrease in the incidence of a disease to a level where it ceases to be a public health problem is-
   A. Control
   B. Elimination
   C. Eradication
   D. Surveillance

5. In an outbreak of Cholera in a village of 2000 population 20 cases have occurred and 5 have died. Case fatality rate is-:
   A. 1%
   B. 0.25%
   C. 5%
   D. 25%

6. Food poisoning is an example of:
   A. Common source, single exposure epidemic
   B. Common source, continuous exposure epidemic
   C. Propagated epidemic
   D. Modern epidemic

7. Prevalence of cataract at one point of time can be determined by-
   A. Longitudinal study
   B. Cross-sectional study
   C. Surveillance
   D. Cohort Study

8. Incidence can be calculated in-
   A. Retrospective Study
   B. Case control study
   C. Prospective Study
   D. Cross-sectional study

9. Which of the following vaccine is not administered at birth?
   A. BCG
   B. OPV
   C. Hepatitis-B
   D. Hib
10. Late expanding stage of population in India is due to?
   A. Birth rate stationary, death rate continues to fall
   B. Death rate declines faster than birth rate
   C. Birth rate declines, death rate same
   D. Birth rate is less than death rate

Q.2 Structured short notes (attempt any four out of five) 4x5=20

1. Sanitary barrier
2. Protein Energy Malnourishment
3. Acculturation
4. Social Audits
5. Juvenile delinquency

Q.3 Structured long question (attempt any two out of three) 2x10=20

1. Discuss challenges in zoonotic Disease Control.
2. Classify arboviral diseases. Describe the epidemiology, prevention and control of dengue syndrome.
3. Discuss the Role of Cultural Factors in Health and Disease.

MBBS305 **Comm.Med.-II**

Third MBBS Part-I (Main/ Remanded) examination Month /Year
Community Medicine

Paper-II
(Section – A & B)
(Epidemiology of specific disease, demography & family planning, Maternity & Child Health, School Health, Urban Health, Mental Health, Health planning & Management, Occupational health, International health and AETCOM)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10=20

1
2
3

Third MBBS Part I (Main/ Remanded) Examination Month / Year

Community Medicine

Paper -II

(Section –A & B)

(Epidemiology of specific disease, demography & family planning, Maternity & Child Health, School Health, Urban Health, Mental Health, Health planning & Management, Occupational health, International health and AETCOM)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q1 MCQ 1X10=10

1. If Birth rate -32 & death rate 21 then annual growth rate-
   A. 11%
   B. 1.1%
   C. 0.25%
   D. 2.5%

2. Community X has 30% below 15 years of age and 10% over 65 years of age. Dependency ratio for community X is-
   A. 20%
   B. 40%
   C. 66.6%
   D. 3%

3. Best Indicator of fertility?
   A. Crude birth rate (CBR)
   B. Total fertility rate (TFR)
   C. Net reproductive rate (NRR)
   D. General reproductive rate (GRR)

4. WHO defines adolescent age between-
   A. 10-19 years of age
   B. 10-14 years of age
   C. 10-25 years of age
   D. 9-14 years of age

5. In Cu-T 380 A, 380 represents-
   A. No. of turns of Copper wire
   B. Surface area of Cu-T in Sq.mm
   C. Surface area of Copper in Sq.mm
   D. Effective life of Cu-T in quarters

6. Serious complication of oral contraceptive is:
   A. Leg vein thrombosis
   B. Headache
   C. Break through bleeding
   D. Breast tenderness

7. Best contraceptive for a newly married healthy couple-
   A. Natural method
   B. Intra Uterine Contraceptive Device
   C. Oral Contraceptive Pills
   D. Barrier method

8. When there is contact between two people with different type of culture, there is diffusion of culture bothways which is called:
   A. Socialization
   B. Acculturation
   C. Adjustment
   D. All the above

9. "Moron" is one with Intelligent Quotient of -
   A. 0-24
   B. 25-49
   C. 50-69
   D. 70-79

10. Learned behavior which is permanent and consistent but liable to change is:
    A. Cultural belief
    B. Attitude
    C. Knowledge
    D. Practice

Q.2 Structured short notes (attempt any four out of five) 4x5=20

1. Target couple
2. Categories of Biomedical waste.
3. TRIAGE.
4. Principals of communications.
5. Urban Health

Q.3 Structured long question (attempt any two out of three) 2x10=20

1. What are the Millennium Development Goals related to Maternal and Child Health.
2. Discuss Indian Public Health Standards for Primary Health Centers.
3. Discuss Demographic Trends in India. Also discuss the National Population Policy 2000 for Population stabilization.

Section B

Q1 MCQ 1x10=10

1. Best Study of first choice for assessment of UNKNOWN or New disease with no etiological hypothesis-
   A. Case control study
   B. Cohort study
   C. Cross-sectional study
   D. Descriptive epidemiology

2. Minimum recommended concentration of free residual chlorine is
   A. 0.1 mg/L
   B. 0.5 mg/L
   C. 1 mg/L
   D. 1.5 mg/L

3. The vital layer of the slow sand filter is also known as :
   A. Superficial layer
   B. Sand bed layer
   C. Biological layer
   D. Chemical layer

4. The main greenhouse gas which is largely contributing to Global warming is
   A. Carbon dioxide
   B. Methane
   C. Nitrous oxide
   D. Fluorocarbons

5. Who discovered the transmission of Malaria by Anopheline mosquitoes ?
   A. Ronald Ross
   B. Luis Pasteur
   C. Edward Jenner
   D. Robert Koch

6. World Health Day is celebrated on?
   A. 1st December
   B. 31st May
   C. 7th April
   D. 8th May

7. What is the causative organism for Malaria?
   A. Anopheles
   B. Culex
   C. Plasmodium
   D. Yersinia

8. Modifiable risk factors in coronary artery disease are all except-
   A. Smoking
   B. Obesity
   C. High blood pressure
   D. Age.

9. Recommended number of populations for primary health centers & subcenter for rural area is-
   A. 30,000 & 5,000 respectively
   B. 50,000 & 10,000 respectively
   C. 1,00,000 & 30,000 respectively
   D. 1,00,000 & 50,000 respectively

10. Primary health care involves all Except:
   A. Sanitation & water supply
   B. Supply of essential drugs
   C. Referral system
   D. Health education

Q.2 Structured short notes (attempt any four out of five) 4x5=20

1. Low birth weight baby
2. Nosocomial infection
3. Cafeteria approach
4. Ergonomics
5. Steps in planning cycle

Q.3 Structured long question (attempt any two out of three) 2x10=20

1. Describe the cause of childhood mortality (0-5 years) in India and role of Universal Immunization Programme to reduce the same.
2. Write in detail on Objectives, Activities and Organization of School Health Services in India.
3. Discuss design, conduct and analysis of a cohort study. Mention advantages and disadvantages of such studies.

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Third (Final) MBBS PART-II Examination

GENERAL MEDICINE

1. GOAL :

(a) The broad goal of the teaching of undergraduate students in Medicine is to have the knowledge, skills and behavioral attributes to function effectivelyas the first contact physician.

2. OBJECTIVES:

(a) **Knowledge:** At the end of the course, the student should be able to:

i. Diagnose common clinical disorders with special reference to infectious and respiratorydiseases, nutritional disorders, tropical and environmental diseases.
ii. Outline various modes of management including drug therapeuticsespecially dosage, side effects, toxicity, interactions, indications andcontra-indications.
iii. Propose diagnostic and investigative procedures and ability to interpretthem.
iv. Provide first level management of acute emergencies promptly and efficientlyand decide the timing and level of referral, if required.
v. Recognize geriatric disorders and their management.

(b) **Skills:** At the end of the course, the student should be ableto:

i. Develop clinical skills (history taking, clinical examination and otherinstruments of examination) to diagnose various common medicaldisorders and emergencies.
ii. Refer a patient to secondary and/or tertiary level of health care afterhaving instituted primary care.
iii. Perform simple routine investigations like haemogram, stool, urine, sputumand biological fluid examinations, ECG, Blood sugar by Glucometer, Nebulization techniques and Therapy.
iv. Assist the common bedside investigative procedures like pleural tap, Ascitic fluid tapping, lumbar puncture, bone marrow aspiration/biopsy and liver aspiration/biopsy.

(c) Integration:

i. Team work with community medicine and physical medicine and rehabilitation
ii. Tohave the knowledge and be able to manage important current nationalhealth programs,
iii. To be able to view the patient in his/her totalphysical, social and economic milieu.
iv. With other relevant academic inputs which provide scientific basis ofclinical medicine e.g. anatomy, physiology, biochemistry, microbiology,pathology and pharmacology.

3. SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200 + 200= 400 Total**
Practical + Viva	**120+80=200 marks**	
Internal assessment		
1. Theory	**100**	**100 +100 = 200 Total**
2. Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory papers)

Note:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each

4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

DISTRIBUTION OF TOPICS IN PAPER I & II IN UNIVERSITY EXAMINATION

Paper	Topics
I	General Medicine Section A: Clinical Pharmacology, Nutritional and Metabolic disorders, Water electrolyte and acid base imbalance, critical care medicine, pain management and palliative care,and AETCOM Neurologic diseases Section B: Poisoning, Specific environmental and occupational hazards, Immune response and infections, Hematological disorders
II	General Medicine including Skin and Psychiatry, Respiratory Medicine Section A: Cardiovascular System, Respiratory System, Endocrinology and Metabolism, Diabetes Mellitus, Thyroid gland, The Reproductive System, The Parathyroid gland, The Adrenal gland, The Endocrine Pancreas, and GIT, The Hypothalamus and the pituitary gland and AETCOM Section B: Kidney and genitourinary system, GIT, Diseases of Pancreas, Liver and Biliary tract diseases, Diseases of immune system, connective tissue and joints, Skin diseases, Psychiatry

SYLLABUS:
Theory

Paper – I
General Medicine (Section – A)

General

(1) The art' and 'science' of Medicine
(2) Principles of medical ethics
(3) Clinical diagnostic reasoning
(4) Principles of prevention of disease
(5) Clinical genetics- common types, clinical presentation, investigation and prevention of genetic diseases and genetic counseling
(6) Medical disorders during pregnancy
(7) Principles of Geriatric Medicine
    a. Normal ageing
    b. Clinical assessment of frail elderly,
    c. Decision about investigations and rehabilitation
    d. Major manifestations of disease in elderly
(8) Care of terminally ill/dying patient

Clinical Pharmacology

(1) Principles of drug therapy
(2) Adverse drug reactions

(3) Drug interactions
(4) Monitoring drug therapy
(5) Writing a drug prescription

Nutritional and metabolic disorders

(1) Nutritional assessment & needs
(2) Nutritional & metabolic disorders
(3) Protein energy malnutrition
(4) Obesity
(5) Vitamin and mineral deficiency & excess
(6) Diet therapy including parenteral nutrition therapy.

Water, electrolyte and acid-base imbalance

(1) Water and electrolyte disturbances
(2) Acid-base disorders
(3) Fluid and electrolyte disturbances

Critical care medicine

(1) Physiology of the critically ill patient
(2) Major manifestations of critical illness
    a. Circulatory failure: shock
    b. Respiratory failure
    c. Renal failure
    d. Coma
    e. Sepsis
    f. Disseminated intravascular coagulation
(3) General principles of critical care management
(4) Scoring systems in critical care
(5) Outcome and costs of intensive care

Pain management and palliative care

(1) General principles of pain
(2) Assessment and treatment of pain
(3) Palliative care

Neurological diseases

(1) Clinical examination of nervous system
(2) Functional anatomy, physiology and investigations
(3) Major manifestations of nervous system disease
    a. Headache and facial pain
    b. Raised intracranial tension
    c. Faintness, dizziness, syncope & vertigo
    d. Sleep disorders
    e. Disorders of movement
    f. Ataxia
    g. Sensory disturbances (numbness, tingling and sensory loss)
    h. Acute confusional states
    i. Coma and brain death
    j. Aphasias and other focal cerebral disorders
    k. Speech, swallowing and brain-stem disturbance
    l. Visual disturbances
    m. Sphincter disturbances
(4) Migraine and cluster headaches
(5) Seizures and epilepsy
(6) Cerebrovascular disease

(7) Dementias
(8) Acute and chronic meningitis
(9) Viral encephalitis
(10) Diseases of cranial nerves
(11) Intracranial tumors
(12) Diseases of spinal cord
(13) Multiple sclerosis and other demyelinating diseases
(14) Parkinson's disease and other extrapyramidal disorders
(15) Cerebellar disorders
(16) Motor neuron disease
(17) Acute Demyelinating Polyneuropathy (LGB Syndrome)
(18) Peripheral neuropathy
(19) Neurological manifestations of system diseases
(20) Nutritional and metabolic diseases of the nervous system
(21) Myasthenia gravis and other diseases of neuromuscular junction
(22) Diseases of muscle

AETCOM module : 4.1, 4.8 & 4.9

(Section – B)

Poisonings

(1) General approach to the poisoned patient
(2) Poisoning by specific pharmaceutical agents
(3) Drugs of misuse
(4) Chemicals and pesticides
(5) Snake bite and Envenomation
(6) Other bites and stings – scorpion, spider

Specific environmental and occupational hazards

(1) Heatstroke and hypothermia
(2) Drowning and near drowning
(3) Electrical injuries
(4) Radiation injury
(5) Heavy Metal poisoning

Immune response and infections

(1) Basic considerations
    a. Patterns of infection
    b. Laboratory diagnosis of infections
    c. Principles of immunization and vaccine usage
(2) Clinical syndromes
    a. The febrile patient
    b. Fever and rash
    c. Fever of unknown origin
    d. Infective endocarditis
    e. Intra-abdominal infections and abscesses
    f. Acute infectious diarrheal diseases and food poisoning
    g. Sexually transmitted diseases – overview & clinical approach
    h. Infections of skin, muscle & soft tissues
    i. Osteomyelitis
(3) Hospital acquired infections
(4) Infections in immuno-compromised hosts
(5) Specific Infections – Epidemiology, clinical features, laboratory, diagnosis, treatment and

prevention of :

a. Protozoal infections
   i. Amoebiasis
   ii. Malaria
   iii. Leishmaniasis
   iv. Toxoplasmosis
   v. Giardiasis
   vi. Trichomoniasis
   vii. Trypanosomiasis

b. Bacterial infections
   i. Streptococcal infections
   ii. Pneumococcal infections
   iii. Staphylococcal infections
   iv. Meningococcal infections
   v. Gonococcal infections
   vi. Legionella infections
   vii. Pertussis and Diphtheria
   viii. Tetanus
   ix. Botulism
   x. Gas gangrene, other clostridial infections
   xi. Cholera
   xii. Salmonellosis – Typhoid and paratyphoid fevers
   xiii. Shigellosis and bacillary dysentery
   xiv. Brucellosis
   xv. Plague
   xvi. Donovanosis (Granuloma inguinale)
   xvii. Helicobacter Pylori
   xviii. Infections due to pseudomonas & other gram – negative bacteria
   xix. Anaerobic infections

c. Mycobacterial diseases
   i. Tuberculosis
   ii. Leprosy

d. Viral Infections
   i. Common exanthemata
      - Measles
      - Mumps
      - Rubella
      - Varicella
   ii. Common viral respiratory infections (Including Influenza and Swine flu)
   iii. Human immunodeficiency virus (HIV)
   iv. Viral gastroenteritis
   v. Dengue fever
   vi. Rabies

e. Rickettsia, Mycoplasma & Chlamydial diseases

f. Fungal infections
   i. Candidiasis
   ii. Aspergillosis
   iii. Histoplasmosis
   iv. Cryptococcosis
   v. Mucormycosis
   vi. Pneumocystis carinii

g. Helminthic infections
    i. Nematodes
        - Tissue
        - Intestinal
    ii. Cestodes
        - Tissue
        - Intestinal

Hematological disorders

(1) Clinical examination in blood disorders
(2) Functional anatomy, physiology and investigations
(3) Major manifestations of hematological diseases
    a. Anaemia
    b. Polycythemia
    c. Leucopenia
    d. Leucocytosis
    e. Thrombocytopenia
    f. Thrombocytosis
    g. Pancytopenia
    h. Lymphadenopathy
    i. Splenomegaly
    j. Bleeding
    k. Venous thrombosis
    l. Abnormal coagulation screen
    m. Infections
(4) Anemias- Iron, Vit. B12 deficiency anemia, Hemolytic anemia, Aplastic anemia, Hypoplastic anemia, Thallesemia
(5) Myeloproliferative disorders
(6) Haematological malignancies
(7) Bleeding disorders
(8) Disorders of coagulation and venous thrombosis
(9) Blood products and transfusion

Nutrition, Genetics and community health, sociology and community health, health education.

Paper-II

General Medicine including Skin and Psychiatry

(Section – A)

System-Based Diseases

Cardiovascular system

(1) Clinical examination of the cardiovascular system
(2) Functional anatomy, physiology and investigations
(3) Major manifestations of cardiovascular disease
    a. Chest pain
    b. Breathlessness
    c. Palpitation
    d. Acute circulatory failure (cardiogenic shock)
    e. Heart failure
    f. Hypertension
    g. Presyncope and syncope
    h. Cardiac arrest and sudden cardiac death
    i. Abnormal heart sounds and murmurs
    j. Atrial fibrillation

(4) Disorders of heart rate, rhythm and conduction
(5) Congestive cardiac failure
(6) Rheumatic fever
(7) Valvular heart disease
(8) Ischaemic heart disease- Angina, Acute coronary syndrome, STEMI
(9) Congenital heart disease in the adult
(10) Cor pulmonale
(11) Hypertension
(12) Peripheral vascular disease
(13) Atherosclerosis
(14) Pericardial disease
(15) Myocarditis and cardiomyopathy

Respiratory system

(1) Clinical examination of the respiratory system
(2) Functional anatomy, physiology and investigations
(3) Major manifestations of lung disease
    a. Cough
    b. Dyspnoea
    c. Chest pain
    d. Haemoptysis
    e. The solitary radiographic pulmonary lesion
    f. Respiratory failure
(4) Upper and lower respiratory Infections
(5) Bronchial asthma
(6) Chronic obstructive pulmonary disease
(7) Pulmonary tuberculosis
(8) Suppurative lung diseases
    a. Bronchiectasis
    b. Lung abscess
(9) Interstitial and infiltrative lung diseases
(10) Occupational lung diseases
(11) Tumors of the bronchus and lung
(12) Pulmonary vascular diseases
    a. Pulmonary hypertension
    b. Pulmonary thromboembolism
(13) Acute respiratory distress syndrome
(14) Obstructive sleep apnoea
(15) Diseases of the nasopharynx, larynx and trachea
(16) Diseases of the Pleura
(17) Acute and Chronic respiratory failure
(18) Diseases of the mediastinum, diaphragm and chest wall

Endocrinology and Metabolism Diabetes mellitus

(1) Clinical examination of the patient with diabetes
(2) Epidemiology and Prevention
(3) Physiology, pathophysiology and investigations
(4) Aetiology and pathogenesis
(5) Major manifestations of disease
    a. Hyperglycaemia
    b. Acute metabolic complications
        i. Diabetic ketoacidosis
        ii. Hyperglycemic non ketotic coma

iii. Hypoglycemia

(6) End organ damage
(7) Management of diabetes
(8) Long term complications (micro and macrovascular)
(9) Long-term supervision
(10) Special problems in management
(11) Prospects in diabetes mellitus

Thyroid gland

(1) Clinical examination of thyroid disease
(2) Functional anatomy, physiology and investigations
(3) Major manifestations of thyroid disease
    a. Hyperthyroidism
    b. Hypothyrodism
    c. Thyroid enlargement
    d. Abnormal thyroid function test result

The reproductive system

(1) Major manifestations of reproductive disease
    (i) Male hypogonadism
    (ii) Gynaecomastia
    (iii) Impotence
    (iv) Short stature and delayed puberty
    (v) Cryptorchidsm
    (vi) Hirsutism
    (vii) Secondary amenorrhoea
    (viii) Infertility

The parathyroid glands

(1) Major manifestations of diseases of the parathyroid glands
    a. Hypercalcemia
    b. Hypocalcemia

The adrenal glands

(1) Major manifestations of adrenal disease
    a. The 'Cushingoid' patient
    b. Adrenal insufficiency
    c. Pheochromocytoma

The endocrine pancreas and gastrointestinal tract

(1) Major manifestations of disease of the endocrine pancreas
    a. Spontaneous hypoglycemia
    b. Disorders affecting multiple endocrine system

The hypothalamus and the pituitary gland

(1) Major manifestations of hypothalamic and pituitary disease
    a. Hypopituitarism
    b. Visual field defects
    c. Galactorrhea

AETCOM module : 4.1, 4.8 & 4.9

(Section – B)

Kidney and genitourinary system

(1) Clinical examination of the kidney and genitourinary system
(2) Functional anatomy, physiology and investigations

(3) Major manifestations of renal and urinary tract disease
   a. Dysuria, pyuria, urethral symptoms
   b. Disorders of urine volume
   c. Hamaturia
   d. Proteinuria
   e. Oedema
   f. Obstruction of the urinary tract
   g. Incontinence
(4) Acute and chronic renal failure
(5) Infections of the kidney and urinary tract
(6) Congenital abnormalities of the kidneys and urinary system
(7) Glomerulonephritides
(8) Tubulo-interstital diseases
(9) Renal involvement in systemic disorders
(10) Drugs and the kidney
(11) Renal vascular diseases
(12) Urinary tract calculi and nephrocalcinosis
(13) Tumors of the kidney and genitourinary tract
(14) Renal replacement therapy
(15) Polycystic Kidney disease

Gastrointestinal tract

(1) Clinical examination of the abdomen
(2) Functional anatomy, physiology and investigations particularly role of imaging, endoscopy and tests of function
(3) Major manifestations of gastrointestinal disease
   a. Abdominal pain (acute and chronic)
   b. Dysphagia
   c. Dyspepsia
   d. Vomiting
   e. Constipation
   f. Diarrhoea
   g. Abdominal lump
   h. Weight loss
   i. Gastrointestinal bleeding – upper and lower
   j. Approach to the patient with gastrointestinal disease
(4) Diseases of the mouth and salivary glands-oral ulcers, candidiasis, parotitis
(5) Diseases of the oesophagus-GERD, other motility disorders, oesophagitis, carcinoma oesophagus
(6) Diseases of the stomach and duodenum-gastritis, peptic ulcer disease tumors of stomach
(7) Diseases of the small intestine
   a. Acute gastroenteritis & food poisoning
   b. Intestinal tuberculosis
   c. Inflammatory bowel disease
   d. Malabsorption syndrome
   e. Tumors of small intestine
   f. Acute, sub-acute and chronic intestinal obstruction
(8) Disorders of the colon and rectum
   a. Bacillary dysentery
   b. Amoebic colitis
   c. Ulcerative colitis
   d. Tumors of the colon & rectum
   e. Irritable bowel disease
(9) Abdominal tuberculosis
   a. Peritoneal

b. Nodal
c. Gastrointestinal

(10) Ischemic gut injury
(11) Anorectal disorders
(12) Diseases of the peritoneal cavity
a. Peritonitis
b. Ascites
c. Peritoneal carcinomatotis

Diseases of the pancreas

(1) Acute and chronic pancreatitis
(2) Tumors of pancreas

Liver and Biliary tract disease

(1) Clinical examination of the abdomen for liver and biliary disease
(2) Functional anatomy, physiology and investigations of hepatobiliary disease
(3) Major manifestations of liver disease
a. 'Asymptomatic' abnormal liver function tests
b. Jaundice
c. Acute (fulminant) hepatic failure
d. Portal hypertension and ascites
e. Hepatic (portosystemic) encephalopathy
f. Hepatorenal failure
(4) Liver abscess – amoebic & pyogenic
(5) Viral hepatitis- acute and chronic
(6) Alcoholic liver disease
(7) Cirrhosis of liver and chronic liver disease
(8) Drugs, toxins and liver
(9) Fatty liver and nonalcoholic steatohepatitis
(10) Infiltrative diseases of liver
a. Wilson's disease
b. Hemachromatosis
(11) Tumors of the liver
(12) Gallbladder and biliary tract diseases
a. Functional anatomy
b. Acute and chronic 'cholecystitis'
c. Cholelithiasis
d. Tumors of gall bladder and bile ducts

Disorders of the immune system, connective tissue and joints

(1) Introduction to the immune system and autoimmunity
(2) Primary immune deficiency diseases
(3) HIV, AIDS and related disorders
(4) Major manifestations of musculoskeletal disease
a. Joint pain
b. Bone pain
c. Muscle pain and weakness
d. Regional periarticular pain
e. Back and neck pain
(5) Approach to articular and musculoskeletal disorders
(6) Rheumatoid Arthritis
(7) Infectious arthritis
(8) Gout
(9) Inflammatory muscle disease

(10) Osteoarthritis
(11) Systemic connective tissue diseases – SLE, RA, PSS
(12) Vasculitides
(13) Ankylosing spondylitis, reactive arthritis and undifferentiated spondylourthropathy
(14) Sarcoidosis
(15) Amyloidosis
(16) Musculoskeletal manifestations of disease in other systems
(17) Fibromyalgia
(18) Diseases of bone
(19) Osteoporosis
(20) Pathological fractures

Skin diseases

(1) Clinical examination of skin diseases
(2) Major manifestations of skin disease
    a. Various types of rash
    b. Pruritis
    c. Erythroderma
    d. Urticaria
    e. Photosensitivity
    f. Blisters
    g. Leg ulcers
    h. Alopecia
    i. Acne
(3) Approach to patient with skin disease
(4) Some common skin infections and infestations-scabies, fungal infections pyoderma
(5) Eczema, psoriasis and other erythematous scaly eruptions
(6) Cataneous drug reactions
(7) Disorders of pigmentation
(8) Disorders of the nails
(9) Skin manifestations of systemic diseases

Medical Psychiatry

(1) Classification of psychiatric disorders
(2) Aetiological factors in psychiatric disorders
(3) The clinical interview and mental state examination
(4) Major manifestations of psychiatric illness
    a. Disturbed and aggressive behavior
    b. Delusions and hallucinations
    c. Depressive Symptoms
    d. Anxiety symptoms
    e. Deliberate self-harm and suicidal ideation
    f. Alcohol misuse and withdrawal
    g. Misuse of drugs other than alcohol
    h. Medically unexplained physical symptoms and functional somatic symptoms
    i. Psychiatric and psychological aspects of chronic and progressive disease
(5) Clinical Syndromes
    a. Organic brain syndromes
    b. Substance abuse
        i. Alcohol/Drugs/ Tobacco
    c. Bipolar disorders
    d. Depressive disorders
    e. Schizophrenia
(6) Treatments used in psychiatry

a. Psychological treatments
b. Physical treatments

(7) Neurotic, stress-related and somatoform disorders
a. Anxiety
b. Obsessive compulsive disorders
c. Dissociative disorders

(8) Sleep disorders

(9) Legal aspects of psychiatry

BOOKS

1. Harrison's Principles of Internal Medicine 21st edition
2. Davidson's Principles and Practice of Medicine 23rd edition
3. API Textbook of Medicine 12th edition
4. Medicine Prep Manual for undergraduates by K George Mathew 6th edition
5. Archit Boloor Exam Preparatory Manual for Undergraduates Medicine 3rd edition
6. Archit Boloor An insider's guide to clinical medicine 2nd edition
7. P J Mehta's Practical Medicine 21st edition
8. Bedside Clinics in medicine by Arup Kumar Kundu Part I
9. Bedside Clinics in medicine by Arup Kumar Kundu Part II
10. R Algappan Manual of Practical Medicine 6th edition

MBBS401 **Gen.Med.-I**

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

General Medicine

Paper-I

(Section – A & B)

Section A: Clinical Pharmacology, Nutritional and Metabolic disorders, Water electrolyte and acid base imbalance, critical care medicine, pain management and palliative care,and AETCOM

Neurologic diseases

Section B: Poisoning, Specific environmental and occupational hazards, Immune response and infections, Hematological disorders

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1

2

3

4

5

Q3 Structured long question (attempt any two out of three) 2x10=20

1

2

3

Section B

Q.1 MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1

2

3

4

5

Q3 Structured long question (attempt any two out of three) 2x10=20

1

2

3

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

General Medicine

Paper-I

(Section – A & B)

Section A: Clinical Pharmacology, Nutritional and Metabolic disorders, Water electrolyte and acid base imbalance, critical care medicine, pain management and palliative care,and AETCOM Neurologic diseases

Section B: Poisoning, Specific environmental and occupational hazards, Immune response and infections, Hematological disorders

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION A

Q1.MCQ 1x10=10

1. Increased muscle tone is found in?
   A. Spasticity
   B. Rigidity
   C. Paratonia
   D. All of the above

2. All of the following are criteria for septic shock except:
   A. Sepsis
   B. Vasopressor Therapy Needed To Elevate Map To ≥ 65mmhg
   C. Serum Lactate Concentration > 2mmo/L After Fluid Resuscitation
   D. Elevated Bnp Levels

3. Which of the following is false about upper motor neuron weakness?
   A. Proximal Muscle Groups Affected More Than Distal
   B. Axial Movements Spared
   C. Affects Ability To Perform Rapid Repetitive Movements
   D. Normal Movement Rhythmicity Is Maintained

4. Normal individuals excrete what amount of total protein in Urine?
   A. < 150 MG / DAY
   B. < 200 MG / DAY
   C. < 250 MG / DAY
   D. < 300 MG / DAY

5. Which of the following is false about severe Hypocalcaemia ?
   A. Seizures
   B. Bronchospasm
   C. Laryngospasm
   D. Short Qt Interval

6. Pill-Rolling tremor is a characteristic feature of ?
   A. Progressive Supranuclear Palsy
   B. Multiple System Atrophy
   C. Corticobasal Degeneration
   D. Parkinson's Disease

7. Normal serum lactate level is?
   A. 0.5 - 1.7 MMOL/L
   B. 1.7 - 2.3 MMOL/L
   C. 2.5 - 3.7 MMOL/L
   D. 3.5 - 4.7 MMOL/

8. Which of the following is false about lumbar puncture headache?
   A. Worsened by head shaking
   B. Worsened by jugular vein compression
   C. Location is bitemporal
   D. Epidural blood patch is effective treatment

9. Glossitis, cheilosis, stomatitis in malabsorption syndrome is due to deficiency of ?
   A. Iron
   B. Vitamin B12, Folate
   C. Vitamin A
   D. All of the above

10. All of following can be done to manage hyperkalaemia except:
   A. Glucose-Insulin Drip
   B. Calcium Gluconate
   C. Salbutamol Nebulisation
   D. Inhaled Corticosteroids

Q2. Structured Sort Notes On (Attempt Any four out of five) : 4X5=20

1. Ards
2. Migraine
3. Ethics In Medicine
4. Osteomalacia
5. Chronic Pain

Q3. Structured Long Question (Attempt Any two out of three)

1. Discuss the pathophysiology, clinical features and management of acute bacterial meningitis.
2. Discuss in brief the definition of shock, its classification and management.
3. Define hyponatremia. discuss common causes, clinical features and management in brief.

SECTION B

Q1. MCQ 1X10=10

1. Poikilocytosis is related to which feature of RBC ?
   A. Size
   B. Shape
   C. Number
   D. Colour

2. KAPOSI'S SARCOMA (KS) IS A?
   A. Neoplastic Sarcoma
   B. Lymphoproliferative Disease
   C. Angio Proliferative Disease
   D. Granulomatous Disease

3. Which of the following is not a "second-line anti-Tuberculous Drug"?
   A. Levofloxacin
   B. Ethionamide
   C. Ethambutol
   D. Amikacin

4. Mee's Lines - is suggestive of which of the following?
   A. Chronic Mercury Poisoning
   B. Aluminum Poisoning
   C. Chronic Arsenic Intoxication
   D. Chronic Lead Poisoning

5. Gaisbock's syndrome relates to?
   A. Spurious polycythemia
   B. High altitude polycythemia
   C. Ectopic epo production
   D. Familial polycythemia

6. Hydrophobia or aerophobia in encephalitic rabies is due to involvement of neurons in?
   A. Cortex
   B. Purkinje cells of cerebellum
   C. Pyramidal cells in hippocampus
   D. Brainstem

7. BCG was derived from an attenuated strain of ?
   A. M. Bovis
   B. M. Tuberculosis
   C. M. Intercellulare
   D. Any of the above

8. Agents for prophylaxis for pcp include ?
   A. Dapsone + pyrimethamine + leucovorin
   B. Aerosolized pentamidine
   C. Atovaquone
   D. All of the above

9. Weight of a normal spleen is ?
   A. < 150 grams
   B. < 250 grams
   C. < 350 grams
   D. < 450 grams

10. Anti-tnf therapy can lead to?
   A. Reactivation of dormant tuberculosis
   B. Increased risk of lymphoma
   C. Development of demyelinating cns disease
   D. All of the above

Q2. Structured sort notes on (attempt any four out of five) : 4x5=20

1. Heat stroke
2. Bio-terrorism
3. Denggue fever
4. Fever with splenomegaly
5. Lead poisoning

Q3. Structured long question (attempt any two out of three) 2x10=20

1. Discuss organophosphorus poisoning under pathophysiology, clinical features and management
2. Discuss the pathophysiology, clinical features and management in brief of plasmodium falciparum malaria.
3. Define thrombocytopenia. Discuss its causes, clinical manifestations and management.

MBBS402 **Gen. Med.II**

Third MBBS Part-II (Main/ Remanded) examination Month /Year

General Medicine

Paper-II

(Section – A & B)

General Medicine including Skin and Psychiatry, Respiratory Medicine

Section A: Cardiovascular System, Respiratory System, Endocrinology and Metabolism, Diabetes Mellitus, Thyroid gland, The Reproductive System, The Parathyroid gland, The Adrenal gland, The Endocrine Pancreas, and GIT, The Hypothalamus and the pituitary gland and AETCOM

Section B: Kidney and genitourinary system, GIT, Diseases of Pancreas, Liver and Biliary tract diseases, Diseases of immune system, connective tissue and joints, Skin diseases, Psychiatry

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

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Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part-II (Main/ Remanded) examination Month /Year

General Medicine

Paper-II

(Section – A & B)

General Medicine including Skin and Psychiatry, Respiratory Medicine

Section A: Cardiovascular System, Respiratory System, Endocrinology and Metabolism, Diabetes Mellitus, Thyroid gland, The Reproductive System, The Parathyroid gland, The Adrenal gland, The Endocrine Pancreas, and GIT, The Hypothalamus and the pituitary gland and AETCOM

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Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

SECTION A

Q1. MCQ 1x10=10

1. In heart failure, aldosterone secretion is elevated due to ?
   A. Prolongation of biologic half-life
   B. Increased secretion
   C. Reduced hepatic catabolism
   D. All of the above

2. Pulmonary hemorrhage syndromes include ?
   A. Goodpasture's syndrome
   B. Idiopathic pulmonary hemosiderosis
   C. Isolated pulmonary capillaritis
   D. All of the above

3. Acth reserve is most reliably assessed by ?
   A. Crh test
   B. Metyrapone test
   C. Insulin-induced hypoglycemia
   D. Standard acth stimulation test

4. Glucagon is produced by ?
   A. Alpha cells
   B. Beta cells
   C. Delta cells
   D. PP cells

5. Which of the following murmurs is low-pitched ?
   A. Aortic regurgitation
   B. Mitral regurgitation
   C. Mitral stenosis
   D. Pulmonic regurgitation due to pulmonary hypertension

6. When ascites is out of proportion to peripheral edema, which of the following should be suspected?
   A. Tricuspid regurgitation
   B. Budd chiari syndrome
   C. Constrictive pericarditis
   D. Cirrhosis live

7. Which of the following respiratory functions cannot be measured by a spirometer?
   A. Vc
   B. Erv
   C. Ic
   D. Total lung capacity (tlc)

8. The diagnosis most commonly overlooked in differential diagnosis of an undiagnosed pleural effusion is ?
   A. Pulmonary embolism
   B. Left ventricular failure
   C. Malignancy
   D. Aids

9. Which of the following has the longest half life ?
   A. Tsh
   B. Acth
   C. Gh
   D. Prolactin (prl)

10. Which of the following is false for carotid sinus massage ?
   A. Not performed in patients with carotid arterial bruits
   B. Massage one carotid bulb at a time
   C. Performed by applying firm pressure just underneath the A. Angle of jaw for up to 10 seconds
   D. Patient should be supine with neck extended

Q2. Structured sort notes on (attempt any four out of five) : 4x5=20

1) Acute rheumatic fever
2) Ethical pertaining to malpractice
3) Covid 19 pneumonia
4) Hypertensive emergencies

Q3. Structured long question (attempt any two out of three) 2x10=20

1) Define diabetese mellitus. Discuss types, clinical features and management in brief.
2) Discuss the pathophysiology, clinical features and management of acute st eleveation myocardial infarction (stemi)
3) Discuss the pathophysiology, clinical features and management of copd.

SECTION B

Q1. MCQ 1x10=10

1. Mallory-weiss syndrome can be caused by ?
   A. Vomiting
   B. Retching
   C. Vigorous coughing
   D. All of the above

2. Which of the following urinary feature is diagnostic of glomerulonephritis ?
   A. Hematuria with dysmorphic rbcs
   B. Rbc casts
   C. Protein excretion >500 mg/day
   D. All of the above

3. Most frequent esophageal cause of chest pain is ?
   A. Gastroesophageal reflux
   B. Diffuse esophageal spasm (des)
   C. Achalasia
   D. Esophageal hypersensitivity syndrome

4. Dysthymia best relates to ?
   A. Depressive disorder
   B. Bipolar disorder
   C. Seizure disorder
   D. Schizophrenia

5. Isolated hematuria may be a feature of all except ?
   A. Urogenital neoplasms
   B. Hypercalciuria
   C. Hyperoxaluria
   D. Hyperuricosuria

6. Complications of celiac sprue include all except ?
   A. Malignancy
   B. Intestinal ulceration
   C. Collagenous sprue
   D. Fistulas

7. Rheumatoid factor may be present in all except ?
   A. Subacute bacterial endocarditis
   B. Visceral leishmaniasis
   C. Trypnosomiasis
   D. Malaria

8. Which of the following is not a feature of type 1 (distal) rta ?
   A. Hypokalemia
   B. Hypocitraturia
   C. Hypocalciuria
   D. Rickets or osteomalacia

9. Felty's syndrome consists of all except ?
   A. Chronic rheumatoid arthritis
   B. Splenomegaly
   C. Neutropenia
   D. Lymphadenopathy

10. Jaundice without dark urine indicates which of the following?
    A. Hemolytic anemia
    B. Gilbert's syndrome
    C. Crigler-najjar syndrome
    D. All of the above

Q2. Structured sort notes on (attempt any four out of five) : 4x5=20

1) Bipolar disorder
2) Toxic epidermal necrolysis (ten)
3) Hepatitis c treatment
4) Iga nephropathy
5) Gout

Q3. Structured long question (attempt any two out of three) 2x10=20

1. Discuss the pathophysiology, clinical features and management in brief of acute viral hepatitis
2. Discuss the etiology, pathophysiology, clinical features and management of nephrotic syndrome
3. Discuss in brief the diagnosis criteria for sle, its clinical features and management.

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

GENERAL SURGERY

1. **GOAL** :

The broad goal of the teaching of undergraduate students in surgery is to produce graduates capable of delivering efficient (first contact) surgical care.

2. OBJECTIVES:

b. **Knowledge** : at the end of the course, the student shall be able to :

- Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children.
- Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion.
- Define asepsis, disinfection and sterilization and recommended judicious use of antibiotics.
- Describe common malignancies in the country and their management including prevention.
- Enumerate different types of anesthetic agents; their indications, mode of administration, contraindications and side effects.
  Understands principles of Laparoscopic surgery.

c. **Skills** : at the end of the course, the student should be able to:

- Diagnose common surgical conditions both acute and chronic, in adults and children.
- Plan various lab. test for surgical conditions and interpret the results.
- Identify and manage patients of hemorrhagic, septicaemic and other types of shock.
- Be able to maintain patient air-way and resuscitate a critically injured patient.
- Be able to manage a patient of cardio-respiratory failure.
- Monitor patients of head, chest, spinal and abdominal injuries both in adults and children.
- Provide primary care for a patient of burns.
- Acquire principles of objective surgery, including pre-operative, operative and post-operative care and monitoring.
- Treat open wounds including preventive measures against tetanus and gas- gangrene.
- Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/ tertiary centres.
- Identify congenital anomalies and refer them for appropriate management.

He shall have observed/ assisted/ performed the following :

- Incision and drainage of abscess;
- Debridment and suturing of open wound;
- Venepuncture, Venesection;
- Excision of simple cyst and tumors;
- Biopsy of surface malignancy;
- Catheterisation and nasogastric intubation;
- Circumcision;
- Meatotomy;
- Vasectomy;
- Peritoneal and pleural aspirations;
- Diagnostic proctoscopy;
- Hydrocele operation;
- Endotracheal intubation;
- Tracheostomy
- Chest tube insertion;

(d) **Integration** : the undergraduate teaching in surgery shall be integrated at various stages with different pre and other clinical departments.

Orthopedics

2.1 Objectives

(a) **Knowledge :** The student shall be able to :

- Explain the principles of bone injuries and dislocation;
- Apply suitable methods to detect and manage common infections of bones and joints;
- Identify congenital, skeletal anomalies and their referral for appropriate or rehabilitation;
- Recognize metabolic bone disease as seen in the country;
- Explain etiognesis, manifestations, diagnosis of neoplasm affecting bones.

(b) **Skills :** At the end of the course, the student shall be able to:

- Detectsprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colles' forearm, phalanges etc;
- Use techniques of splinting, plaster, immobilization etc;'
- Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
- Advise aspects of rehabilitation for polio, cerebral palsy and Amputation.

(c) **Integration:** Integration with anatomy, surgery, pathology, radiology, Forensic Medicine is bone.

Anesthesiology

2.2 Objectives

(a) Knowledge: At the end of the training the student should be able to:

- Perform cardio-pulmonary resuscitation with the available resources and transfer the patient to a bigger hospital for advanced life support.
- Set up intravenous infusion, C.V.P. line etc.
- Clear and maintain airway in an unconscious patient.
- Administer oxygen correctly
- Perform simple nerve block
- Exhibit awareness of the principles of administration general and local

3. SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200 + 200= 400 Total**
Practical + Oral	**120+80=200 marks**	
Internal assessment		
1. Theory	**100**	**100 +100 = 200 Total**
2. Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory papers)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for

eligibility for appearing for University Examinations.

8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

Passing in III M.B.B.S. Part-I Examination is not compulsory for entry to III M.B.B.S. Part II training, However passing of III MBBS Part-I is compulsory for being eligible for III MBBS Part-II examination.

3. SYLLABUS:
4. Theory Paper-I

(General Surgery & Orthopaedics)
(Section – A)

Gastrointestinal tract, abdominal wall, Hernias, Endocrine, Skin, Head and Neck Region, Laparoscopic Surgery& AETCOM

(1) Pathogenesis, causes, epidemiology, Clinical Presentation, Investigations, and management of the diseases in the following systems:

- **Oesophagus**: dysphagia, reflux, hiatus hernia, benign and malignant tumours.
- **Stomach and duodenum**: Peptic ulcer- stomach and duodenum, carcinoma of the stomach, gastritis.
- **Small intestine:** Small bowel obstruction, intestinal tuberculosis.
- **Colon and rectum:** Amoebic colitis, Ulcerative colitis, colorectal cancer.
- **Appendix**: Acute appendicitis.
- **Anus:** Haemorrhoids, Pruritus ani, Fissure-in-ano, Anorectal abscesses, Fistula-in-ano, cancer of the anus.
- Peritoneum and intraperitoneal abscesses: peritonitis.
- **Liver**: Hepatic trauma, abscesses, cancer.
- **Biliary tract:** gall stone disease, carcinoma of the gallbladder.
- **Pancreas:** Acute panacreatitis, pancreatic cancer.
- Acute abdomen
- **Hernias** of the abdominal wall: Inguinal hernias, femoral hernia, umbilical and epigastric hernia.
- **Skin:** ulcers and wounds, wound infections, burns, skin infections (boils, carbuncle, abcess), cysts (epidermoid cyst, dermoid),skin tumors(basal cell carcinoma, squamous cell carcinoma, melanoma).
- **Head and Neck region:** congenital anomalies (cleft lip, cleft palate, branchial cyst and fistula, thyroglossal cyst) swellings of parotid and submandibular glands, oral ulcers, leukoplakia, submucous fibrosis, lichen planus, common jaw tumors, squamous
- Carcinoma of oral cavity, pharynx & larynx. Thyroid swellings (adenomatous goitre, Graves' Disease, papillary and follicular thyroid cancer).Swellings of lymph nodes (tuberculosis, lymphoma, metastatic carcinoma)

AETCOM module : 4.1, 4.6 & 4.7

(Section – B)
Orthopaedics

(1) Fracture: Definition, Classification, Principles of Management
(2) Fracture healing, delayed union
(3) Classification & Management of open fractures
(4) Management of fracture calvicle, dislocation shoulder
(5) Fracture shaft humerus
(6) Classificaton of injuries around elbow & management

(7) Supracondylar fracture & dislocation of elbow
(8) Monteggia fracture dislocation & fracture both bones of forearm
(9) Volkamann's ischaemic contracture
(10) Fracture of lower end of radius fracture scaphoid and metacarpals
(11) Fracture pelvis & dislocation of hip
(12) Fracture neck of femur
(13) Fracture shaft of femur & tibia
(14) Internal derangements of knee, injuries of ankle & foot
(15) Amputations
(16) Congenital malformations: ctev torticollis
(17) Congenital malformation: cdh, pseudoarthrosis tibia etc.
(18) Disorders of the hip : coxa vara, perthes diseases
(19) Deformities of the spine

Paper-II
(General Surgery & Anaesthesia, Radiology)
(Section – A)
Breast, Genitourinary system, venous and arterial disorders,
Minor Surgery, Emergency Surgery & AETCOM

1. Breast: mastalgia, ANDI, fibroadenoma, cyst, breast abscess, cancer of the breast.
2. Urology: Diagnostic studies and techniques in the urinary tract, trauma to the urinary tract, urinary calculi, urinary tract infection, prostatic hyperplasia, tumours of the kidney, epididymo-orchitis, hydrocele, tumours of the testicle, carcinoma of the penis.
3. Arteries: Features of limb Ischaemia, noninvasive vascular diagnostic tests, obliterative atheromatous disease, aneurysms, Raynaud's syndrome, and arterial emboli.
4. Veins: varicose veins, deep vein thrombosis, pulmonary embolism.

AETCOM module : 4.1, 4.6 & 4.7

(Section – B)
Allied subjects (Anaesthesia, Radiology, Paediatrics Surgery,
Neurosurgery, Cardiothoracic surgery and Plastic Surgery, Dental sciences)

Anaesthesia

(1) Introduction-Scope of Anesthesiology, Pre-Anaesthetic check up premedication
(2) The pharmacology of Local Anaesthetics (LA), their us and how to perform simple nerve blocks like
- Infiltration anesthesia
- Digital block
- Ankle block
- Pudendal and Para cervical blocks etc.

(3) Regional analgesia- Subarachnoid and Epidural analgesia, Other techniques of regional analgesia and agents used for regional anesthesia
(4) Management of complication of Regional Anesthesia (RA)
(5) The principles of administration of General Anaesthetics (GA)
(6) General anesthesia-Basal Anesthesia triads of anesthesia, inhalation agents
(7) Intravenous Anaesthetic agents
(8) Regional analgesia – Subarachnoid and Epidural analgesia, Other techniques of regional analgesia and agents used
(9) Equipments in Anesthesia and Methods of Oxygen Therapy (Boyle's Apparatus)
(10) Intra venous fluid therapy, intra operative period

(11) Anatomy of upper airway; sites of respiratory obstruction and management of airway in an unconscious patient
(12) Cardio-pulmonary & cerebral resuscitation, Basic Cardia Life Support (BCLS), Advanced Cardiac Life Support (ACLS)
(13) Methods of Pain Relief
(14) Various methods of oxygen therapy and its indications
(15) Ventilators, Artificial Respiratory Support; Cardiac Monitors/ capnograph Defibrillators.
(16) Management of 'Emergency, Casualty, Intensive Care, OT unit by Dept. of Anesthesia.
(17) Principles & Practices-Recent advances changing trends of Anesthesia

Radiology

1. Basics of Radiology and radiological procedures - X-rays, Barium studies, CT, MRI. Pediatrics Surgery, Neurosurgery, Cardiothoracic surgery and Plastic Surgery, Dental sciences
2. Basics of allied subjects

4.1 Practicals

(1) All varieties of clinical surgical cases.
(2) Instruments, X-rays and pathology specimens
(3) Operative Surgery (Basic)
(4) Anaesthetic/Orthpoaedics and Radiological equipments

5. BOOKS:

(1) Bailey and Love's short practice of surgery
(2) Ferguson's operative surgery
(3) Sebastian surgery
(4) Schwartz surgery
(5) Clinical methods - S. Das.
(6) Synopsis of Anesthesia - Alfred Lee
(7) Anesthesia for internees -CMC-Vellore

MBBS403 **Gen.Surg.-I**

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

General Surgery

Paper – I

(Section – A & B)

(General Surgery, Orthopaedics)

(Gastrointestinal tract, abdominal wall, Hernias, Endocrine, Clinical, Laparoscopic Surgery and AETCOM Orthopaedics in Sec. B)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1×10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4×5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2×10= 20

1
2
3

Section B

Q.1 MCQ 1×10=10

a) b) c) d) e) f) g) h) i) j)

Q2 Structured short notes (attempt any four out of five) 4×5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2×10= 20

1
2
3

MBBS403 **Gen. Surge.-I**

Third MBBS Part-II (Main/ Remanded) Examination Month /Year
General Surgery
Paper – I
(Section – A & B)
(General Surgery, Orthopaedics)
(Gastrointestinal tract, abdominal wall, Hernias, Endocrine, Clinical, Laparoscopic Surgery and AETCOM Orthopaedics in Sec. B)
Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**
At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**
The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section-A

Q.1 MCQ 1×10=10

1. Muscle which is primarily responsible for Rectal Prolapse?
   A. Exterior Sphincter
   B. Interior sphincter
   C. Puborectalis
   D. Sacrococcygeal

2. Best Diagnostic aid in blunt trauma Abdomen is:
   A. CT - Scan
   B. Four quadrant aspiration
   C. Peritoneal Large
   D. UltraSonoGraphy

3. Sliding constituent of a large direct hernia is:
   A. Bladder
   B. Sigmoid Colon
   C. Calcium
   D. Apendix

4. Regarding Hashimoto's Thyroiditis which is false
   A. Auto immune Thyroiditis
   B. Plasma cells and lymphocytes infiltration
   C. Hypothyroid state
   D. Hypothyroid State

5. An acute diverticulitis of colon, the sigmoido scopic finding is:
   A. Mucosa is intrammed
   B. Minute diverticulitis seen
   C. Saw toothed appearance
   D. Sigmoidscope can not be passed beyond

6. 15 cm the maximum intra-abdominal CO2 pressure in Laparoscopic cholecystectomy is :-
   A. 14
   B. 10
   C. 25
   D. 20

7. Commonest type of hernia is:-
   A. Femoral
   B. Inguinal
   C. Ventral
   D. Epigastric

8. Secondary deposits from Prostate carcinoma is commonest in:-
   A. Bone
   B. Kidney
   C. Liver
   D. Brain

9. Commonest type of mesentric cyst is:-
   A. Enterogenous
   B. Chylolymphatic
   C. Dermoid
   D. Urogenital remnant

10. About achalasia cardia, all are correct except:-
   A. Mostly in women
   B. Dilated esophagus narrowing to a point
   C. Heller's operation treatment of choice
   D. Not Pre malignant condition

Q. 2. Structured Short Notes (Attempt any four out of five) 4×5=20

1. Porcelain gallbladder
2. Annular pancreas
3. Zollinger – Ellison syndrome
4. Identify the conflict of interests in patient care
5. Murphy's sign

Q. 3. Structured Long questions (Attempt any two out of three) 2×10=20

1. Discuss in brief, clinical presentation and management of congenital hypertrophic pyloric stenosis.
2. Discuss assessment and management of obstructive Jaundice in a male of 60 years
3. Discuss clinical presentation, investigation and management of obstructive inguinal hernia.

SECTION B

Q.1 MCQ 1×10 =10

1. Which of following vessels is most commonly injured in supracondylar fractures of the humerus?
   A. Axillary artery
   B. Radial artery
   C. Brachial artery
   D. Ulnar artery

2. Acute osteomyelitis of long bones commonly affects the:
   A. Epiphysis
   B. Metaphysis
   C. Diaphysis
   D. Articular surface

3. Fracture of the shaft of the ulna with dislocation of a proximal radio-ulnar joint:
   A. Galeazzi Fracture
   B. Smith's Fracture
   C. Monteggia Fracture
   D. Rolando's Fracture

4. Most common type of Supracondylar Fracture is:
   A. Extention type
   B. Flexion type
   C. Abduction type
   D. Adduction type

5. Multiple bone Fractures in a new born is seen in:
   A. Scurvy
   B. Syphilis
   C. Osteogenesis Imperfecta
   D. 4.Morquio's Disease

6. Duga's test is helpful in:
   A. Dislocation of Hip
   B. Scaphoid fracture
   C. Fracture neck of femur
   D. Anterior dislocation of shoulder

7. Sprengle's deformity of scapula is:
   A. Undescended/ Elevated scapula
   B. Undescended neck of scapula
   C. Exostosis scapula
   D. None of above

8. Spina Ventosa results from
   A. Sarcoidosis
   B. Tuberculosis
   C. Histiocytosis X syndrome
   D. Both A + B but not C

9. Onion peel appearance in X-ray suggests:
   A. Osteosarcoma
   B. Ewing's sarcoma
   C. Osteoclastoma
   D. Chondrosarcoma

10. Sudek's atrophy is associated with
   A. Osteoporosis
   B. Osteophyte formation
   C. Osteopenia
   D. Osteochondritis

Q2 . Structured short notes (attempt any four out of five) 4×5 = 20

1. Colle's Fracture and Smith Fracture
2. The clinical features, investigations and management of acute osteomyelitis (Brief)
3. Management of Open Fractures
4. Osteomalacia
5. Stages of Fracture healing

Q3 Structured Long Question (attempt any two out of three) 2×10= 20

1. Osteosarcoma
2. Clinical features , Treatment of CTEV
3. Classification, clinical features, Investigation & Management of Pott's Spine.

MBBS404 **Gen.Surg.-II**

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

General Surgery

Paper-II

(Section – A & B)

(General Surgery including Allied Specialties)

(Breast, Genitourinary system, venous and arterial disorders, Family welfare, Minor Surgery, and Emergency Surgery, AETCOM

Basic Sciences and allied subjects (Anaesthesia, Radiology, Pediatrics Surgery, Neurosurgery, Cardiothoracic surgery and Plastic Surgery, Dental sciences and Miscellaneous)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1×10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4×5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2×10=20

1
2
3

Section B

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

General Surgery

Paper-II

(Section – A & B)

(General Surgery including Allied Specialties)

(Breast, Genitourinary system, venous and arterial disorders, Family welfare, Minor Surgery, and Emergency Surgery, AETCOM

Basic Sciences and allied subjects (Anaesthesia, Radiology, Pediatrics Surgery, Neurosurgery, Cardiothoracic surgery and Plastic Surgery, Dental sciences and Miscellaneous)

Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q.1 MCQ 1×10=10

1. Triple assessment for Ca Breast Includes:
   A. History, Clinical examination and Mammogram
   B. History, Clinical examination and FNAC
   C. USG, Mammogram and FNAC
   D. Clinical examination, Mammogram and FNAC

2. The commonest bladder stone is?
   A. Triple Phosphate
   B. Xanthine
   C. Uric acid
   D. cysteine

3. Not a feature of acute arterial occlusion:
   A. Cyanosis
   B. Pollen
   C. Paralysis
   D. Paraesthesia

4. Brodies trendelenburg test possible in:-
   A. Saphenofemoral incompetence
   B. Perforator competence above knee
   C. Deep vein incompetence
   D. Perforator competence below knee

5. Post operative advice in Vasectomy excepts:
   A. Bed rest
   B. Avoid unprotected sexual comfort for 3 months
   C. Scrotal support
   D. Steven examination after 3 months

6. In a sutures surgical wound, the process of epithelialization is completed within:-
   A. 24 Hrs
   B. 48 hrs
   C. 72 hrs
   D. 96 hrs

7. Trauma to spleen in a stable patient is best diagnosed by:-
   A. x- Ray abdomen
   B. USG
   C. CT Scan
   D. DPL

8. In treatment of hand surgery, the greatest priority is:-
   A. Repair of tendon
   B. Repair of Nerve
   C. Repair of Skin cover
   D. Vein

9. A patient in emergency with worst headache in his life. What is the next stape ?
   A. CT Brain
   B. MRI Brain
   C. Lumber Puncture
   D. Observation and Analgesic

10. In Bari Operation:
   A. Uretric retransplant
   B. Lower ureteric reconstruction
   C. Diversion
   D. Bowel interposition

Q.2 Structured short notes (Attempt ant four out of five) 4×5=20

1. Staging carcinoma breast
2. Burger's Disease
3. Paraphymosis
4. Communication regarding therapeutic options
5. Bladder outlet obstruction

Q. 3. Structured Long questions (Attempt any two out of three) 2×10=20

1. Describe DVT, its Pathophysology and Management
2. Describe Investigation and Management of Bladder outlet obstruction
3. Describe Thyroglossal Cyst

Section B

Q1. MCQ 1×10=10

1. Which of the following is not a wound closure technique?
   A. Parotid Thickness skin graft
   B. Composite graft
   C. Vascular Graft
   D. Musculo-cutaneous Graft

2. Middle meningeal vessels damage results in?
   A. SDH
   B. SAH
   C. EDH
   D. Intracerebral hemorrhage

3. An elective surgery is to be done a patient taking heavy dose of aspirin. Management consist of:
   A. Proceed with surgery
   B. Stop Aspirin for 7 days than do surgery
   C. Preoperative Platelet transfusion
   D. Intraoperative Platelet transfusion

4. Orchidopexy is done in case of undescended testis at the age?
   A. Infancy
   B. 1-2 Years
   C. 5 Years
   D. Puberty

5. Tripod fracture is seen is:
   A. Zygomatic bone
   B. temporomandibular joint
   C. Maxilla
   D. Frontal bone

6. Most common coagulopathy noted in surgical patients?
   A. Thrombocytopenia
   B. Afibrinogenemia
   C. Fibrinolysis
   D. Factor VIII deficiency

7. Hypothermia is used in:
   A. Cardiac Surgery
   B. Neonatal
   C. Ischemia Cardiac arrhythmia
   D. GI Surgery

8. All of the following tumors may be malignant except:
   A. Glioma
   B. Astrocytoma
   C. Hemangioblastoma
   D. Ependymoma

9. Air Embolism in Neurosurgery maximum which position?
   A. Sitting
   B. Supine
   C. Rendelenberg
   D. Left Lateral

10. Commonest artery for cannulation is:
   A. Radial
   B. Ulnar
   C. Brachia
   D. Cubital

Q.2 Structured Short Notes (Attempt any four out of five) $4 \times 5 = 20$

1. Barium Studies
2. Burr Hole
3. Hiatal Hernia
4. Epidural Anaesthesia
5. Epulis

Q. 3. Structured Long questions (Attempt any two out of three) $2 \times 10 = 20$

1. Describe Briefly PVD
2. Describe Investigation and Management of Bladder outlet obstruction
3. Describe Management of Emphysema chest

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

PAEDIATRICS

Goal

The broad goal of the teaching of undergraduate students in Paediatrics is to acquire knowledge and appropriate skills for optimally dealing with major health problems of childrenand to ensure their optimal growth and development.

Objectives:

Knowledge:
At the end of the course, the student shall be able to:

0.1.1) Describe the normal growth and development during foetal life, neonatal period, childhood and adolescene and outline deviations thereof;
0.1.2) Describe the common pediatric disorders and emergencies in terms of epidemiology, etiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;
0.1.3) State age related requirements of calories, nutrients, fluids, drugs etc., in health and disease;
0.1.4) Describe preventive strategies for common infectious disorders, malnutrition, geneticand metabolic disorders, poisoning, accidents and child abuse;
0.1.5) Outline national programmes relating to child health including immunization programmes;

Skills:
At the end of the course, the student shall be able to:

- Take a detailed pediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bedside investigative procedures, interpret common laboratory investigations and plan and institute therapy;
- Take anthropometric measurements, resuscitate newborn infants with bag and maskat birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, start an intravenous line and provide nasogastric feeding, observe venesection and intraosseous infusion if possible.
- Conduct diagnostic procedures such as lumbar puncture, bone marrow aspiration, pleural tap and ascitic tap and observe kidney biopsy.
- Distinguish between normal newborn babies and those requiring special care and institute early care to all new born babies including care of preterm and low birth weight babies, provide correct guidance and counseling in breast feeding.
- Provide ambulatory care to all sick children, identify indications for specialized / inpatient care and ensure timely referral of those who require hospitalization.

Integration:

The training in pediatrics should be done in an integrated manner with other disciplines, such as Anatomy, Physiology, Forensic Medicine, Community Medicine, Obstetrics and Physical medicine and Rehabilitation, to prepare the student to deliver preventive, promotive, curative and rehabilitative services for care of children both in the community and at hospital as part of a team.

3. SCHEME OF EXAMINATION

UNIVERSITY EXAMINATION		
THEORY	100 MARKS	100+100= 200 TOTAL
PRACTICAL + ORAL	100 MARKS	
INTERNAL ASSESSMENT		
THEORY	100	100+100=200 TOTAL
PRACTICAL	100	

Theory- One paper of 100 marks (One Multipal choice Questions of 10 marks in each section of the theory paper)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.
2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

1. SYLLABUS

Paper
(Section-A)

1. Normal growth and development of children. Adolescents & its disorders
2. Fluid and electrolyte disturbances and common pediatrics
3. Nutrition & micronutrients in health and disease , breast feeding
4. Immunity & Immunization , universal & IAP Immunization Programme
2. Neonatology Care of newborn and common disorder.
3. Infections and infestations
4. Primary complex, Pulmonary and extra pulmonary Tuberculosis
5. Integrated management of neonatal & childhood illness
6. Rights of children
7. Common poisionings, injuries and accidents and oxygen
8. Assessment of a seriously ill child, paediatrics basic & advanced life support
9. Common Rheumatological disorders
10. Genetics and disease, common inborn errors of metabolism
11. Neonatology: Systematic instructions in growth and development, nutritional needs of a child, immunization schedules and management of common disease of infancy and childhood including scope for social paediatrics and counselling.
12. National health Programmes

AETCOM 4.1, 4.4 & 4.5

(Section B)

1. Respiratory system
2. Cardiovascular system disorders
3. Central nervous system, Neuromuscular system
4. Genito urinary system disorders
5. Common endocrine & metabolic disorders
6. Common skin, dye, ear, nose & throat disorders in children
7. Common paediatric procedures
8. Disorders of gastrointestional and Liver
9. Hematological Disorders in Children
10. Drug therapy
11. Common childhood malignancies

1.2 Practical

1. 1-2 short or long cases of systemic illness
2. 5-6 stations for viva including vaccines, neonatal resuscitation , equipments instruments drugs, radiological exam and nutrition and others.

5. Books:

1. Nelson Textbook of pediatris- Behrman
2. Forfar Textbook of pediatrics-- Campbell
3. Rudolph's Pediatrics- Rudolph
4. New born Medicine- Gordon Avery
5. Textbook of pediatrics- Udani
6. Manual of Neonatal Care – Cloherty
7. Mcleod's clinical methods.
8. IAP texbook of pediatrics
9. Harriet lane handbook- Barone
10. Ghai Essantial Pediatrics
11. Clincal examination – Maharban Singh

MBBS405 **Paed.**

Third MBBS Part II (Main/ Remanded) Examination Month / Year
Paediatrics
(Section – A & B)
(General Paediatrics, Systemic Paediatrics and Neonatology & AETCOM)
Time: 3 hrs

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book
(Any Question having parts should be answered as whole at one place only)
Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part-II (Main / Remanded) Examination
Paediatrics
(Section-A& B)
(General Pediatrics, Systemic Paediatrics and Neonatology & AETCOM)
Time:3 hrs
Maximum Marks:100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

(Any Question having parts should be answered as whole at one place only)

Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section A

Q.1 MCQ **1x10= 10**

1. Blood cholesterol is increased in
   A. Acute nephritis
   B. Nephrotic syndrome
   C. Mumps
   D. None of the above

2. Head circumference at birth
   A. 32 cm
   B. 35 cm
   C. 45 cm
   D. 50 cm

3. Caloric requirement of one year old child is
   A. 400 Calories
   B. 1500 Calories
   C. 1000 Calories
   D. 2000 Calories

4. The finding(s) in a case of Kwashiorkor may include
   A. Diarrhoea
   B. Depigmented hair
   C. Fatty liver & deficiency of intestinal enzymes
   D. All of th above

5. Early sign of rickets at six months is
   A. Craniotabes
   B. Double malleoli
   C. Rickety rosary
   D. Bent tibia

6. Petechial haemorrhage seen in the gums is due to deficiency of
   A. Vitamin'K'
   B. Ascorbic acid
   C. Cholecalciferol
   D. Nicotinic and

7. Koplik's spots are diagnostic of
   A. German measles
   B. Measles
   C. Chickenpox
   D. Mumps

8. Boy presenting with fever, confusion, leucopenia and bradycardia- the most likely diagnosis is
   A. Meningitis
   B. Cerebral abscess
   C. Typhoid
   D. Ricketssiae

9. A 3 year old girl has 2 weeks' fever and a positive PPD. X-ray of the chest shows a patch of Pneumonitis on the right side with an enlarged mediastinal shadow. The likely diagnosis is
   A. Lobar pneumonia
   B. Empyema
   C. Primary complex
   D. Staphylococcal pneumonia

10. Sita aged 10 years. Has had nocturnal cough and low-grade fever for 2 months, Her PPD is negative. On auscultation; she has bilaterl rhonchi. She most probably has
   A. Miliary tuberculosis
   B. Tropical pulmonary eosinophilia
   C. Bronchial asthma
   D. Bronchopneumonia

Q.2 Structured short notes (attempt any four out of five) **4x5 =20**

1) X-ray findings of Rickets.
2) Febrile Seizure
3) Ethical issues in patient care when patient is a child.
4) Difference between Kwashiorkor & marasmus
5) Newer Diagnostic criteria of Rheumatic fever

Q.3 Structured long question (attempt any two out of three) **10x2 =20**

1) Describe differential diagnosis, Lab Investigation and management of Hematuria with swelling face in 3 yr. Old child. (3+7)
2) Enumerate causes of lower moter neuron palsy. Write difference between upper moter neuron and lower moter neuron disease. (4+6)
3) Discuss in brief causes of wheeze in a 5 year old child. Plan treatment of acute attack of bronchial asthma in a 5 years old child. (3+7)

Section B

Q.1 MCQ **1x10 = 10**

1. Length of a neonate
   A. 40 cm
   B. 50cm
   C. 70 cm
   D. 100 cm

2. Which of the following is not a cause of delayed closure of fontanelle in 12 months old child?
   A. Rickets
   B. Craniosynostosis
   C. Hydrocephalus
   D. Myxoedema

3. Commonest cause of convulsions in newborn is
   A. Meningitis
   B. Septicemia
   C. Birth trauma
   D. Birth asphyxia

4. A 14- year old girl with Hb less than 8gm% splenomegaly and a characteristic epiphyseal line on X-ray of hand, is suffering from
   A. Aplastic anemia
   B. Agranulocytosis
   C. Acute leukaemia
   D. Malaria

5. A 5- year old with acute onset of purpuric rash on buttocks and thigh, acute abdomen, haematuria and arthritis is suffering from
   A. Anaphylactoid Purpura
   B. Idiopathic thromobopenic purpura
   C. Meningoencephalitis
   D. Viral exanthemata

6. A 4 year child had fever, took salicylaters but developed abnormal behaviour. Phenobarbitone was given , he developed red urine Diagnosis is
   A. Purpura
   B. G-6-P-D deficiency
   C. Acute intermittent porphyria
   D. Thrombocytopenia

7. A 6 month old child with pansystolic murmur on II / IV left Intercostal space which disappeared after 4 months without any treatment . Diagnosis is:
   A. Atrial Septal defact
   B. Ventricular Septal defect
   C. Functional
   D. Pulmonary stenosis

8. 8 Year old Ramesh has had high fever for 2 weeks, with a wet cough for 3 days. He had previous been very well. Now he is toxic with dyspnoea and clubbing of the fingers. The likely diagnosis is
   A. Subacute bacterial endocarditis
   B. Bronchiectasis
   C. Lung abscess
   D. Cirrhosis

9. The cerebrospinal fluid in an untreated 2 year old girl with 4 days fever and vomiting shows clear fluid under tension, with 150 cells, 50 mg% protein and 40mg% sugar. No organisms are seen on the direct smear. The diagnosis is
   A. Pneumococcal meningitis
   B. E. Coli meningitis
   C. H. Influenzae meningitis
   D. Viral encephalitis

10. A 4 year old child with height 75 cm and weight 14kg . He has mormal proportions of development. He is best diagnosed by
   A. T levels
   B. Growth hormone levels
   C. Thyrotropic releasing hormone assessment
   D. ACTH profile

Q.2 Structured short notes (attempt any four out of five) **4x5 = 20**

1) Management of dengue hemorrhagic fever
2) Stem cell transplantation
3) Management of Preterm baby
4) Difference between Intra & exterahepatic portal hypertension
5) Describe the clinical feature of Down syndrome

Q.3 Structured long question (attempt any 2 out of three) **2x10 = 20**

1) Define & classify shock in pediatrics, management of shock in emergency room.
2) Case: Fatima is 18 month old. She weights 11.5kg. Her Temperature. is 37.5C . The physician asked "What are the child's problem. The mothr said " Fatima has been coughing for 6 days , and she is having trouble breathing ". This is the initial visit for this illness. How will you assess for fever & clssify as per IMNCI ?
3) Describe the clinical features, investigations & treatment of acute Idiopathic thrombocytopenic purpura .

Instructions for framing questions

Q1. MCQs

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2. Structured short notes:

The questions should be task oriented rather than write a short note on xxx.
Include:-
Reasoning Questions
Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

OBSTETRICS & GYNAECOLOGY

1. GOAL:

The broad goal of the teaching of undergraduate students in Obstetrics and Gynaecology is that he/she should acquire understanding of anatomy, physiology and pathophysiology of the reproductive system and gain the ability to optimally manage common conditions affecting it.

2. OBJECTIVES: At the end of the course, the student should be able to:

(a) Knowledge:

(i) Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it.
(ii) Detect normal pregnancy, labour puerperium and manage the problems he/she is likely to encounter therein.
(iii) List the leading causes of maternal and perinatal morbidity and mortality.
(iv) Identify the use, abuse and side effects of drugs in pregnancy, premenopausal and post-menopausal periods.
(v) Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilisation and their complications.
(vi) Describe the national programme of maternal and child health and family welfare and their implementation at various levels.
(vii) Identify common gynaecological diseases and describe principles of their management.
(viii) State the indications, techniques and complications of surgeries like Caesarian section, laparotomy, abdominal and vaginal hysterectomy, Fothergill's operation and vacuum aspiration for M.T.P.

(b) Skills: At the end of the course, the student should be able to:

(i) Examine a pregnant woman; recognise high risk pregnancies and make appropriate referrals.
(ii) Conduct a normal delivery, recognise complications and provide postnatal care.
(iii) Resuscitate the new born and recognise congenital anomalies.
(iv) Advise a couple on the use of various available contraceptive devices and assist in insertion in and removal of intra-uterine contraceptive devices.
(v) Perform pelvic examination, diagnose and manage common gynaecological problems including early detection of genital malignancies.
(vi) Make a vaginal cytological smear, perform a post coital test and wet vaginal smear examination for Trichomonas vaginalis, moniliasis and gram stain for gonorrhoea.
(vii) Interpretation of data of investigations like biochemical, histopathological, radiological, ultrasound etc.

(c) Integration: The student should be able to integrate clinical skills with other disciplines and bring about coordinations of family welfare programmes for the national goal of population control.

3. SCHEME OF EXAMINATION:

Theory	200 Marks	200 + 200= 400 Total
Practical + Oral	120+80=200 marks	
Internal assessment		
Theory	100	100 100 +100 = 200 Total
2. Practical	100	

Theory-Two papers of 100 marks each (One Multiple choice Question of 10 marks in each section of both the theory papers)

Notes:

1. Each paper will consist of two Sections A & B (50 marks each) comprising of three questions each.

2. The question no1 from each section shall contain 10 multiple choice question of one mark each.
3. The question no 2 from each section shall contain structured short notes (attempt any 4 out of 5) 5 marks each
4. The question no 3 from each section shall contain structured long questions (attempt any 2 out of 3) 10 marks each
5. Each section shall be answered in separate answer book.
6. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
7. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
8. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

Passing in III M.B.B.S. Part-I Examination is not compulsory for entry to III M.B.B.S. Part II training, However passing of III MBBS Part-I is compulsory for being eligible for III MBBS Part-II examination.

4. SYLLABUS:
4.1 Theory
Paper - I (Obstetrics)
(Section - A)

(1) Anatomy Of Female Reproductive Organs
(2) Fundamentals Of Reproduction
(3) The Placenta And Fetal Membranes
(4) The Fetus
(5) Physiological Changes During Pregnancy
(6) Endocrinology In Relation To Reproduction
(7) Diagnosis Of Pregnancy
(8) The Fetus- In-Uterus
(9) Fetal Skull And Maternal Pelvis
(10) Antenatal Care, Pre-Conception Counseling And Care
(11) Antenatal Assessment Of Fetal Well Being
(12) Normal Labour
(13) Normal Puerperium
(14) Contracted Pelvis
(15) Abnormal Uterine Action
(16) Malposition, Malpresentation And Cord Prolapse
(17) Prolonged Labour, Obstructed Labour, Dystocia Caused By Fetal Anomalies
(18) Complications Of The Third Stage Of Labour
(19) Injuries To The Birth Canal
(20) Abnormalities Of The Puerperium

AETCOM 4.1, 4.2 & 4.3

(Section - B)
(1) Haemorrhage In Early Pregnancy
(2) Multiple Pregnancy, Hydramnios & Abnormalities Of Placenta & Cord
(3) Hypertensive Disorders In Pregnancy
(4) Antepartum Haemorrhage
(5) Medical And Surgical Illness Complicating Pregnancy
(6) Gynaecological Disorders In Pregnancy
(7) Preterm Labour, Preterm Rupture Of The Membranes, Postmaturity, Intrauterine Fetal Death
(8) Special Cases : Pregnancy with prior caesarean delivery, Pregnancy in a Rh-negative woman
(9) The Term New born Infant

(10) Low Birth Weight Baby
(11) Diseases Of The Fetus And The Newborn
(12) Pharmacotherapeutics In Obstetrics
(13) Induction Of Labour
(14) Population Dynamics And Control Of Conception
(15) Operative Obstetrics
(16) Safe Motherhood, Epidemiology Of Obstetrics
(17) Special Topics In Obstetrics : Intrapartum fetal monitoring, Shock in obstetrics, High Risk Pregnancy, Blood coagulation disorders in obstetrics
(18) Current Topics In Obstetrics
(19) Imaging In Obstetrics, Amniocentesis And Guides To Clinical Tests
(20) Practical Obstetrics : Clinical thermometer, Processing of instruments, Obstetric instruments
(21) Vomiting In Pregnancy

Paper – II (Gynaecological)
(Section - A)
(1) Anatomy Of The Female Pelvic Organs
(2) Blood Vessels, Lymphatic Drainage & Innervations Of Pelvic Organs
(3) Development Of Genital Organs & Gonads
(4) Congenital Malformations Of Female Genital Organs
(5) Puberty - Normal And Abnormal
(6) Menopause
(7) Neuroendocrinology In Relation To Reproduction
(8) Menstruation
(9) History, Examination, Diagnostic Procedures Of A Gynecological Patient
(10) Pelvic Infection
(11) Sexually Transmitted Infections
(12) Infections Of The Individual Pelvic Organs
(13) Dysmenorrhoea & Other Disorders Of Menstrual Cycles
(14) Abnormal Menstrual Bleeding
(15) Displacement Of The Uterus
(16) Infertility
(17) Endometriosis And Admenomyosis
(18) Genital Tract Injuries
(19) Intersex
(20) Amenorrhea
(21) Special Topics : Abnormal vaginal discharge, Pruritus vulvae, Pelvic pain, Low backache, Breast in gynaecology, Breast Carcinoma, Psychosexual problems, Vaginismus, Dyspareunia, Abdomino-pelvic lump, Hirsutism, Galactorrhoea

AETCOM 4.1, 4.2 & 4.3

(Section - B)
(1) Contraception
(2) Benign Lesions of the Vulva And Vagina
(3) Benign Lesions of the Cervix
(4) Benign Lesions of the Uterus
(5) Benign Lesions of the Ovary
(6) Premalignant Lesions
(7) Genital Malignancy
(8) Radiotherapy, Chemotherapy, Immunotherapy & Genetherapy In Gynaecology
(9) Urinary Problems in Gynaecology
(10) Genital Fistulae
(11) Endoscopic Surgery in Gynaecology

(12) Operative Gynaecology
(13) Hormones in Gynaecological Practice
(14) Practical Gynaecology: Sutures, Specimens, Imaging studies (Plates), Instuments, Skiagraphy, Ultrasonography, Compted Tomography (CT) & Magentic Resonance Imaging (MRI)

4.2 Practical : At the end of the course, the learner should be able to :

(1) Manage normal pregnancy, labor & post partum period, with adequate knowledge of anatomy, physiology, pathophysiology of reproductive system and the physiological changes that occur during pregnancy.
(2) Diagnose high-risk pregnancy, abnormal labour and refer the patient at appropriate time.
(3) Appreciate socio-culture, economic, demographic factors that influence the practice of Obstetrics and Gynaecology.
(4) Give first aid for obstetrics emergencies and refer appropriately.
(5) Counsel & promote use of contraception.
(6) Sensitize about national programmes of maternal and child health and family welfare.
(7) Conduct cervical & breast cancer screening.
(8) Diagnose and treat common gynaecological problems like leucorrhoea, menstrual irregularities, infections, displacements, and neoplasms.
(9) Understand the implications of medicolegal and ethical issue concerning the speciality.
(10) Acquire skills to perform certain therapeutic operative procedure.
(11) Apply the principle of rational management keeping in mind the best evidence in favor of or against a remedial measure. Skills to be developed by the end of the course
(12) Proper history taking and examination of the patient and arriving at diagnosis, Planning for investigation and treatment. Writing a good case sheet and discharge summary. Diagnosing situations where senior's help is required, referral or inter disciplinary help is needed. Community orientation and to participate in community health promotion and disease prevention programmes.
(13) Clinical examination skills : General examination: To note Anemia, Edema, BP etc. Obstetric examination (Palpation of Abdomen, Grips, FH location – using fetoscope and stethoscope Pelvic examination: (Speculum Examination and Bimanual examination). Rectal examination Examination of other systems: CVS, Respiratory System and others.
(14) Communication Skills : Counseling the patient, informed consent inter personal communication skills Counselling of HIV patient.
(15) Obstetric skills : Diagnose pregnancy, assess period of gestation, to diagnose onset of labour, monitor labour progress, able to plot partogram, able to diagnose abnormalities and decide about the referral of patient. To conduct normal delivery, to make and suture episiotomy. Able to provide first aid or obstetric emergencies. Recognition of post partum complications. Counselling and supervising of breast feeding. Evacuation of incomplete abortion. Resuscitation of newborn.
(16) Forceps and vaccum application Assisted breech delivery/ breech extraction External/internal version.
(17) Gynaecological skills :
    a. Pap smear and visual inspection with Lugol's iodine (VILI), visual inspection with acetic acid Visualization (VIA)
    b. D & C
    c. Cervical Biopsy
    d. Catheterization and management of indwelling catheter
    e. Vaginal wet smear.
(18) Family Welfare skills
    a. Copper T insertion, removal and follow up
    b. Tubal ligation-Post partum
    c. Termination of pregnancy: Suction evacuation, MVA

4.3 Teaching / Learning Methods for Practical:

1. Lectures, Small group discussions, Seminars, Case studies/ Simulations, Role play, Problem Based Learning, Videography, Integrated teachings and e-modules.
2. Learning Resource Material

3. Textbooks, Journals, Internet/ Web Resources, CDs, Video, Dummy pelvis, Mannequins, Instruments Specimens, X-rays, USG films etc.
4. Integrated Teaching: (Lectures with other departments)

5. BOOKS:

Core Books

(1) Holland and Brews Manual of Obst.
(2) Text book of Obstetrics by Dutta DC
(3) Practical guide to High Risk Pregnancy and delivery-Arias Fernando
(4) Shaw's Text book of Gynaecology
(5) Jeffcoate's Principles of Gynaecology

Reference Books

(1) Williams Obstetrics
(2) MunroKerr's Operative Obstetrics
(3) Care of the Newborn 6th ed. Meharban Singh
(4) USG in Obst. & Gynaecology by Callens
(5) Medicolegal aspects in Obst. & Gynae-Mukherjee GG
(6) Clinical Obstetrics – by Mudaliar
(7) Novak's Gynaecology
(8) Bonney's Gyn Surgery 10th ed.
(9) Shaws Operative Gynaecology
(10) Text book of Gynae contraception 14th ed. C.S.Dawn
(11) Infertility – R Rajan
(12) Gynae & Obst. Procedures –Parulikar S.V.
(13) Surgery in infertility & Gynaecology – Jain Nutan
(14) Principles & Practice of Colposcopy – Balya B.S.
(15) Infertility Manual – Rao Kamini A.

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

Obst. & Gynaecology

Paper-I

(Section A & B)

Basics of Reproduction, Maternal Pelvis, Fetus & Placenta, Antenatal Care with Normal & Abnormal Labour, Normal & Abnormal Puerperium, Medical Disorders and other abnormalities of pregnancy, and AETCOM

Drug and imaging in pregnancy, fetus and new born, operative obstetrics, Safe Motherhood, Epidemiology of Obstetrics

Time: Three hrs.

Maximum Marks: 100

Use separate answer-books for each section.

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Section A

Q.1 MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any 4 out of five) 4x5=20

1

2

3

4

5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1

2

3

Section B

Q.1 MCQ 1x10 =10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1

2

3

4

5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1

2

3

MBBS406 **Obst. & Gynae. I**

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

Obst. & Gynaecology

Paper-I

(Section A & B)

Basics of Reproduction, Maternal Pelvis, Fetus & Placenta, Antenatal Care with Normal & Abnormal Labour, Normal & Abnormal Puerperium, Medical Disorders and other abnormalities of pregnancy, and AETCOM

Drug and imaging in pregnancy, fetus and new born, operative obstetrics, Safe Motherhood, Epidemiology of Obstetrics

Time: Three hrs.

Maximum Marks: 100

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

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Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section – A

Q.1. MCQ **1×10=10**

1. The smallest diameter of the true pelvis:
   A. Interspinous diameter
   B. Diagonal conjugate
   C. True conjugate
   D. intertuberous diameter

2. Dystocia dystrophia syndrome is seen in:
   A. Android pelvis
   B. Platypelloid pelvis
   C. Anthropoid
   D. Gynaecoid pelvis

3. In a young female of reproductive age with regulation menstrual cycles of 28 days. Ovulation occur around 14th day of periods. When is the first polar body extrude?
   A. 24 hours prior to ovulation
   B. Accompanied by ovulation
   C. 48 hrs. after the ovulation
   D. At the time of fertilization

4. The uterine blood flow at term:
   A. 50 ml/min
   B. 100 – 150 ml/min
   C. 350 – 375 ml/min
   D. 500 – 750 ml/min

5. The pH of amniotic fluid:
   A. 6.8 to 6.9
   B. 7.1 to 7.3
   C. 7.4 to 7.6
   D. 6.7 to 6.8

6. Oligohydramnios is seen in:
   A. Renal oxygen's
   B. Oesophageal atresia
   C. Exomphalos
   D. Neural tube defect

7. Hegar's sign of pregnancy is:
   A. Uterine contraction
   B. Bluish discoloration of vagina
   C. softening of isthmies
   D. Quickening

8. Ritzen maneuver is done in:
   A. Shoulder dystocia
   B. For delivery of head in breech delivery
   C. For delivery of legs in breech
   D. For delivery of head in normal labor

9. Common route of spread of puerperal sepsis:
   A. Lymphotic
   B. Direct invasion
   C. Skin Lesions
   D. Hematogenesis

10. A 28 year old female with a H/O of 8 weeks. Amenorrhoea complains of vaginal bleeding and lower abdominal pain. On USG examination there is gestational sac with absent fetal parts. The diagnosis is:
   A. Ectopic pregnancy
   B. Incarcerated abortion
   C. Threatened abortion
   D. Corpus luteum cyst

Q.2. Structured short notes (attempt any four out of five) **4×5 = 20**

1. Active management of 3rd stage of labour.
2. Management of threatened abortion
3. medico-legal issues pertaining to abortion
4. Abnormalities of placenta
5. Complications of eclampsia

Q.3. Structured long question (attempt any two out of three) 2×10=20

1. Define APH. How will you manage antepartum hemorrhage at 32 weeks of pregnancy?
2. Describe the physiological changes in cardiovascular system during pregnancy.
3. Define pre-eclampsia. How will you manage a primigravida with 36 weeks of pregnancy with eclampsia.

Section – B

Q.1. MCQ 1×10=10

1. Most common cause of maternal anaemia in pregnancy:
   A. Acute blood loss
   B. Iron deficiency state
   C. GI blood loss
   D. Hemolytic anemia

2. Maximum cardiac output in pregnancy is:
   A. 20 weeks
   B. 24 weeks
   C. 26 weeks
   D. 28 weeks

3. Tubectomy in a heart patient who has recently delivered is best done after:
   A. 48 hrs.
   B. 1 week
   C. 2 wks
   D. Immediately

4. A lady with 12 wks of pregnancy having fasting blood glucose 170 mg/dl., the antidiabetic drug of choice is:
   A. Insulin
   B. Metformin
   C. Glipizide
   D. Glibendamide

5. All of the following are predictive test for PIH except:
   A. Rolling over test
   B. Serum uric acid
   C. in weight > 2 kg. in month
   D. Shake test

6. Which is not the complication of Rh incompatibility:
   A. APH
   B. PPH
   C. Oligohydramnios
   D. PIH

7. Intrahepatic cholestasis treatment in pregnancy is:
   A. Cholestyramine
   B. Ursodiol
   C. Steroids
   D. Antihistamines

8. During pregnancy baby can be affected in utero in all except:
   A. Candida
   B. Syphills
   C. Toxoplasmosis
   D. Polio

9. Which female genital malignancy is most common in pregnancy?
   A. Ovarian cancer
   B. Vaginal cancer
   C. Endometrial cancer
   D. Cervical cancer

10. ECV is contraindicated in:
   A. Primi
   B. Flexed breech
   C. Anemia
   D. PIH

Q.2. Structured short notes (attempt any four out of five) **4×5=20**

1. Apgar score
2. Immunization during pregnancy
3. Hyperemesis gravidarum
4. Ventous delivery
5. Down syndrome

Q.3. Structured long question (attempt any two out of three) **2×10=20**

1. Discuss the management of HIV positive women in pregnancy and labour.
2. Diagnose and management of gestational diabetes mellitus.
3. Define intrauterine growth restriction. How will you diagnose and manage IUGR.

MBBS407 **Obst. & Gynae. II**

Third MBBS Part II (Main/ Remanded) Examination Month / Year

Obst. & Gynaecology

Paper-II

(Sec A & B)

Anatomy including embryology of female pelvic organs, Normal and Abnormal Puberty, Menstruation and Menopause, and AETCOM
Gynae Examination, Infections and Infertility, Contraception, Benign and Malignant Disorders, Urogynecology, Operative Gynae including Endoscopy, Hormones and Drugs

Time: 3 hrs

Maximum Marks: 50.

Use separate answer book for each Section.

For each section, student shall be allowed to take only one supplementary copy along with one main answer book
(Any Question having parts should be answered as whole at one place only)
Answers of MCQs are to be given on OMR answer sheet. This OMR answer sheet will be collected from the examinees after 30 minutes of the commencement of the examination. Answers of MCQs, if written in the answerbook, shall not be evaluated by the examiner.

Section A

Q.1 MCQ 1x10= 10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any 4 out of five) 4x5=20

1
2
3
4
5

Q.3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Section B

Q.1 MCQ 1x10=10

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Q2 Structured short notes (attempt any four out of five) 4x5=20

1
2
3
4
5

Q3 Structured long question (attempt any two out of three) 2x10= 20

1
2
3

Third MBBS Part-II (Main/ Remanded) Examination Month /Year

Obst. & Gynaecology

Paper – II

(Section A & B)

Anatomy including embryology of female pelvic organs, Normal and Abnormal Puberty, Menstruation and Menopause, and AETCOM

Gynae Examination, Infections and Infertility, Contraception, Benign and Malignant Disorders, Urogynecology, Operative Gynae including Endoscopy, Hormones and Drugs

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Instructions to Paper Setter for framing questions

Q1 **MCQs**

At least two MCQs from each section (A and B) should be case/problem based, single response with 4 options in answers. Avoid one liner and negative terms in stem of question. Avoid 'all of above' and 'none of above' in options.

Q2 **Structured short notes**

The questions should be task oriented rather than write a short note on xxx.

Include:-

Reasoning Questions , Questions on applied aspect, Questions on preclinical basis & one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3 **Structured long question**

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.

Section – A

Q.1. MCQ **1×10=10**

1. All are related to lateral vaginal fornix except:
   A. Ureters
   B. Mackenrodt's
   C. Infancies vesical artery
   D. Uterine artery

2. The epithelial lining of cervical canal is:
   A. Low columnar
   B. High columnar
   C. Strarfied squamous
   D. Ciliated columnar

3. The ovarian cycle is initiated by:
   A. FSH
   B. Estrogen
   C. LH
   D. Progesterone

4. HRT is helpful in all of the following except:
   A. Vaginal atrophy
   B. Flushing
   C. Osteoporosis
   D. Coronary Heart Disease

5. M/C congenital abnormality of uterus is:
   A. Uterus didelphys
   B. Ascuate
   C. Unicornate
   D. Septate

6. The treatment for a case of virilizing adrenal hyperplasia is:
   A. Estrogen
   B. Anti androgens
   C. ACTH
   D. Cortisone

7. Nongonoccal urethritis is caused by:
   A. Chlamydia
   B. LGV
   C. Syphitis
   D. Gamdnerella vaginals

8. Fallopian tube dysmotility is seen:
   A. Noonan syndrome
   B. Turner syndrome
   C. Kartagener syndrome
   D. Marfan syndrome

9. Kamla, a 30 years old lady examined for infertility by HSG, reveals 'Bead-Like' Fallopian Tube and clubbing of ampulla, Most likely cause is:
   A. Gonococcus
   B. Mycoplasma
   C. Chlamydia
   D. Tuberculosis

10. A sucheta, a 29 year old nulliparous women complains of severe menorrhagia and lower abdominal pain since 3 months, on examination these was a 14 weeks size uterus with the fundal fibroid. The treatment of choice is:
   A. Myomectomy
   B. GnRH analogue
   C. Hysterectomy
   D. Wait and watch

Q.2. Structured short notes (attempt any 4 out of five) 4×5=20

1. Precocious puberty
2. Classification and management of secondary dysmenorrhea.
3. Causes & diagnosis of primary amenorrhea.
4. social and ethical issues regarding reproductive rights
5. Complications of uterovaginal prolapsed

Q.3. Structured long question (attempt any two out of three) 2×10=20

1. Define abnormal uterine bleeding (AUB). Mention its classification. Describe different treatment modalities of AUB.
2. Discuss symptoms, investigations and treatment of 20-week size fibroid uterus in P2L2 45-year-old female.
3. Describe complications of pelvic inflammatory disease.

Section – B

Q.1. MCQ **1×10=10**

1. Endometrial hyperplasia is seen in:
   A. Endometrial sinus tumor
   B. Dysgerminoma
   C. Ca Cervix
   D. PCOD

2. Pap smear is useful in the diagnosis of all except:
   A. Gonourhea
   B. Trichomonas Vaginitis
   C. Human papilloma virus
   D. Inflammatory changes

3. Cervical cone biopsy in a case of carcinoma cervix causes all, except:
   A. Bleeding
   B. Cervical stenosis
   C. Infection
   D. Spread of malignancy

4. Which of the following are masculinizing tumors of the ovary:
   A. Granulose cell tumor
   B. Dysgerminoma
   C. Dermoid cyst
   D. Arrhenoblastoma

5. Hysteroscopy is used in all except:
   A. Uterine synechiae
   B. Abnormal vaginal bleeding
   C. Infertility
   D. Recurrent still birth and abortion

6. 40 years female, mass in pelvis detected clinically, following investigations should be done except:
   A. CT
   B. Laparoscopy
   C. Pap smear
   D. USG

7. Contraceptive vaginal foam tablet “today” contains:
   A. Nonxynol. 9
   B. Octoxynol 9
   C. Menfegel
   D. None of the above

8. Sterilization procedure with maximum chances of reversal is:
   A. Pmenroy’s tubal ligation
   B. Trwing’s technique
   C. Laparoscopic tubal ligation with silastic bands
   D. Laparosocpic tubal ligation with clips

9. Most common genital prolapse is:
   A. Cystocele
   B. Procidentia
   C. Rectocele
   D. Enterocele

10. A woman threated for infertility, presents with 6 weeks amenorrhea with urinary retention. The most likely etiology is:
   A. Retroverted uterus
   B. Pelvic hematocele
   C. Impacted cervical fibroid
   D. Carcinoma cervix

Q.2. Structured short notes (attempt any 4 out of five) 4×5=20
1. Emergency contraception
2. Causes and management postmenopausal bleeding
3. Indications of laparoscopy in gynecology
4. Diagnosis of endometriosis
5. Methods of cervical cancer screening

Q.3. Structured long question (attempt any two out of three) 2×10=20
1. Discuss clinical features. Diagnosis and investigation of malignant ovarian tumor.
2. A 27-year-old lady married for 3 years, presented with c/o inability to conceive. How will you investigate this case? Discus the management of anovular infertility.
3. Discuss the important sites of ureteric injuries in Gynae surgery.

Instructions for framing questions

Q1. MCQs

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Q2. Structured short notes:

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Include:-
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Questions on applied aspect
Questions on preclinical basis &
one question on AETCOM in all subjects in all phases in paper 1 (Section A)

Q3. Structured long question
The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liner as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall-based questions.