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)

NOTICE

1. Amendments made by the Statutory Regulating Council i.e. Medical Council of India 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)
i. 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:

4. **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, the upper age limit for candidates appearing for National Eligibility Entrance Test and seeking admission to MBBS programme shall be 25 years as on the date of examination with a relaxation of 5 years for candidates belonging to SC/ST/OBC **category and persons entitled for reservation under the Rights of Persons with Disabilities Act, 2016**.

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

in any academic year for admission to MBBS Course, the Central Government in consultation with Medical Council of India 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)***
- ***iii. 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 Medical Council of India.

(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:

i. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis)
ii. Surgery and allied specialties (General Surgery, Orthopedics [including trauma]), Dentistry, Physical Medicine and rehabilitation, Anaesthesiology and Radiodiagnosis)
iii. Obstetrics and Gynecology (including Family Welfare)
iv. Pediatrics
v. AETCOM module

Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, 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 colspan="2">Electives & Skills</td></tr>
<tr><td colspan="12">III MBBS Part II</td></tr>
<tr><td colspan="2">Exam III MBBS Part II</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>
</table>

- 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	1 + 13 months	I Professional

	(AETCOM)		
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, Radiodiagnosis & 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 skills[3]	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	210
Obstetrics and Gynecology	70	125	15	210
Pediatrics	20	35	10	65
Orthopaedics	20	25	5	50
Clinical Postings**	-	-	-	792
Attitude, Ethics & Communication Module (AETCOM)***	-	28	16	43
Electives	-	-	-	200
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).

3This 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 thelearner to:

(a) Recognize the relevance of basic sciences in diagnosis, patient care and treatment,

(b) Provide a context that will enhance basic science learning,

(c) Relate to experience of patients as a motivation to learn,

(d) Recognize attitude, ethics and professionalism as integral to the doctor-patient relationship,

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

(a) Attendance

1. Attendance requirements are 75% in theory and 80% in practical /clinical for eligibility to appear for the examinations in that subject. In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.

2. If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting.

3. Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

Internal Assessment: Internal assessment shall be based on day-to-day assessment. It shallrelate 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 no less than two examinations in each clinical subject in a professional year. An end of posting clinical assessment shall be conducted for each clinical posting in each professional year.

2. When subjects are taught in more than one phase, the internal assessment must be done in each phase and must contribute proportionately to final assessment. For example, General Medicine must be assessed in second Professional, third Professional Part I and third Professional Part II, independently.

3. Day to day records and log book (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.

4. The final internal assessment in a broad clinical specialty (e.g., Surgery and allied specialties etc.) shall comprise of marks from all the constituent specialties. The proportion of the marks for each constituent specialty shall be determined by the time of instruction allotted to each.

5. Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.

6. The results of internal assessment should be displayed on the notice board within a 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 l

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, 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

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 duringthe 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 conductedexamination separately in Theory and Practical (practical includes: practical/ clinical and vivavoce) in order to be declared as passed in that subject.

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

No more than four attempts shall be allowed for a candidate to pass the first Professional examination. The total period for successful completion of first Professional course shall not exceed four (4) years. Partial attendance of examination in any subject shall be counted as an attempt.

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

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

1) **Grace Marks:** Grace marks upto a maximum of 5 marks may be awarded to students as per grace rules, who have failed only in one subject but passed in all other subjects.
2) **Re-evaluation:** The objective or re-evaluation is to ensure that the student receives a fair evaluation in the University examination and to minimize human error and extenuating circumstances. There shall be two mechanisms for this purpose.
   a) **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 should be suitably rectified.
   b) **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.

(8) **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) 4 years teaching experience in the subject in a recognized Medical college after MD/MS. 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 Medical Council of India for MBBS.

11.2.9 **Appointment of Examiners**

(a) Person appointed as an examiner in the particular subject must have at least four years of totalteaching experience as assistant professor after obtaining postgraduate degree in the subject ina college affiliated to a recognized/approved/permitted medical college.

(b) 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, thesenior-most internal examiner will act as the Chairman and coordinator of the wholeexamination programme so that uniformity in the matter of assessment of candidates ismaintained. Where candidates appearing are more than 100, two additional examiners (oneexternal & one internal) for every additional 50 or part there of candidates appearing, beappointed.

(c) In case of non-availability of medical teachers, approved teachers without a medical degree(engaged in the teaching of MBBS students as whole-time teachers in a recognized medicalcollege), may be appointed examiners in their concerned subjects provided they possessrequisite doctorate qualifications and four years teaching experience (as assistant professors)of MBBS students. Provided further that the 50% of the e xaminers (Internal & External) arefrom the medical qualification stream.

(d) External examiners may not be from the same University.

(e) The internal examiner in a subject shall not accept external examinership for a college fromwhich external examiner is appointed in his/her subject.

(f) A University having more than one college shall have separate sets of examiners for eachcollege, with internal examiners from the concerned college.

(g) External examiners shall rotate at an interval of 2 years.

(h) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner andshall moderate the questions.

(i) All eligible examiners with requisite qualifications and experience can be appointed internalexaminers by rotation in their subjects.

(j) All theory paper assessment should be done as central assessment program (CAP) ofconcerned university.

(k) Internal examiners should be appointed from same institution for unitary examination in sameinstitution. For pooled examinations at one centre approved internal examiners from sameuniversity may be appointed.

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 Medical Council of India 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 MCI 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/Medical Council of India 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) Therapeutic 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.

CURRICULUM IN FAMILY WELFARE FOR BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBBS) COURSE

The curriculum may be considered under various pre and para clinical heads and the following details are worked out for each of the disciplines :

(1) **Anatomy** :
- (a) Gross and microscopic anatomy of the male and female genital organs.
- (b) The menstrual cycle.
- (c) Spermatogenesis and oogenesis.
- (d) Fertilization of the ovum.
- (e) Tissue and organ changes in the mother in pregnancy.
- (f) Embryology and Organogenesis.
- (g) Principles of Genetics
- (h) Applied anatomy of mechanical methods of preventing conception :
  - i. Females - chemical contraceptive, pessaries, Intrauterine Contraceptive Device (IUCD), tubectomy etc.
  - ii. Males - condom, vasectomy etc.

(2) **Physiology** :
- (a) Physiology of reproduction.
- (b) Endocrinal regulation of reproduction in the Female.
- (c) Endocrine and Physiology of reproduction in the male.
- (d) Physiology and Endocrinology of pregnancy, parturition and lactation.
- (e) Nutritional needs of mothers and child during pregnancy and lactation.
- (f) The safe period- rhythm method of contraception.
- (g) Principles of use of oral contraceptives.

(3) **Pharmacology :**
- (a) Mode of action and administration of,
  - i. Chemical contraceptive
  - ii. Oral contraceptive
- (b) Contra indications for administration of contraceptives.
- (c) Toxic effects of contraceptives.

(4) **Community Medicine :**

(a) The need for Family Welfare Planning Service.
(b) Organization of Family Welfare Planning Service.
(c) Health Education relating to Family Welfare Planning.
(d) Nutrition
(e) Psychological need of the mother, the child and the family.
(f) Demography and vital statistics.

(5) **Obstetrics and Gynaecology :**
(a) Contraceptive methods in male/female
i. Mechanical
1) Pessaries, Intra Uterine Contraceptive Device (IUCD), Condoms.
2) Tubectomy and Vasectomy
ii. Chemical
iii. Oral
iv. Rhythm Method
(b) Demonstration of use of pessaries, IUCD, condoms and the techniques of tubectomy.
(c) Advice on Family Planning to be imparted to parents.

(6) **Paediatrics :**
(a) Problems of child health in relation to large family :
i. Organization of paediatric service.
ii. Nutritional problems of mother and child.
iii. Childhood diseases due to overcrowding

(7) **Surgery :**
(a) Technique of vasectomy

(8) **Compulsory Internship :**Placement of a student for in-service training in a Family Welfare Planning clinic for a period of at least one month.

(9) **Examinations :** It is necessary that question on Family Welfare Planning be introduced in the theory and oral examination throughout the MBBS course.
The curriculum content has been indicated subject wise.
However, it would be more advantageous to the student for purpose of integrated learning and for understanding of the subject if Family Welfare Planning instruction with the curriculum content could be divided into two parts :
(a) **PART-I:** Anatomy, Physiology, Bio-chemistry and Pharmacology: There shall be close integration in the teaching of these subjects. It is suggested that during the early para-clinical years two to three weeks may be set apart for instructions in Family Welfare Planning relating to these subjects, so that the student gets an overall understanding of the Principles and Practice of Family Planning' within the limited time available for covering all the subjects of the medical courses. The method suggested would save time and repetition of essential facts.
(b) **PART-II:** This includes the later para-clinical and clinical courses. The practical aspects of Family Welfare Planning methods should be emphasized. The programme of instruction shall be supervised by the Department of Obstetrics and Gynaecology. The department of Community Medicine, Internal Medicine, Psychiatry, Paediatrics and Surgery must be closely associated in imparting instruction relating to the problems arising for want of Family Welfare Planning and the advantages to society and the individual which will be gained by adopting the measures suggested.

(10) **Seminars:** The medical college shall organize occasional seminars in which staff from all departments and the in service trainees shall participate.

A COMPREHENSIVE LIST OF SKILLS RECOMMENDED AS DESIRABLE FOR BACHELOR OF MEDICINE AND BACHELOR OF SURGERY (MBBS) GRADUATES:

(1) **Clinical Evaluation:**
(a) To be able to take proper and detailed history,
(b) To perform a complete and through physical examination and elicit clinical signs.
(c) To be able to properly use the stethoscope, Blood pressure Apparatus, Auroscope, Thermometer, Nasal Speculum, Tongue depressor, weighing scales vaginal Speculum etc.
(d) To be able to perform internal examination per rectum (PR), per Vaginum (PV) etc.
(e) To arrive at a proper provisional clinical diagnosis.

(2) **Bed-side Diagnostic Tests :**
(a) To do and interpret Haemoglobin (Hb), Total Leucocye Count (TLC), Erythrocyte Sedimentation Rate (ESR), Blood Smear for parasties, Urine Examination (Albumin/ Sugar/ Ketones/ microscopic).
(b) Stool examination for ova and cysts.
(c) Gram staining and Ziehl Neilsen staining for AFB.
(d) To do skin smear for lepra bacilli.
(e) To do and examine a wet film vaginal smear for Trichomonas.
(f) To do a skin scraping and potassium hydroxide (KOH) stain for fungus infections.
(g) To perform and read Montoux Test.

(3) **Ability to carry out Procedures :**
(a) To conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults.
(b) To give subcutaneous (SC)/Intramuscular (IM)/ Intravenous (IV) injections and start intravenous (IV) infusions.
(c) To pass a Nasogastric tube and give gastric lavage.

(d) To administer Oxygen-by mask/tube.
(e) To pass a urinary catheter in male and female.
(f) To insert flatus tube.
(g) To do pleural tap, Ascitic tap & lumbar puncture.
(h) Insert intercostal tube to relieve tension pneumothorax
(i) To relieve cardiac tamponade.
(j) To control external hemorrhage.

(4) **Anaesthetic Procedures :**
(a) Administer local anesthesia and nerve block.
(b) Be able to secure airway patency, administer Oxygen ambu bag.

(5) **Surgical Procedures** :
(a) To apply splints, bandages and plaster of Paris (POP) slabs,
(b) To do incision and drainage of abscesses,
(c) To perform the management and suturing of superficial wounds.
(d) To carry on minor surgical procedures e.g. excision of small cysts and nodules, circumcision, reduction of Paraphimosis, debridement of wounds etc.,
(e) To perform vasectomy,
(f) To manage anal fissures and give injections for piles.

(6) **Mechanical Procedures :**
(a) To perform through antenatal examination and identify high risk pregnancies.
(b) To conduct a normal delivery.
(c) To apply low forceps and perform and suture episiotomies.
(d) To insert and remove IUD's and to perform tubectomy.

(7) **Paediatrics :**
(a) To assess newborns and recognize abnormal ties and growth retardation.
(b) To perform Immunization.
(c) To teach infant feeding to mothers.
(d) To monitor growth by the use, of road to health chart and to recognize development retardation.
(e) To assess dehydration and prepare and administer Oral Rehydration Therapy (ORT)
(f) To recognize acute respiratory infection (ARI) clinically.

(8) **ENT Procedures :**
(a) To be able to remove foreign bodies.
(b) To perform nasal packing for epistaxis.
(c) To perform tracheotomy.

(9) **Ophthalmic Procedures :**
(a) To evert eye lids.
(b) To give subconjunctival injection.
(c) To perform appellation of eye lashes.
(d) To measure the refractive error and advise correctional glasses.
(e) To perform nasolacrimal duct syringing for patency.

(10) **Dental Procedures :**
(a) To perform dental extraction.

(11) **Community Health :**
(a) To be able to supervise and motivate community and paraprofessionals.
(b) To be able to carry on managerial responsibilities, e.g. management of Stores, indenting and stock keeping and accounting.
(c) Planning and management of health camps,
(d) To effect proper sanitation measures in the Community e.g. disposal of infected garbage, chlorination of drinking water.
(e) Implementation of national health programmes.
(f) To identify and institute control measures for epidemics including its proper data collection and reporting.

(12) **Forensic Medicine Including Toxicology :**
(a) To be able to carry on proper medico-legal examination and documentation of injury and age reports.
(b) To be able to conduct examination for sexual offences and intoxication.
(c) To be able to preserve relevant ancillary materials for medico-legal examination.
(d) To be able to identify important Post-mortem findings in common unnatural deaths.

(13) **Management of Emergencies :**
(a) To manage acute anaphylactic shock
(b) To manage peripheral vascular failure and shock
(c) To manage acute pulmonary oedema and LVF
(d) Emergency management of bronchial asthma and status epilepticus
(e) Emergency management of hyperpyrexia
(f) Emergency management of comatose patients regarding airways positioning, prevention of aspiration and injuries
(g) Assess and administer emergency management of burns.

*PRESCRIBED TEACHING HOURS AND SUGGESTED MODE TIME TABLE:

Subjects	Lectures (hours)	Small Group Teaching/ Tutorials/ Integrated learning/ Practical (hours)	Clinical Postings (hours) *	Self directed learning (hours)	Total (hours)

7.10 During para-clinical and clinical phases, including prescribed 2 months of electives, clinical postings of three hours duration daily as specified in Tables would apply for various 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

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	210
Obstetrics and Gynecology	70	125	15	210
Pediatrics	20	35	10	65
Orthopaedics	20	25	5	50
Clinical Postings**	-	-	-	792
Attitude, Ethics & Communication Module (AETCOM)***	-	28	16	43
Electives	-	-	-	200
Total	250	435	60	1780

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

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

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

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 trauma[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.

***Phase-I**

Model Time Table (As per MCI)

(Subject to modifications per local situation/NMC Guidelines)

Time Table for First M.B.,B.S. Batch 2019 (first and second semester)

As per new curriculum

Day	Lecture 09AM to 10PM	Practical 10AM to 12Noon	Lecture 12-1 PM	1PM to 2 PM	Pract. Haem. (Phy) 2-4	Pract. Amph (Phy) 2-4	Pract. Bio. 2-4	Pract. Com. Med. 2-4	4-5 pm
Monday	Physiology	Anatomy	Anatomy	LUNCH	A	B	C	D	Biochemistry
Tuesday	Anatomy	Anatomy	Physiology		B	C	D	A	Anatomy
Wednesday	Physiology	Anatomy	Anatomy		C	D	A	B	Physiology
Thursday	Biochemistry	Anatomy	Anatomy		D	A	B	C	Physiology
Friday	Anatomy	Anatomy	Physiology		Biochemistry				Sports Activities
Saturday	Anatomy	Anatomy	Biochemistry		Physio. –Lecture		Comm. Med.		Sports Activities

a. Teaching hours for all subjects :

Subject	Lecture (hours)	Practicals (hours)	Self Directed learning (hours)	Total (hours)
Anatomy	220	415	40	675
Physiology	160	310	25	495
Biochemistry	80	150	20	250
Community medicine	20	27	5	52
Early clinical exposure	90 (30 hours each subject)	--	--	90
AETCOM Module:	---	26	8	34

b. **AETCOM Module will be conducted from January 2020 (tentatively) every Saturday 3 PM to 5 PM**

Phase-II as per the new curriculum

To be added

Phase-III Part 1 as per the new curriculum to be added

Phase-III Part 2 as per the new curriculum to be added

SCHEME OF EXAMINATION MBBS

New curriculum

First Professional

Subject	Theory		Total	practical		Total	Subject total	Internal assessment 200		Total
Human Anatomy Paper Code No	Paper I 1110-I 100	Paper II 1110-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100
Human Physiology Paper Code No	Paper I 1120-I 100	Paper II 1120-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100
Biochemistry Paper Code No	Paper I 1130-I 100	Paper II 1130-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100

Second Professional

Subject	Theory		total	practical		Total	Subject total	Internal assessment 200		Total
Pharmacology Paper Code No	Paper I 1210-I 100	Paper II 1210-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100
Pathology Paper Code No	Paper I 1220-I 100	Paper II 1220-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100
Microbiology Paper Code No	Paper I 1230-I 100	Paper II 1230-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100

Third Professional Part 1

Subject	Theory		total	practical		Total	Subject total	**Internal assessment** 200		Total
OtorhinolaryngoloGY Paper Code No	Paper I 1310 100		100 50	Practical 60	Viva 40	100 50	200 100	Theory 100	Practical 100	200 100
Ophthalmology Paper Code No	Paper I 1320 100		100 50	Practical 60	Viva 40	100 50	200 100	Theory 100	Practical 100	200 100
Community medicine Paper Code No	Paper I 1330-I 100	Paper II 1330-II 100	200 100	Practical 60	Viva 40	100 50	300 150	Theory 100	Practical 100	200 100
Forensic medicine and Toxicology Paper Code No	Paper I 1340 100		100 50	Practical 60	Viva 40	100 50	200 100	Theory 100	Practical 100	200 100

Third Professional Part 2

Subject	Theory		total	practical		Total	Subject total	Internal assessment 200		Total
General medicine Paper Code No	Paper I 1410-I 100	Paper II 1410-II 100	200 100	Practical 120	Viva 40	200 100	400 200	Theory 100	Practical 100	200 100
General surgery Paper Code No	Paper I 1420-I 100	Paper II 1420-II 100	200 100	Practical 120	Viva 80	200 100	400 200	Theory 100	Practical 100	200 100
Obstretics and Gynaecology Paper Code No	Paper I 1430-I 100	Paper II 1430-II 100	200 100	Practical 120	Viva 80	200 100	400 200	Theory 100	Practical 100	200 100
Paediatrics Paper Code No	Paper I 100 1440		100 50	Practical 60	Viva 40	100 50	200 100	Theory 100	Practical 100	200 100

First MBBS Examination

Paper I
HUMAN ANATOMY (1110)

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 + Viva	**60+40= 100 marks**	
Internal assessment		
1. Theory	**100**	**100+100=200 Total**
2. Practical	**100**	

Theory-Two papers of 100 marks each (One Multiple choiceQuestion of 10 marks ineach section of both the theory paper)

Notes :

1. Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.
2. Question number 1 insection A of Paper I and Paper II shall be compulsory.
3. Question number 4 in section B of Paper I and Paper II shall be compulsory.
4. Section A of both the papers will be assessed by the External Examiners and Section B of both the papers by the Internal Examiners.
5. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
6. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

4. 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 (1110-I)

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 structures

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) Gastrointestinal system
(4) Respiratory system
(5) Cardio vascular system
(6) Genitourinary system
(7) Nervous system
(8) Endocrine system
(9) Integumentary System.
(10) Musculoskeletal system

Paper II (1110-II)

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

Histology

(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) Nervous tissue-neuron, ganglia, peripheral nerve, spinal cord, cerebrumand cerebellum.
(10) Skin and its appendages.
(11) Lymphoid tissue –Tonsil, Thymus, Spleen and Lymph node
(12) Respiratory system
(13) Gastrointestinal tract
(14) Cardio-vascular system
(15) Urinary system
(16) Male reproductive system
(17) Female reproductive system
(18) Endocrine glands
(19) Eye
(20) Ear

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

PAPER II

HUMAN PHYSIOLOGY (1120)

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 and development.
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.

3. SCHEME OF EXAMINATION:

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60+40= 100 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 paper)

Notes:

1. Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory. Each section shall be answered in separate answer book.
2. Question number 1 in section A of Paper I and Paper II shall be compulsory.
3. Question number 4 in section B of Paper I and Paper II shall be compulsory.
4. Section A of both the papers will be assessed by the External Examiners and Section **B of both the papers by the Internal Examiners.**
5. **Internal Assessment**: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations.
6. **University Examination:** Mandatory 50% marks separately in theory and practical (practical = practical/clinical + viva)

SYLLABUS:
Theory

Paper – I (1120-I)
(Section – A)
General Physiology & Biophysics

(1) Description of study of physiology, methodology
(2) Cell function : morphology of cell components & functions.
(3) Body fluids : Compartments-volume and composition, units for measuring concentration of solutes.
(4) Transport across the cell membrane-homeostasis :Intra cellular communication, transport across capillary wall.
(5) Biomembrane potentials, action potential: ionic basis, properties.
(6) Tissues (Histophysiology) : Introduction, epithelium-properties, types, specializations, functions-modes of secretion-classification of glands, Connective tissue-classification types of cells and fibers- brown and white adipose tissue- functions. Supporting tissue- cartilage and bone types, properties.

Nervous system

(1) Organization: Neurons, neuroglia, spinal cord-structure & functions effects of hemi section, spinal shock, ascending & descending tracts, lumber puncture.
(2) Sensory unit, Receptors : Classification, types, functions, properties, adaptation, receptor potential,synaptic transmission, mechanism, chemical & electrical synapse, reflex Action
(3) Spinal reflexes : Classification, organization & functions.
(4) Sensations : Touch, pain, temperature-reception, transmission & perception, position sense (proprioception) pain modulation-segmental, supra spinal, referred pain, visceral pain-mechanism, applied physiology, Thalamus.
(5) Basal ganglia, cerebellum, reticular formation. connections, functions, role in motor movement motor neuron, motor unit, descending motor pathways, common disorders affecting cerebellum, basal ganglia, Parkinson's disease, tests, vestibular apparatus, structure & function, neural connections, motion sickness, Meniere's disease.
(6) Reticular formation, role in sleep & wakefulness.
(7) Posture & equilibrium-Maintenance, postural reflexes, parts involved.
(8) Cerebral cortex Brodman's areas, functions, intellectual functions (speech & language, learning & memory) conditioned reflexes.
(9) E.E.G: Method of recording: REM& Non REM sleep, clinical uses
(10) Hypothalamus : Connection & function.
(11) Role in emotions & behaviour along with limbic system.
(12) C.S.F. :Formation, circulation, absorption, composition, lumber puncture.
(13) 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.

Reproductive System

(1) Sex organs, genetic basis of sex, sex determination, sex differentiation, common chromosomal abnormalities, Gonadotrophins.
(2) Female reproduction system :Parts, menstrual cycle & its control, ovulation, mechanism, tests to detect ovulation,ovary-structure & function.
(3) Estrogen & progesterone : synthesis, actions, corpus luteum – functions.
(4) Fertilization, functions of placenta, change during pregnancy, mammary gland and lactation, physiology of labour.
(5) Contraception, infertility.
(6) Male reproduction system :Testes -structure & functions, spermatogenesis, regulation of testosterone, actions, physiology of copulation, semen analysis, male contraception.

Growth and Development

Paper – II (1120-II)

(Section – A)

Blood

(1) Body fluid compartments, composition & properties, plasma proteins, classification & functions,

(2) RBC : structure, erythropoiesis, life span, blood indices, osmotic fragility, hemoglobin, normal & abnormal, anemias, R.E. system,

(3) WBC's : structure & functions,

(4) Platelets : Structure & functions, leucopoiesis, thrombopoiesis,

(5) Immunity,

(6) Hemostasis, clotting factors, mechanism of coagulation, fibrinolysis, anti coagulants, bleeding disorder,

(7) Tests, blood volume, measurement, tissue fluid formation, lymph circulation, edema,

(8) Blood groups, clinical importance, blood transfusion, blood substitutes.

Cardio-vascular system :

(1) Structure of cardiac muscle & blood vessels,

(2) Properties cardiac action potentials, cardiac cycle,

(3) Heart sounds, murmurs,

(4) Central venous pressure measurement,

(5) Arterial pulse, radial pulse, features,

(6) Echo cardiograph,

(7) Electrocardiography, origin and spread of cardiac impulse, cardiac vectors, recording of normal ecg, ecg change during arrhythmias

(8) Hypertrophy,

(9) Heart block,

(10) Ischemia & infraction,

(11) Effect of ions (only basics) cardiac output, measurement, factors affection, regulation, heart rate normal & abnormal variation, regulation.

(12) Blood Pressure : factors affecting and determining, regulation, hypertension. Hemodynamics, Poiseuille equation, rheological properties, shock: classification, patho physiology, physiological basis of treatment.

(13) Regional circulation : coronary, cerebral, skeletal muscle, cutaneous, pulmonary, splanchnic, Cardio vascular changes during exercise.

(Section – B)

Respiration

(1) Structure in relation to functions, mechanics, compliance, work of breathing,

(2) ARDS, IRDS,

(3) Pulmonary pressures, pulmonary ventilation, alveolar ventilation, volumes & capacities, dead space, measurements, pulmonary blood flow, distribution, regulation.

(4) 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.

(5) Transport of gases, O2 & CO2 & O2 carrying capacity, oxy-hemoglobin & CO2 dissociation curves, Bohr effect, Haldane effect.

(6) Regulation of respiration: neural & chemical, generation of normal rhythm. Hypoxias, cyanosis, oxygen therapy, hyperbaric O2 therapy, asphyxias, hypercapnoea, effect of exercises, high altitude physiology, acclimatization, deep sea diving, space physiology (Basics), Abnormal breathings, dyspnoeas, artificial respiration, CPR.

Digestive System

(1) General organization : Structure in relation to function, innervations.

(2) Secretions & movements of different parts of GIT, control mechanisms, gastric emptying vomiting,

(3) Patho-physiology of peptic ulcer,

(4) Exocrine pancreas, secretion & its control

(5) Liver: structure & functions, bile: mechanism of secretion, functions,

(6) Enterohepatic circulation, jaundice, liver function tests, gall bladder functions.

Excretion

(1) Gross structure : nephron – parts with functions, renal circulation, its control, renal functions tests.

(2) Mechanism of urine formation, GFR, measurement.

(3) Mechanism of urine concentration & dilution, acidification of urine, regulation of body pH.

(4) Urine : composition

(5) Principles of dialysis

(6) Urinary bladder : Anatomy, innervations, micturition reflex & its control, neurogenic bladder

(7) Structure & functions of skin and temperature regulation: heat stroke, frost bite.

(8) Physiology of yoga & yogic exercises.

4.2 Practical

(1) Hematology

- a Study of microscope
- b Common objects
- c Effects of reagents on human blood
- d Study of peripheral blood smear, DLC, Arneth Count
- e Enumeration of WBC, RBC, Platelets, Eosinophils and Reticulocytes
- f Blood Groups, ESR, PCV, Bleeding and Clotting Time, Osmotic Fragility
- g Specific gravity Measurement of Blood

(2) Amphibian (only simulation)

- a Muscle and Nerve Experiments
- b Recording and Interpretation of Heart activity and learn the effect of various interventions on amphibian heart (simulated experiment)

(3) Clinical Physiology

- a Recording of Blood pressure and effect of posture and exercise on BP
- b Stethography
- c Spirometry
- d Clinical examination of respiratory system and CVS, ECG - recording and interpretation
- e General Clinical Examination

f Clinical examination of CNS, Sensory system, Motor system, Cranial Nerves, higher mental functions
g Tests of Vision, visual reflexes, tests of hearing,
h Ergography, nerve conduction studies
i Use of Physiograph for various experiments

4. BOOKS:

1. Physiological basis for Medical Practice - Best and Taylor
2. Text book of Medical Physiology - AC Guyton
3. Review of Medical Physiology - WF Ganong
4. Clinical Physiology - Campbell
5. Text Book of Physiology - Berne and Levi

Paper III

BIOCHEMISTRY (1130)

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:

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60+40= 100 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 paper)

Notes :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

4. SYLLABUS:

4.1 Theory

Paper I (1130-I)

General Chemistry and Metabolism

Cell Biology

(1) Importance and scope of concept of medical biochemistry in prevention, diagnosis and therapeutics of diseases.
(2) Organization of Cellular structures and their functional roles.
(3) Cell membranes, mechanism of transport across typical cell membrane.

Carbohydrates

(1) Chemistry: chemical nature, Classification, physical and chemical properties and biologic importance of carbohydrates with emphasis on role of heteropolysaccharides.
(2) Metabolism: Glucose Transporters, Glycolysis, Glycogen metabolism, HMP shunt and uronic acid pathway, Gluconeogenesis, Overview of inborn errors of carbohydrate metabolism (glycogen storage diseases, Galactosemia, Pentosuria etc.)
(3) Regulation of Blood Glucose level, Insulin receptor and Insulin Resistance, metabolism in starvation and Diabetes mellitus, Lab diagnosis and monitoring of Diabetes Mellitus; Biochemical basis of acute and chronic complications of Diabetes Mellitus.

Lipids

(1) Chemistry: Classification, Composition and biological importance of lipids. Arachidonic acid derivatives, Prostaglandins. Lipoproteins classification, functions and disorders.
(2) Metabolism: Fatty acid oxidation, Biosynthesis of Fatty acids, Cholesterol, Triglycerides, fate of Cholesterol, Lipoprotein and phospholipid metabolism, Fatty liver and lipotropic factors.

Proteins

(1) Various classifications of Amino acids and Proteins; Important biochemical properties, Structural organization and structure – function relationship of proteins eg. Hemoglobin, myoglobin and collagen;
(2) Denaturation Biochemical basis of Sickle cell anemia and Thallassemia.
(3) Formation and disposal of ammonia – urea cycle.
(4) Overview of metabolism of amino acids; phenylalanine, tryptophan, glycine, serine, Sulfur containing amino acids, histidine.
(5) Specialized products obtained from amino acid, metabolism and their importance, eg. creatine, melatonin, Melanin, Epinephrine, Thyroxine.

Intermediary Metabolism

(1) TCA cycle, interrelationships of metabolites of carbohydrates, Amino Acids and Lipids.
(2) Regulation by hormones in starvation, well fed state and Diabetes Mellitus.

Nucleic acids

(1) Types, Composition and Nucleic acids, Purine and pyrimidine base pairing rules in nucleic acids.
(2) Overview of biosynthesis, Salvage pathway, Disorders of Nucleic acid Metabolism – hyperuricemias, Gout.

Nutrition

(1) Concept of Basal Metabolic Rate, SDA, Respiratory Quotient, Balanced diet, Nitrogen balance, Calorific value of foods, Protein Energy Malnutrition.
(2) Vitamins: Dietary sources, biochemical role, deficiency manifestations, daily requirement, toxicity and Vitamin antagonists in medicine.
(3) Mineral metabolism: Dietary source, functional importance, regulation and altered levels of Calcium, Phosphorus, Iron, Zinc, Copper, Iodine, Fluoride, Sodium and Potassium in the body. Biological importance of Selenium, Magnesium, Manganese and Chromium.

Enzymology

(1) Basic concept of catalysis, classification, mechanism of enzyme activity, factors affecting enzyme activity, importance of Km valve. Different types of enzyme inhibition and their clinical applications.
(2) Enzyme regulation: modes, mechanisms and importance in the human system.
(3) Diagnostic and therapeutic importance of enzymes.

Bioenergetics and Biologic Oxidation

(1) Concepts of bioenergetics in relation to theromodynamic principles as applied to the human system. Phosphagens, Substrate level phosphorylation, High energy compounds
(2) Organization of Electron transport system, Oxidative Phosphorylation – formation of ATP and its regulation – uncouplers and inhibitors. Formation of free radicals, consequences and disposal of free radicals.

Hormones

(1) Chemistry and biological functions of hormones secreted by pituitary, hypothalamus, thyroid, parathyroid and adrenal glands.
(2) Sex hormones
(3) Mechanism of action of hormones.

Paper II(1130-II)

Human Genetics and Molecular Biology

(1) Organization of Genome, Phases of cell cycle, DNA, RNA metabolism
(2) Replication, transcription DNA.
(3) Modifications of RNA.
(4) Translation of mRNA, post translational modification
(5) Regulation of Genetic expression, Mutations – Concept and types and DNA repair mechanisms.
(6) Principles and applications of Recombinant DNA Technology in Medicine, polymerase chain reaction (PCR) and gene therapy, DNA finger printing, Blotting Technique, Human genome project, Bioinformatics.
(7) Splicing of RNA, Prion disease.

Immunochemistry

(1) Immunoglobulin structure & function
(2) Innate & Acquired immunity
(3) Immunogens & Antigen

(4) Humoral & cellular immunity
(5) T. cell subset
(6) MHCS. Monoclonal & Polyclonal Antibody
(7) Hypo & Hyper gammaglobulinemias
(8) Hypersensitivity reactions
(9) Immunosuppressant drugs
(10) Antibody diversity & class switching
(11) AIDS

Environmental Biochemistry

(1) Hazards of pollutants.
(2) Xenobiotics
(3) Free radical & Antioxidants.

Acid Base Balance

(1) Basic concepts: pH, Acids, Bases, Buffers, Henderson Hasselbalch Equation in relation to body systems. Role of kidney and lungs in Acid base homeostasis.
(2) Acid base disorders, causes and laboratory diagnosis.

Biochemistry of Cancer

(1) Role of carcinogens in carcinogenesis, Tumor, suppressor genes oncogenes
(2) Tumor markers – common parameters and their utility in clinical practice

Clinical Biochemistry

(1) **Hemoglobin Metabolism** – Breakdown of Hb, Biochemical basis of jaundice and distinguishing features of different types of jaundice, outline of biosynthesis of Heme, overview of causes and types of porphyrias, lab diagnosis.
(2) **Plasma proteins** – classification, separation techniques, functions and altered levels of plasma protein in diseases.
(3) **Organ Function Tests** Liver function tests, Renal function tests, Thyroid function tests, Pancreatic function tests, Gastric function tests.
(4) Biochemistry of Atherosclerosis and Diagnosis of Myocardial infarction.
(5) **Principles of laboratory practice:** General principles of assays of biochemical parameters, Photometric assays, Beer Lamberts Law, ELISA and RIA Techniques. Principles and application of chromatography and electrophoresis, Principles and applications of Radioisotopes in Medicine, Use of Blood Gas Analysis, pH meter, autoanalyzers etc.

4.2 Practicals

(1) Laboratory Instrumentation.
(2) Identification of substances of physiological importance.
(3) Colour reactions of amino acids and proteins.
(4) Estimation of blood analytes: glucose, urea, creatinine, uric acid, total cholesterol etc.
(5) Gastric juice analysis.
(6) Urine analyses for normal and pathological constituents.
(7) Enzymes: amylase, lactate dehydrogenase and alkaline phosphatase etc.
(8) Liver function tests
(9) Renal function tests.
(10) Principles and significance of various biochemical techniques including Chromatography, Electrophoresis, Immunoassays etc.
(11) Case-oriented discussions (clinical interpretations & diagnosis)

1. BOOKS:

1. Textbook of Biochemistry for Medical students - DM Vasudevan, Sreekumari S, Kannan Vaidyanathan; Seventh edn, 2013.
2. Textbook of Medical Biochemistry - Dinesh Puri; Third edn., 2011
3. Principles of Biochemistry. Ed. Lehinger, Nelson and Cox. CBS Publishers and distributors.
4. Harper"s Biochemistry, Ed. R.K. Murray, D.K. Granner, P.A. Mayes and V.W. Rodwell. Appleton and Lange, Stamford, Connecticut.
5. Tietz Textbook of Clinical Chemistry. Ed. Burtis and Ashwood. W.B. Saunders Company.
6. Immunology Ed. 5th Richard A. Goldsby, Thomas J Kindt, Barbara A Osborne, Janis Kuby.
7. Immunology Ed. 6th Ivan Roitt, Jonathan Brostoff, David Male

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.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

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 a separate answer book for each section.

Q. No.**1** in Section **A** and Question No. 4 in section B (10 marks each) is compulsory.

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

SECTION-A

Question 1. MCQ (10)

- The secondary center of ossification appears in following part of the developing bone:
  - (1) Diaphysis
  - (2) Metaphysis
  - (3) Epiphyseal plate
  - (4) Epiphysis

2. Which of the following is not a fibrous joint:
   - (1) Schindylesis
   - (2) Symphysis
   - (3) Gomphosis
   - (4) 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)
a) Innervation of scalp
b) Neural crest
c) Lingual nerve
d) Dangerous area of face
e) Microanatomy of thyroid gland

Q.3. Describe in detail about the following: - **(any two**) **(20)**
a) Type & variety, ligaments, movements, muscles causing movement and applied anatomy of Temporomandibular joint (1+1+2+3+3)
b) Gross anatomy, relation, nerve supply and applied anatomy of parotid gland (2+2+3+3)
c) Development, nerve supply and lymphatic drainage of tongue (4+3+3)

SECTION- B

Question 4. MCQ (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:
   - Perineurium
   - Neurilemmma
   - Epineurium
   - 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

Q5. Write short notes on the following **(any four)** (4X5=20)

a) Carotid sheath
b) inferior cerebellar peduncle
c) Carpal tunnel syndrome
d) Development of spinal cord
e) Sternocleidomastoid muscle

Q.6. Describe in detail about the following:- **(any two)** (2X10)

a) Constituent fibers, arterial supply and applied anatomy of Internal capsule (10)
b) Lateral wall of nasal cavity (10)
c) Circle of Wille's (10)

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: Three Hours

Maximum Marks: 100.

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

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: Three Hours
Maximum Marks: 100
Use a separate answer book for each section.
Q. No.**1** in Section **A** and Question No. 4 in section B (10 marks each) is compulsory.
(Any question having parts should be answered as whole at one place only)

SECTION-A

Question 1 MCQ 10 marks

Q.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

Q.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

Q.3. The spleen contacts all of the following organs except:
a) Jejunum
b) Kidney
c) Lt colic flexure
d) Tail of pancreas

Q.4. The inferior mesenteric vein usually joins which vein:
a) Inferior venacava
b) Lt Renal vein
c) Portal vein
d) Splenic vein

Q.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

Q.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

Q.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

Q.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

Q.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

Q.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

Question 2 Write short notes on the following (attempt any 4 out of five) (20)

a) Site of Portocaval anastomosis
b) Femoral hernia
c) Bronchopulmonary segments of the Rt lung
d) Typical intercostal space
e) Openings of diaphragm

Question 3 . Describe in detail about the following:- **(any two**) (20)

a) Arterial supply, lymphatic drainage & nerve supply of stomach
b) Boundaries, gross anatomy & applied anatomy of Ischiorectal fossa.
c) Factors maintaining medial longitudinal arch & give its applied anatomy.

SECTION- B

Question 4 MCQ

Q.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

Q.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

Q.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

Q.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

Q.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

Q.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

Q.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

Q.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

Q.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

Q.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 nodes
c) Internal iliac lymph nodes
d) External iliac lymph nodes

Question 5. Write short notes on the following (attempt any 4 out of five) (20)

a) Interventricular septum
b) Supports of Uterus
c) Microanatomy of spleen
d) Structures passing through greater sciatic foramen
e) Callot's triangle

Question 6 . Describe in detail about the following:- **(any two**) (20)

a) Development, relations, nerve supply & blood supply of Rt kidney
b) Development, relations, blood supply, nerve supply & applied anatomy of liver
c) The differences between the proximal & distal part of the Anal canal

(1120-I) Human 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 separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1120-I) Human 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 separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

Two MCQ should be problem based learning (nice to know)

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:
   1. Zero decibel
   2. 20 decibel
   3. 40 decibel
   4. 60 decibel
   5.
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 - Correct
   C. Maternal ABO antigens do not cross the placenta
   D. Fetal ABO antigens are less immunogenic
7. Lesions of optic chiasma typically causes:
   1. Complete blindness of affected eye
   2. Bi temporal hemi anopia
   3. Bi nasal hemi anopia
   4. Scotoma
8. Fast pain fibers use which neurotransmitter at synapse in dorsal horn.

1. Glutamate
2. Acetyl choline
3. Substance P
4. Gama amino butyric acid

9. Chronaxi is a measure of:
    1. Force of contraction
    2. Velocity of conduction
    3. Excitability of nerve
    4. Auto rhythmicity
10. Aldosterone:
    1. is secreted during hyperkalemia
    2. Causes active sodium absorption from proximal tubule
    3. When secreted in excess leads to acidosis
    4. Secretion is mainly controlled by ACTH

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

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 marks

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

Question 4 MCQ 1x10 =10 marks

Two MCQ should be problem based learning (nice to know)

11. Resting membrane potential is mainly due to:
    1. Influx of sodium ions
    2. Influx of potassium ions
    3. Efflux of potassium ions
    4. Influx of chloride ions
12. Jumping of depolarization from node to node is called as:
    1. Orthodromic conduction
    2. Antidromic conduction
    3. Saltatory conduction
    4. Absolute refractory period
13. All are features of endemic goiter **except:**
    1. Enlarged thyroid gland
    2. Increased TSH
    3. Decreased T3 and T4
    4. Increased BMR
14. The secretion of growth hormone:

1. Dependent on integrity of hypothalamus
2. Ceases when adult state is reached
3. Decreases during injury stress
4. Increases during fasting when blood glucose level is reduced

15. Hyper aldosteronism is associated with:
    1. Oedema
    2. Retention of sodium
    3. Hyperkalemia
    4. Hypotension
16. Dorsal column pathway transmits all of the following sensations **except:**
    1. position sense
    2. two point discrimination
    3. slow pain
    4. vibration
17. Which of the following is not a postural reflex:
    1. Flexor withdrawal reflex
    2. Stretch reflex
    3. Tonic neck reflex
    4. Vestibular placing reaction
18. Most common site of lesion of corticospinal tract is:
    1. Medullary pyramids
    2. Pontine nuclei
    3. Internal capsule
    4. Motor cortex
19. Neocerebellum is concerned with control of:
    1. Trunk and limb muscles
    2. Postural reflexes
    3. Skilled voluntary motor activity
    4. equilibrium

20. 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

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

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

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

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.

(1120-II) Human 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 separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1120-II) Human 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 separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

Two MCQ should be problem based learning (nice to know)

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. Daily loss of small amount of blood will lead to:
    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. Clotting time will be prolonged in following conditions **Except:**
    a) Classical hemophelia
    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 marks

1. 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 marks

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 cardiac cycle. Mention the pressure volume changes occurring in the ventricular systole.

Section B

Question 4 MCQ 1x10= 10 marks

Two MCQ should be problem based learning (nice to know)

11. 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
12. Purpose of counter current multiplier in kidney is to:
    a) Form concentrated urine
    b) Form dilute urine
    c) Make medullary interstitial fluid hyper osmolar
13. Maintain urinary pH Slowest rate of conduction of cardiac action potential is in:
    a) Internodal bundles
    b) Atrio-ventricular node
    c) Ventricular muscle
    d) Purkinje fibers
14. 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
15. Which of the following is not synthesized in liver:
    a. Albumin
    b. Immunoglobulins
    c. Cholesterol
    d. Urea
16. 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

17. Decreasing alveolar diameter Right shift of oxyhemoglobin dissociation curve is caused by all **except:**

1. Increase in pCO2
2. Increase pH
3. Acidosis
4. Increase in 2,3 DPG

18. Basic respiratory rhythm is generated by:
    a) Medullary respiratory centers
    b) Pneumotaxic centers
    c) Apneustic center
    d) Vagus nerve
19. When environmental temperature is greater than body temperature, body looses heat by:
    a) Conduction
    b) Convection
    c) Evaporation of sweat
    d) Radiation
20. 'J' receptors stimulation produces:
    a) Prolonged inspiration
    b) Periodic breathing
    c) Apnoea, bradycardia and hypotension
    d) Bainbridge reflex

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

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

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1. 1Describe the counter current mechanism in urine formation.
2. List the respiratory centres. Describe the neural regulation of respiration.
3. Define Glomerular filtration rate. Mention the factors affecting it. Add a note on plasma clearance

(1130-I)

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 separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

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 separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

1 C**obalt 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 4 out of five) 4x5=20 marks

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 marks

1 With the help of flow chart, describe steps of Urea cycle. Write a note on biochemical causes of ammonia toxicity. (6+4)

2 Describe the steps of Cholesterol synthesis. What are the important metabolites produced by Cholesterol? (6+4)

3 Describe the sources, recommended daily allowance, functions and deficiency manifestations of Vitamin C (1+1+4+4)

Section B

Question 4 MCQ 1x10 =10 marks

1 **Cobalt is an essential constituent of the following vitamin ?**

a) B1 b) B6

c) B12 d) Folic acid

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

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

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

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1 What are the complications of Diabetes mellitus? Discuss the necessary lab investigations for diagnosis and screening of diabetic patient. (5+5)

2 What is the biological significance of HMP shunt pathway? Explain why deficiency of G6-PD in RBCs leads to hemolysis. (6+4)

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

(1130-II)

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)

Maximum Marks: 100.

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1130-II)

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)

Maximum Marks: 100.

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

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 4 out of five)** 4x5=20 marks

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 marks

1 What are Porphyrias? Describe in brief various types of porphyrias. (3+7)

2 What are Plasma proteins? Describe in brief different electrophorectic variations in various disorders. (3+7)

3 Outline the process of DNA replication. Write a note on mechanism of DNA repair (6+4)

Section B

Question 4 MCQ 1x10= 10 marks

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

Two MCQ should be problem based learning (nice to know)

Q5 **structured short notes (attempt any 4 out of five)** 4x5=20 marks

1 Post translational modifications (with examples)

2 Lab diagnosis of myocardial infarction

3 Monoclonal antibodies

4 Biochemistry of Atherosclerosis

5 Free radicals and antioxidants

Q6 **Structured long question (attempt any two out of three)** 2x10= 20 marks

1 Enumerate the various Liver function tests. Describe the role of Bilirubin estimation in diagnosing different types of Jaundice. (6+4)

2 What is metabolic acidosis? Discuss its causes and mechanism of compensation. (3+7)

3 Describe the principle and applications of recombinant DNA technology (5+5)

Second MBBS Examination

Paper I

PATHOLOGY (1210)

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:

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

i. 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;

ii. Explain the 'pathophysiological' processes which govern the maintenance of 'homeostasis', mechanisms of their disturbance and the morphological and clinical manifestations associated with it.

iii. 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'.

iv. 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.

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

i. Describe the rationale and principles of technical procedures of the 'diagnostic laboratory tests' and interpretation of the results;

ii. Perform the simple bed-side tests on blood, urine and other biological fluid samples;

iii. Draw a rational scheme of investigations aimed at diagnosing and managing the cases of 'common disorders'

iv. Understand 'biochemical/physiological disturbances' that occur as a result of disease in collaboration with pre-clinical departments.

(c) **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= 300 Total**
Practical + Viva	**60+40= 100 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 each section of both the theory paper)

Notes :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

4. SYLLABUS:

4.1 Theory

Paper-I(1210-I)
(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

Amyloidosis and Calcification

(1) Calcification : Dystrophic and Metastatic
(2) Amyloidosis : classification, Pathogenesis, Morphology

Inflammation and Repair

(1) Acute inflammation : Features, causes, vascular and cellular events.
(2) Morphologic variants of acute inflammation
(3) Inflammatory cells and Mediators
(4) Chronic inflammation : Causes, types, nonspecific and Granulomatous with examples
(5) Wound healing by primary and secondary union, factors promoting and delaying the process
(6) Healing at specific sites including bone healing

Circulatory Disturbances

(1) Oedema : Pathogenesis and types
(2) Chronic venous congestion : Pathogenesis and changes in Lung, Liver, Spleen
(3) Thrombosis and Embolism : Formation, Fate and Effects
(4) Infarction : Types, common sites, Gangrene
(5) Shock : Pathogenesis, Types, Morphologic changes
(6) Derangements of Fluid and electrolyte imbalance

Growth Disturbances and Neoplasia

(1) Atrophy, Hypertrophy, Hyperplasia, Hypoplasia, Metaplasia, Malformation, Agenesis, Dysplasia
(2) Neoplasia : Classification, Histogenesis, Biologic Behaviour : Benign and Malignant; Carcinomaand Sarcoma
(3) Malignant Neoplasia : Grades and Stages, Local and distant spread

(4) Carcinogenesis : Environmental carcinogens, chemical, viral, occupational, Heredity and cellularoncogenes
(5) Tumour and Host Interactions : Systemic effects including paraneoplastic syndromes, Tumorimmunology
(6) Laboratory diagnosis : Cytology, Biopsy, Tumor markers

(Section- B)

Immunopathology

(1) Immune system : organisation, cells, antibodies and regulation of immune responses.
(2) Hypersensitivity : types and examples, Antibody and cell mediated tissue injury with examples.
(3) Primary immunodeficiency
(4) Secondary Immunodeficiency including HIV Infection
(5) Auto-immune disorders like systemic lupus erythematosis; organ specific and non-organ specificsuch as polyarteritisnodosa, Hashimoto's disease.
(6) Tumor Immunity
(7) Organ transplantation : Immunologic basis of Rejection and Graft versus host reaction

Miscellaneous Disorders

(1) Autosomal and sex-linked disorders with examples
(2) Metabolic disorders
(3) Protein energy malnutrition and vitamin deficiency disorders
(4) Radiation Injury
(5) Disorders of Pigment and Mineral metabolism such as bilirubin, melanin, hemosiderin

PAPER-II(1210-II)

(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) Diseases of blood vessels other than atherosclerosis
(5) Hypertension and Hypertensive Heart Disease
(6) Congenital Heart Disease : ASD, VSD, Tetralogy of Fallot, Bicuspid aortic valve, PDA
(7) Pericarditis and other pericardial diseases
(8) Cardiomyopathy

Respiratory Pathology

(1) Structure of Bronchial tree and alveolar walls, normal and altered lung function; concept ofobstructive and restrictive lung disorders
(2) Inflammatory diseases of bronchii : chronic bronchitis, bronchial asthma, bronchiectasis, chronicobstructive lung disease
(3) Pneumonias : Lobar, Broncho, Interstitial
(4) Pulmonary suppuration including lung abscess :Etiopathogenesis and Morphology
(5) Pulmonary Tuberculosis : Primary and Secondary, Morphologic types including pleuritis

(6) Emphysema : Types, pathogenesis

(7) Atelectasis and Hyaline Membrane Disease

(8) Tumors : Benign; Carcinoid, Malignant; Squamous cell, Oat cell, Adeno, etiopathogenesis.

(9) Occupational lung disorders :anthracosis, silicosis, asbestosis, mesothelioma

Urinary Tract Pathology

(1) Renal structure, basis of impaired function, urine analysis

(2) Glomerulonephritis : Classification, Primary Proliferative and Non Proliferative

(3) Secondary Glomerulonephritis : SLE, Purpura, Polyarteritis, Amyloidosis, Diabetes

(4) Nephrotic Syndrome

(5) Acute Renal Failure : Acute tubular and cortical necrosis

(6) Progressive renal failure and end stage renal disease

(7) Pyelonephritis, Reflux Nephropathy, Interstitial Nephritis

(8) Renal tumors : Renal cell carcinoma, Nephroblastoma

(9) Renal vascular disorders, kidney changes in Hypertension

(10) Urinary bladder : cystitis, carcinoma

(11) Urinary Tract Tuberculosis

(12) Urolithiasis and Obstructive Uropathy

(13) Renal Malformations : Polycystic kidneys

Pathology of the Gastro-Intestinal Tract

(1) Oral Pathology :Leukoplakia; Carcinoma oral Cavity and Esophagus

(2) Salivary gland tumors : Mixed, Adenoid cystic, warthin's

(3) Peptic ulcer :etiopathogenesis and complications; gastritis: types

(4) Tumors of stomach : Benign; Polyp, Leiomyoma, Malignant; Adenocarcinoma, Lymphoma

(5) Inflammatory diseases of small intestine : Typhoid, Tuberculosis, Crohn's, Appendictis

(6) Inflammatory diseases of appendix and large intestine : Amoebic colitis, Bacillary dysentery,Ulcerative Colitis

(7) Ischemic and Pseudomembranous enterocolitis, diverticulosis

(8) Malabsorption : Celiac disease, Tropical sprue and other causes

(9) Tumours and Tumor like condition of the large and small intestine : Polyps, Carcinoid,Carcinoma, Lymphoma

(10) Pancreatitis

(11) Pancreatic tumors : Endocrine, Exocrine and periampullary

(Section – B)

Infectious Diseases

(1) Mycobacterial Diseases : Tuberculosis and Leprosy

(2) Bacterial diseases : Pyogenic, Typhoid, Diphtheria, Gram negative infection, Bacillary dysentery,Syphilis

(3) Viral : Polio, Herpes, Rabies, Measles; Rickettsial, Chlamydial infection

(4) Fungal diseases and opportunistic infections

(5) Parasitic Diseases : Malaria, Filaria, Amebiasis, Kala-azar, Cysticercosis, Hydatid

(6) AIDS : Aetiology, modes of transmission, diagnostic procedures and handling of infected materialand health education.

Haematology

(1) Constituents of blood and bone marrow, Regulation of hematopoiesis
(2) Anaemia : classification and clinical features; clinical and lab. approach to diagnosis
(3) Nutritional anaemias : Iron deficiency anaemia, Folic Acid/Vit B 12 deficiency anaemia includingpernicious anaemia
(4) HemolyticAnaemias : Classification and investigation
(5) Hereditary hemolyticanaemias : Thalassemia, sickle cell anaemia
(6) Hereditary hemolyticanaemias : hereditary spherocytosis, G-6-PD deficiency
(7) Acquired hemolyticanaemias
(8) HemolyticAnaemias : Autoimmune, Alloimmune, Drug induced Microangiopathic and Malaria
(9) Aplastic Anaemia, PNH and Myelodysplastic syndrome
(10) Hemostaticdisorders : Platelet deficiency; ITP, Drug induced, secondary
(11) Coagulopathies : Coagulation factor deficiency; hemophilia, DIC and anticoagulant control
(12) Leukocyticdisorders :Leukocytosis, leukopenia, leukemoid reaction
(13) Acute and chronic Leukemia : Classification, Diagnosis
(14) Myeloproliferativedisorders :Polycythemia, Myelofibrosis
(15) Multiple myeloma and dysproteinemias
(16) Blood transfusion : grouping and cross matching, untoward reactions, transmissible infections including HIV and hepatitis

Liver and Biliary Tract Pathology

(1) Jaundice : Types, Pathogenesis and Differentiation
(2) Hepatitis : Acute and Chronic, Etiology, Pathogenesis and Pathology
(3) Cirrhosis: Etiology, Postnecrotic, Alcoholic, Metabolic, Pathology, Morphology (Macronodular,Micronodular, Mixed), complications
(4) Portal Hypertension : Types including non-cirrhotic portal fibrosis and Manifestations
(5) Tumors of Liver : hepatocellular and metastatic carcinoma, tumor markers
(6) Concept of hepatocellular failure
(7) Diseases of the gall bladder :Cholecystitis, Cholelithiasis, Carcinoma

Lymphoreticular System

(1) Lymphadenitis : nonspecific, Granulomatous
(2) Hodgkin's and Non-Hodgkin's Lymphomas : Classification, Morphology
(3) Diseases of the spleen : Splenomegaly causes and effects
(4) Thymus :Dysgenesis, Atrophy, Hyperplasia, Neoplasia

Reproductive System

(1) Diseases of cervix : cervicitis, cervical carcinoma, etiology, types and cytologic diagnosis
(2) Hormonal influences and histological appearances of different phases of menstrual cycle andthe abnormalities associated with it
(3) Diseases of uterus :endometritis, endometrial hyperplasia and carcinoma, adenomyosis, smoothmuscle tumors
(4) Trophoblastic disease :Hydatidiform mole, Choriocarcinoma
(5) Diseases of the breast : Mastitis, abscess, Fibrocystic disease, Neoplastic lesions : Fibroadenoma,Carcinoma, Phyllodestumor

(6) Prostate : Nodular Hyperplasia and Carcinoma
(7) Ovarian and testicular tumors
(8) Carcinoma of penis
(9) Pelvic inflammatory diseases including salpingitis
(10) Genital Tuberculosis

Skeletal System

(1) Bone – general considerations, reactions to injury and healing of fractures
(2) Osteomyelitis : Acute, Chronic, Tuberculous, Mycetoma
(3) Metabolic diseases : Rickets/Osteomalacia, Osteoporosis, Hyperparathyroidisism
(4) Tumors : Primary, Osteosarcoma, Osteoclastoma, Ewing's Sarcoma, Chondrosarcoma;Metastatic
(5) Arthritis : Rheumatoid, Osteo and tuberculous

Endocrine Pathology

(1) Scope of endocrine control and investigations
(2) Diabetes Mellitus : Types, Pathogenesis, pathology
(3) Nonneoplastic lesions of thyroid : Iodine deficiency goiter, autoimmune thyroiditis, thyrotoxicosis,myxedema
(4) Tumors of thyroid – adenoma, carcinoma : Papillary, Follicular, Medullary, Anaplastic
(5) Adrenal diseases : Cortical hyperplasia, atrophy, tuberculosis, tumors of cortex and medulla
(6) Parathyroid hyperplasia and tumors and Hyperparathyroidism
(7) Pituitary tumors
(8) Multiple endocrine neoplasia

Neuropathology

(1) Structural Organization, specific cell types, and reaction patterns
(2) Inflammatory disorders : Pyogenic and tuberculous meningitis, brain abscess, tuberculoma
(3) CNS tumors – primary :glioma and meningioma (excluding histopathology) and metastatic
(4) CSF and its disturbances : cerebral edema, raised intracranial pressure
(5) Cerebrovascular diseases : Atherosclerosis, thrombosis, embolism, aneurysm, Hypoxia, Infarctionand Hemorrhage
(6) Peripheral neuropathies and demyelnating disorders
(7) Diseases of muscles
(8) Traumatic lesions of CNS

4.2 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

Clinical Pathology

(1) Urine examination physical and chemical examination
(2) Use of different stix and their interpretation – Demonstration
(3) Microscopic examination of urine – Demonstration
(4) CSF examination – Demonstration of procedure and cell count and discussion
(5) Sputum examination – Discussion
(6) Seman analysis – Discussion

Instruments

(1) Demonstration and use.

Histopathology & Cytopathology

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

System	Specimens	HP Slide
Cardio – Vascular	Mitral stenosis Atheroma aorta, Left ventricular hypertrophy, Fibrinous pericarditis	
Respiratory	Lobar pneumonia, Bronchiectasis, Emphysema, Pulmonary tuberculosis &miliary tuberculosis, Bronchogenic carcinoma	Tuberculosis of lung, Bronchictasis
Gastro-Intestinal	Peptic ulcer, Gastric carcinoma, Typhoid ulcer of small intestine, Tubercular ulcer of small intestine, colorectal cancer, UC, Crohn's disease	Pleomorphic salivary adenoma, Adenocarcinoma, TB instestine, Acute appendicitis
Renal	Granular contracted kidney, Large white kidney, Hydronephrosis, Renal cell carcinoma, Adult polycytic kidney, TCC bladder wilm's tumour	Clear cell carcinoma, TCC bladder
Bone	Osteomyelitis – sequestrum, TB spine, Osteogenic sarcoma, Gaint cell tumour	Osteogenic sarcoma, Gaint cell tumour
Female Genital	Fibroid uterus, Carcinoma cervix, Dermoid tumour of ovary, Papillary serous cyst adeno carcinoma, Mucinous cyst adenoma ovary, Vesicular mole	Proliferative endometrium secretary endometrium, Leiomyoma, Mucinous cystadenoma, Vesicular mole, Benign cystic teretoma

Hepatic-Biliary	Micro-nodular cirrhosis, Fatty liver, Metastatic liver, Gall stones	Fatty liver, Chronic ccholecystitis
Female Breast	Carcinoma breast, Fibroadenoma	Fibroadenoma. Duct carcinoma
Male Genital	Carcinoma penis, Seminoma of testis, Benign hyperplasia of prostate, Undercended testis, Teretoma testis	Seminoma, Benign hyperplasia of prostate
Lymph Node	Lyph node - Hodgkin and NHL, TB lymph node	Metastatic deposit, TB lymphnode
Endocrine	Thyroid adenoma papillary carcinoma	Colloid goiter
Skin		Melanoma Basal cell carcinoma, Squmous cell carcinoma
Soft Tisssue		Lipoma, Capillary hemangioma
Central Nervous System		Neurilemmoma

5. BOOKS:

Core Books

1. Pathological Basis of Diseases- Robbins – latest edition.
2. Pathology – B.N.Dutta – latest edition
3. Manual of basic techniques for Health Laboratory – WHO 1980, Reprint 1995.
4. Pathology – Rubin and Farber
5. A handbook of Medical Laboratory Technology- VH Talib
6. Clinical Haematology in Medical Practice –De Grachy
7. 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

Paper II

MICROBIOLOGY (1220)

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:

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60+40= 100 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 paper)

Notes :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

4. SYLLABUS:

4.1 Theory

Paper – I (1220-I)

(Section – A)

General Microbiology and Immunology

Introduction to Microbiology

(1) Historical Introduction
(2) Scope of Microbiology
(3) Microbiology in relation to health and disease.

Microbiology and Medicine

(1) Development of Microbiology
(2) Micro-Organisms and Disease
(3) Culture Media : Types, Preparation and Use.
(4) Culture Methods : Aerobic and Anaerobic culture methods, methods of isolating pureculture.
(5) Sterilization and disinfection

Classification of Micro-Organisms : Morphology and Nature

(1) Taxonomy – classification, nomenclature and identification
(2) Methods of classification – Phylogenetic classification, Adansonian or numerical classification, Molecular or genetic classification, DNA composition, DNA homology, Ribosomal RNA sequencing intraspecies classification.
(3) Classification in clinical practice.
    a. Bacteria
    b. Fungi
    c. Viruses
    d. Rickettsiae
    e. Protozoa
    f. Nomenclature
    g. Type of cultures
(4) General properties of Bacteria, Anatomy of Bacteria – Bacterial nucleus (DNA), Cytoplasm of bacteria, Ribosomes, Inclusion Granules, Mesosomes, Cytoplasmic, membrane, Cell Wall Capsules, Microcapsules and Biofilms, Flagella and motility. Fimbriae, Pili (sex pili) Physiology of Bacteria.

Bacterial Reproduction

(1) Introduction, Bacterial spores, Sporulation, Viability, Germination, Outgrowth, (exospores), Pleomorphism and involution, Spheroplasts and free protoplasts, L-forms of bacteria, Protoplast, Spheroplast.

Bacterial Genetics

(1) Introduction – Basic principles of molecular biology, Extra-chromosomal genetic elements, Genotypic and Phenotypic variations, Mutation, Transmission of genetic material, Genetic mechanisms of drug resistance in bacteria, Transposable genetic elements – Molecular genetics, Genetic engineering, Restriction endonucleases, DNA probes, Blotting techniques, Polymerase chain reaction (PCR), Molecular epidemiology.

Identification of Bacteria

(1) Morphology
(2) Microscopy
(3) Staining reactions, stained preparations-negative or background staining, differential staining reactions, Gram stain, acid fast staining reaction, impregnation method
(4) Cultural Characteristic
(5) Resistance
(6) Metabolism – Fermentation and other biochemical properties
    a. Sugar fermentation
    b. Litmus milk
    c. Indole production
    d. Methyl red test (MR)
    e. Voges – Proskauer test
    f. Citrate utilisation
    g. Nitrate reduction
    h. Production of ammonia
    i. Urease test
    j. Hydrogen sulphide production
    k. Methylene blue reduction
    l. Catalase production
    m. Oxidase reaction
    n. Egg yolk reaction
    o. Growth in presence of KCN
    p. Composite media
(7) Serological Reactions
(8) Animal pathogenicity
(9) Typing of Bacteria – Biotyping, Serotyping, Phage typing, Bacteriocin typing, Protein typing, Restriction endonuclease typing, Gene probe typing, Polymerase chain reaction typing.
(10) Indirect identification methods- Gene probes, Antibody reactions. Counterimmuno-electrophoresis, Enzyme-linked immunosorbent assay, Latex agglutination, Heamagglutination and haemadsorption, Fluorescence microscopy and immunofluorescence.

Bacterial Growth and Physiology

(1) Introduction, Bacterial growth, Types of growth, Growth phases in broth culture
(2) Media for Bacterial Growth, Media used for isolation and identification of pathogens, Selective and indicator media, Media for laboratory studies
(3) Bacterial Physiology, Nutritional types, Physical conditions required for growth, Growth atmosphere, Growth temperature, Extremophiles
(4) Bacteria metabolism, Adaptive responses in bacteria, Bacterial viability.

Bacterial Health

(1) Normal Bacterial Flora

Bacteria in disease

(1) Pathogenicity and Virulence
(2) Infection and Resistance

Immunology

(1) General Immunology
   a. Infection
   b. Immunity
   c. Antigens
   d. Antibodies immunoglobulins
   e. Antigen-Antibody Reactions
   f. The Complement System
   g. Structure and Functions of 'Immune System'
   h. Immune Response
   i. Immunodeficiency Diseases
   j. Hypersensitivity
   k. Autoimmunity
   l. Immunology or Transplantation and Malignancy
   m. Immuno hematology

(Section – B)

Systematic Bacteriology Cocci & Bacilli

Systemic Microbiology

(1) Study of the pathogenic Bacteria belonging to the following genera and their laboratory diagnosis.
   a. Staphylococcus
   b. Streptococcus and Enterococcus
   c. Pneumococcus
   d. Neisseria
   e. Corynebacterium
   f. Bacillus
   g. Mycobacteria
   h. Actinomycetes & Nocardia
   i. Nonsporing anaerobes
   j. Coliform Bacteria – Escherichia Coli & Klebsiella
   k. Proteus
   l. Salmonella
   m. Shigella
   n. Yersinia
   o. Pasteurella & Francisella
   p. Vibrio Cholera
   q. Pseudomonas
   r. Brucella
   s. Haemophilus and Bordetella
   t. Intestinal Commensals
   u. Bacillus
   v. Clostridium
   w. Mycoplasms
   x. Spirochaetes
   y. Rickettsia
   z. Chlamydia
   aa. Miscellaneous Bacteria

Paper–II (1220-II)

(Section – A)

Virology – (HIV to be covered as a special topic)

General Properties of Viruses

(1) Virus Host Interactions : Virus Infections
(2) Bacteriophage
(3) Pox viruses
(4) Herpes viruses
(5) Adenoviruses
(6) Picorna viruses
(7) Orthomyxovirus
(8) Paramyxoviruses
(9) Arboviruses
(10) Rhabdoviruses
(11) Hepatitis Viruses
(12) Miscellaneous Viruses
(13) Oncogenic Viruses
(14) Retrovirus- Human Immunodeficiency Virus : AIDS

Mycology

(1) Economic importance and harmful effects of fungi
(2) Mycotoxins, Classification of fungi and pathogenesis & Lab diagnosis of mycotic infections

Medical Mycology

(1) Mycoses
(2) Superficial Mycoses
(3) Pityriasis versicolor
(4) Tinea nigra
(5) Piedra
(6) Dermatophytoses
(7) Candidiasis
(8) Deep Mycoses
(9) Mycetoma
(10) Chromoblastomycosis
(11) Sporotrichosis
(12) Rhinosporidiosis
(13) Subcutaneous mycosis
(14) Cryptococcosis
(15) Blastomycosis
(16) Paracoccidiomycosis
(17) Histoplasmosis
(18) Opportunistic Systemic Mycoses
(19) Aspergillosis
(20) Penicilliosis
(21) Mucor mycosis
(22) Otomycosis
(23) Oculomycosis
(24) Mycotic poisoning and Opportunistic mycosis & Antifungal agents

(Section – B)

Parasitology

(1) Introduction to parasitology, parasites, parasitism, evolution of parasites and host parasitic relationship.
(2) General principles of diagnosis, obtaining specimens for diagnosis method of staining methods.
(3) Classification of Parasites.

Protozoology

(1) Classification and the study of pathogenic protozoa belonging to
   a. Rhizopoda-Pathogenic and non-pathogenic amoebae
   b. Mastigophora-Intestinal & blood and tissue Mastigophora
   c. Sporozoa-Plasmodium, Toxoplasma, Isospora
   d. Ciliata-Balantidium coli
   e. Protozoan of uncertain classification

Helminthology

(1) Classification and the study of pathogenic helminths-Platyhelminths belonging to Cestodes, Trematodes and Nematodes.

Normal Microbial Flora of the Human Body

(1) Normal Flora of the Skin
(2) Normal Flora of the Conjunctiva
(3) Normal Flora of the Nose, Nasopharynx and Accessory sinuses
(4) Normal Flora of the Mouth and Upper Respiratory Tract
(5) Normal Flora of the Intestinal Tract
(6) Normal Flora of the Genitourinary Tract
(7) Bacteria in the Tissues, body fluids

Bacteriology of Water, Milk and Air

(1) Bacteriology of water
(2) Bacteriological examination of water
(3) Viruses in water
(4) Protozoa in water
(5) Bacteriology of Milk
(6) Types of bacteria in milk
(7) Milk-borne diseases
(8) Bacteriological examination of Milk, Water and Air
(9) Bacteriology of Air
(10) Measurement of air contamination
(11) Bacteriological examination of environmental dust

Laboratory Control of Antimicrobial Therapy

(1) Antibiotic sensitivity tests
(2) Disk Diffusion test
(3) Broth & Agar dilution test
(4) Antibiotic assays in body fluids
(5) Anti microbial agents

Immunoprophylaxis

(1) Routine immunisation
(2) Individual immunisation

Hospital infection – Nosocomial infection

(1) Microbiology of hospital acquired infections
(2) Common types of hospital infections
(3) Diagnosis and control of hospital infection

Clinical Microbiology

(1) Collection, transport and disposal of specimens

(2) Organ specific infections

a. Respiratory infections – Upper/ lower respiratory tract infections, Pneumonia, Tuberculosis, Bronchitis – Etiology, Lab diagnosis, Prophylaxis.
b. Infection of Eye and Ear.
c. Infection of skin
d. Infection of CVS Rheumatic fever – Endocarditis, Myocarditis
e. Urinary tract infections
f. Enteric Fever
g. Gastro-enteritis-Cholera; Other causes, Acute and chronic
h. Infections of Bones and Joints-Osteomyelitis-Arthritis, TB of bone
i. Central nervous system infections-Meningitis, Pyogenic, Aseptic
j. Opportunistic infections
k. Sexually transmitted disease including AIDS
l. Systemic infections/ Syndromes- P.U.O., Septicemias
m. Hospital Infections & Hospital waste management
n. Zoonotic infections
o. Basic molecular biology in relation to diagnosis of infectious diseases.

4.2 Practical

(1) Collection of relevant clinical samples.
   a. Blood for culture and serological test
   b. Urine for culture
   c. Swabs for microscopy and culture
   d. Body fluids for microscopy and culture

(2) Storage and transport of the clinical specimens

(3) Preparation of smears from clinical material

(4) Microscopic Examination
   a. Gram stain.
   b. Ziehl – Neelsen stain
   c. Stool for ova and cyst
   d. Blood smear for parasites (MP, Mf).
   e. Albert stain for diphtheria

(5) Under supervision
   a. India ink of CSF for Cryptococcus
   b. Modified Z-N stain for M. leprae.
   c. KOH for fungal elements

(6) Standard (universal precaution): hand wash, asepsis and antisepsis.

(7) Biomedical waste disposal: Needle, sharps disposal, infectious material

(8) Interpretation of Microbiology reports:
   a. Serology: VDRL, HIV, Hepatitis, ASO, RF, Widal Test.

(9) Antibiotic sensitivity: Rational use of antibiotics

5. BOOKS:

Core Books

1. A guide to Microbial Infections, Pathogenesis Immunology, Laboratory Diagnosis and control by Green wood, Slack and Peutherer (15th Ed. 1997 or latest edition)
2. Text Book of Microbiology by R. Anantha Narayanan and C.K.J. Paniker latest Edition
3. Parasitology by C.K.J. Paniker latest Edition

4. Mackie and McCartney's Medical Microbiology-Vol-I and Vol-II
5. Review of Medical Microbiology-Jawetz
6. Essentials of Medical Microbiology-Rajesh Bhalla & R.L. Ichpujani
7. Medical Mycology – Emmons
8. Text Book of Immunology – Barrett
9. Immunology – Dr. K.R. Joshi
10. Essentials Immunology – Ivam R. Roitt
11. Text Book of Microbiology – Surrinder kumar
12. Parasitology – Ramnik Sood
13. Parasitology – R.K. Ichpujani
14. Text book of Microbiology – P. Chakraborty
15. Parasitology – (Protozoology, Helminthology in relation to clinical medicine) – K.D.Chatterjee
16. Text Book of Parasitology - Dr D.R. Arora

Reference Books

1. Microbiology in Clinical practice by Shanson, 1997
2. Clinical Mycology Smith & Conant
3. Rhodes and van Rooyen – Text Book of Virology
4. Text Book of Immunology – Roitt
5. Text Book of Immunology – Bellanta
6. Diagnostic Microbiology – Bailey and Scott
7. Text book of Medical Mycology – Dr. Jagdish Chander
8. Text Book of Parasitology – KD Chattereji
9. Text Book of Parasitology – SC Parija

Paper III

PHARMACOLOGY (1230)

1. GOAL:

The broad goal of the teaching of undergraduate students in Pharmacologyis 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:

i. Describe the pharmacokinetics and pharmacodynamics of essential andcommonly used drugs.
ii. List the indications, contraindications, interactions and adverse reactions ofcommonly used drugs.
iii. Indicate the use of appropriate drug in a particular disease withconsideration to its cost, efficacy and safety for:
    1) Individual needs.
    2) Mass therapy under national health program.
iv. Describe the pharmacokinetic basis, clinical presentation, diagnosis andmanagement of common poisonings.
v. List the drugs of addiction and recommend the management.
vi. Classify environmental and occupational pollutants and statethe management issues.
vii. Indicate causations in prescription of drugs in special medical situationssuch as pregnancy, lactation, infancy and old age.
viii. Integrate the concept of rational drug therapy in clinical pharmacology.
ix. State the principles underlying the concept of 'Essential Drugs'
x. Evaluate the ethics and modalities involved in the development andintroduction of new drugs.

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

i. Prescribe drugs for common ailments.
ii. Recognise adverse reactions and interactions of commonly used drugs.
iii. Observe experiments designed for study of effects of drugs, bioassay andinterpretation of the experimental data.
iv. Scan information on common pharmaceutical preparations and criticallyevaluate drug formulations.

(c) **Integration:** Practical knowledge of use of drugs in clinical practice will be acquiredthrough integrated teaching with clinical departments and pre clinicaldepartments.

3. Scheme of Examination

Theory	**200 Marks**	**200 + 100= 300 Total**
Practical + Viva	**60 + 40= 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 each section of both the theory paper)

Notes :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

4. SYLLABUS:

4.1 Theory

Paper – I (1230-I)

(1) General Pharmacology, essential drugs, Rational therapy.
(2) Drugs action on the central nervous system including drug abuse and addiction.
(3) Drugs acting on autonomic nervous system.
(4) Drugs acting on peripheral (somatic)nervous system-Local anaesthetics and skeletal muscle relaxants.
(5) Drugs acting on respiratory system.
(6) Autacoids and other Biogenic Amines and polypeptides.
(7) Drugs acting on gastrointestinal tracts.

Paper – II (1230-II)

(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) Chemotherapy of Neoplastic diseases.
(6) Hormones and hormone antagonists.
(7) Drugs affecting uterine motility.
(8) Drugs used in common skin and eye disorder.
(9) Toxicology : Metals & Heavy metal poisoning & treatment of common poisoning.
(10) Drugs administered in special situations : Pregnancy, Lactation, Paediatrics & Geriatrics.
(11) Miscellaneous drugs:
    a. Antioxidants, Vitamins & minerals
    b. Enzymes in therapy, Gene therapy
    c. Immunotherapy, immune suppressants and immune stimulants.

4.2 Practical:

(1) Oral Viva
(2) Prescription writing,
(3) Drug interactions,
(4) Spotting,
(5) One experimental pharmacology exercise and
(6) One pharmacy exercise.
(7) Table viva.

5. BOOKS:

1. The Pharmacological Basis of Therapeutics - Goodman & Gilman 2011
2. Basic and Clinical Pharmacology - BG Katzung 2012
3. Pharmacology -Rang, Dale - Ritter and Moore 2011
4. Essential of Medical Pharmacology - K.D.Tripathi 2013
5. Principles of Pharmacology - KK Sharma & HL Sharma 2012

Second MBBS Patho. (I)
(1210-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)

Time: Three Hours

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

Second MBBS Patho. (I)
(1210-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)
Time: Three Hours
Maximum Marks: 100
Use separate answer – book for each section.
Question No. 1 in section A and
Question No. 4 in section B (10marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Question 1 MCQ 1x10=10 marks

a) 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)

b) 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

c) 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)

d) Transudate differs from exudate in having the following except –
a) No inflammatory cells
b) Low glucose content
c) Low protein content
d) Low specific gravity

e) The infarct of following organ is invariably haemorrhagic –
a) Infarct kidney
b) Infarct spleen
c) Infarct lung
d) Infarct heart

f) Typhoid fever is an example of –
a) Acute inflammation
b) Chronic nonspecific inflammation
c) Chronic granulomatous inflammation
d) Chronic suppurative inflammation

g) 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

h) 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

i) 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

j) 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 4 out of five) 4x5= 20 marks
1. CVC liver
2. Apoptosis
3. Phagocytosis
4. Differentiate between benign and malignant tumors.
5. Metastatic VS dystrophic calcification

Q3 Structured long question (attempt any two out of three) 2x10=20 marks
1. Define oedema, discuss etiopathogenesis of edema.
2. Classify amyloidosis, describe physical and chemical characteristic of amyloid.
3. Define inflammation, and with in brief an sequence of vascular events in inflammation.

Question 4 MCQ 1x10= 10 marks
a) 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

b) 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

c) 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

d) Which of the following is not included in TTP triad?
   a) Anti-platelet antibodies
   b) Thrombocytopenia
   c) Microangiopathic haemolytic anaemia
   d) Fibrin microthrombi

e) Leucocyte alkaline phosphatase (LAP) scores are elevated in –
   a) AML
   b) CML
   c) Myeloid metaplasia
   d) Myeloid leukaemoid reaction

f) Cytoplasmic anti-neutrophil cytoplasmic antibodies (C-ANCA) is seen in –
   a) Polyarteritis nodosa
   b) Wegener's granulomatosis
   c) Leucocytoclastic vasculitis
   d) Giant cell arteritis

g) The features of tetralogy of fallot are as under except –
   a) VSD
   b) Displacement of aorta to right to override the VSD
   c) Pulmonary stenosis
   d) Left ventricular hypertrophy

h) All of the following cause left –sided heart failure except-
   a) Cor pulmonale
   b) Systemic hypertension
   c) Mitral stenosis
   d) Aortic stenosis

i) 25 years female presented with butterfly rash, joint pain, fene white is probably diagnosis
   a) SLE
   b) Turner syndrome
   c) Rheumatoid arthritis
   d) Iron deficiency anaemia

j) Patient presented with neck rigidity, convulsion, fever. CSF findings are – Increased protein raised cell count with lymphocytosis and lobcreb formation. What is the diagnosis
   a) Pyogenic meningitis
   b) Tubercular meningitis
   c) Kernictures
   d) Viral meningitis

Q5 Structured short notes (attempt any 4 out of five) 4x5=20 marks

1. Delayed hypersensitivity reaction
2. Cancer cachexia
3. Gangrene
4. Vit D deficiency
5. Benedicts test

Q6 Structured long question (attempt any two out of three) 2x10=20 marks

1. Define shock, discuss pathogenesis of septic shock
2. Enumerate and describe mediators of acute inflammation
3. Define and classify neoplasia, describe the characterstic of malignant cell.

Second MBBS Patho. (II)

(1210-II)

Second MBBS (Main/ Remanded) examination Month /Year

PATHOLOGY

Paper-II

(Section – A & B)

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

Time: Three Hours

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

Second MBBS Patho. (II)
(1210-II)
Second MBBS (Main/Remanded) examination Month/Year
PATHOLOGY
Paper-II
(Section – A & B)

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

Time: Three Hours
Maximum Marks: 100
Use separate answer – book for each section.
Question No. 1 in section A and
Question No. 4 in section B (10marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Question 1 MCQ 1x10=10 marks

a) Non-caseating sarcoid-like epitheliod cell granulomas are seen in –
   a) Silicosis
   b) Asbestosis
   c) Coal-workers pneumoconiosis
   d) Chronic berylliosis

b) Most common cyst arising from dental tissues is –
   a) Redicular cyst
   b) Dentigerous cyst
   c) Eruption cyst
   d) Gingival cyst

c) The nature of lesion in barrett's oesophagus is –
   a) Congenital anomaly
   b) Inflammatory disease
   c) Metaplastic process
   d) Neoplastic lesion

d) Familial hypercholesterolaemia is
   a) Autosomal recessive
   b) X-linked recessive
   c) Autosomal co-dominant
   d) Non- mendelian disorder

e) In chronic RHD, the most common valvular deformities are –
   a) Mitral stenosis and insufficiency
   b) Mitral stenosis alone
   c) Mitral insufficiency alone
   d) Mitral and aortic stenosis combined

f) Which type of asthma occurs in late adult life –
   a) Atopic asthma
   b) Intrinsic asthma
   c) Mixed asthma
   d) Allergic asthma

g) Sjogren's syndrome produces the following pathological change in the eye –
   a) Uveitis
   b) Phthisis bulbi
   c) Keratoconjunctivitis
   d) Glaucoma

h) Ackerman's tumour is –
   a) Spindle cell carcinoma of larynx
   b) Verrucous carcinoma of larynx
   c) Adenocarcinoma of larynx
   d) Sarcoma of larynx

i) 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

j) 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

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

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

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

1 Discuss etiopathogenesis, morphology and complication of peptic ulcer.
2. Discuss pathophysiology and clinical presentation of nephrotic syndrome
3. Describe briefly risk factors and pathogenesis of atherosclerosis

Section B

Question 4 MCQ

a) The most common malignant salivary gland tumour in children is –
   a) Acinic cell tumour
   b) Adenoid cystic carcinoma
   c) Mucoepidermoid carcinoma
   d) Adenocarcinoma

b) 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

c) Intra-abdominal desmoplastic small cell tumour is a –
   a) Benign tumour
   b) Fibromatosis
   c) Tumour-like lesion
   d) Highly malignant tumour

d) Tubular adenoma of breast is mainly composed of –
   a) Closely-packed ductules
   b) Ductal epithelial hyperplasia
   c) Lobular hyperplasia
   d) Lactational hyperplasia

e) Necrotic lesions of entamoeba histolytica are due to –
   a) Cyst stage
   b) Trophozoite stage
   c) Both cyst and trophozoites
   d) Neither cysts nor trophozoites

f) 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

g) The cell of origin of Ewing's sarcoma is –
   a) Endothelial cell
   b) Marrow cell
   c) Osteoblast
   d) Primitive neuroectodermal cell

h) Common cause of meningitis in neonates with neural tube defects is –
   a) Escherichia coli
   b) Neisseria meningitides
   c) Streptococcus pneumonia
   d) Staphylococcus aureus

i) Pregnant female presented with pallor and generalized weakness since last one month, Hb –

7 serum Fe reduced and TIBC raised, what is probabli diagnosis –

a) Fe deficiency anaemia
b) Megaloblastic anaemia
c) Hemolytic anaemia
d) CML

j) A 5 year boy presented with serus anaemia H/o recurreal transfusion and normal Fe levels

Q which of the following test is most lelpful for diagnosis –

a) Hb electrophoresis
b) TIBC
c) Sickling test
d) Hb A2

Q5 Structured short notes (attempt any 4 out of five) 4x5=20 marks

1. Philadelphia chromosom
2. Transfusion transmitted diseases
3. Hemophilia
4. WHO classification of acute leukemia
5. Prothrombin time

Q6 Structured long question (attempt any two out of three) 2x10=20 marks

1. Define and classify anaemia. Discuss PBF findings and laboratory investigations of megaloblastic anaemia.
2. Describe clinical features, PBF and bone marrow findings of chronic myeloid leukemia.
3. Discuss molecular pathogenesis and lab finding of Beta thalassemia.

Second MBBS

Micro. (I)

(1220-I)

Second MBBS (Main/ Remanded) examination Month /Year

MICROBIOLOGY

Paper-I

(Section – A & B)

(General Microbiology, Immunology, Systemic Microbiology including Bacteriology)

Time: Three Hours

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

Second MBBS Micro. (II)

(1220-II)

Second MBBS (Main/ Remanded) examination Month /Year

MICROBIOLOGY

Paper-II

(Section – A & B)

(Virology, AIDS, Mycology, Parasitology, Clinical Microbiology, Miscellaneous)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

Second MBBS Pharm.(I)

(1230-I)
PHARMACOLOGY
Paper-I

(Section – A & B)
(General Pharmacology, CNS, ANS, PNS, Local Anaesthetics,
Respiratory System, Autacoids and GIT)
Time: Three Hours
Maximum Marks: 100
Use separate answer -- book for each Section.
Question No.1 in Section A and
Question No.4 in Section B (10 marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Question 1 MCQ 1x10= 10 marks
a) b) c) d) e) f) g) h) i) j)….
Two MCQ should be problem based learning (nice to know)

Q2 structured short notes (attempt any 4 out of five) 4x5=20 marks
1
2
3
4
5

Q3 structured long question (attempt any two out of three) 2x10= 20 marks
1
2
3

Section B

Question 4 MCQ 1x10 =10 marks
a) b) c) d) e) f) g) h) i) j)….
Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks
1
2
3
4
5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks
1
2
3

Second MBBS Pharm.(I)
(1230-II)
PHARMACOLOGY
Paper-II
(Section-A & B)
(CVS, Drugs acting on Kidney, Haematopoietic system, Antimicrobials, Anticancer drugs, Hormones, Drugs acting on Uterus, Drugs administered in Pregnancy, Lactation, Pediatrics and Geriatrics and Miscellaneous Drugs)
Time: Three Hours
Maximum Marks: 100
Use separate answer – book for each section.
Question No.1 in Section A and
Question No.4 in Section B (10 marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Q1. MCQs 1x10=10 marks

a) Potentiation of bradykinin appears to play a role inthe following effects of angiotensin convertingenzyme 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

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

c) A patient of iron deficiency anaemia has been put oniron therapy. What should be the rate of rise inhaemoglobin level of blood so that response is consideredadequate:
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

d) 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 destroyAmoxicillin

e) Biological response modifiers like GM-CSF are usedin conjunction with anticancer drugs for the followingpurpose(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

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

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

h) 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

i) The following is true about use of prednisolone inmalignant diseases **except**:
   A. It is curative in acute childhood leukaemia
   B. It is used in Hodgkin's disease
   C. It controls hypercalcaemia in patients withbony metastasis
   D. It affords symptomatic relief in most cancerPatients

j) 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 correctingneurological defects of vit B12 deficiency
   D. All of the above

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

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 marks

1. Classify Antitubercular drugs. Describe the mechanism of action, indicationsand adverse effects of Rifampicin.
2. Classify Oral Hypoglycemic Drugs. Describe the mechanism of action, indications and adverse effects of Metformin.
3. Classify Diuretic drugs.Describe the mechanism of action, indications and adverse effects of Loop Diuretics.

Section B

Q4. MCQs

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

b) A patient of congestive heart failure was being treatedwith furosemide and digoxin. He developed urinarytract infection. Which of the following antimicrobialsshould be avoided:
   A. Ampicillin
   B. Gentamicin
   C. Norfloxacin
   D. Cotrimoxazole

c) A 60-year-old patient presented with anorexia, weakness,paresthesia and mental changes. His tonguewas red, tendon reflexes were diminished, haemoglobinwas 6 g% with large red cells and neutrophilshad hypersegmented nuclei. Endoscopy revealedatrophic gastritis. Deficiency of which factor is likelyto be responsible for his condition:
A. Folic acid
B. Vitamin B12
C. Pyridoxine
D. Riboflavin

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

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

f) The following thyroid inhibitor interferes with peripheralconversion of thyroxine to triiodothyronine:
A. Propyl thiouracil
B. Methimazole
C. Carbimazole
D. Radioactive iodine

g) Resistance to acyclovir is most commonly due to mutationsin a viral gene that encodes a proteinthat:
A. Converts viral single-stranded RNA into doublestrandedDNA
B. Phosphorylates acyclovir
C. Transports acyclovir into the cell
D. Transports acyclovir out of the cell

h) Mental retardation, microcephaly, and underdevelopment ofthe midface region in an infant is associated with chronic heavymaternal use during pregnancy of which of the following?
A. Cocaine
B. Ethanol
C. Heroin
D. Methylenedioxymethamphetamine (MDMA)

i) The most important mechanism of anti-inflammatory action of glucocorticoids is:
A. Inhibition of lysosomal enzymes
B. Restriction of recruitment of inflammatorycells at the site of inflammation
C. Antagonism of action of interleukins
D. Suppression of complement function

j) Compared to erythromycin, azithromycin has:
A. Extended antimicrobial spectrum
B. Better gastric tolerance
C. Longer duration of action
D. All of the above

Q5. Structured short notes (attempt any four out of five) 4x5=20 marks

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. Write treatment regimens for Drug-sensitive TB and Multidrug-resistant (MDR) TB

Q6. Structured Long Question (attempt any two out of three) 2x10=20 marks

1. Enumerate methods of female and male contraception. Describe mechanism of action, adverse effects and contraindications of hormonal contraception in females.
2. Describe the actions, indications, contraindications and adverse effects of Glucocorticoids.
3. Explain in detail various types of Viral vaccines with example.

Second MBBS Pharm.(II)

(1230-II)

PHARMACOLOGY

Paper-II

(Section – A & B)

(CVS, Drugs acting on Kidney, Haematopoietic System, Antimicrobials, Anticancer drugs, Hormones, Drugs acting on Uterus, Drugs administered in Pregnancy, Lactation, Pediatrics & Geriatrics and Miscellaneous Drugs)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

Second MBBS Pharm.(I)
(1230-I)
PHARMACOLOGY
Paper-I
(Section-A & B)
(General Pharmacology, CNS, ANS, PNS, Local Anaesthetics,
Respiratory System, Autacoids and GIT)
Time: Three Hours
Maximum Marks: 100
Use separate answer – book for each section.
Question No.1 in Section A and
Question No.4 in Section B (10 marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Q1. MCQs 1x10=10 marks

a) `Essential drugs' are:
A. Life saving drugs
B. Drugs that meet the priority health care needs ofthe population
C. Drugs that must be present in the emergencybag of a doctor
D. Drugs that are listed in the pharmacopoeia of a country

b) A suspected case of poisoning has been brought to thecasualty with weakness, fainting, involuntary passageof urine and stools, profuse sweating, salivation, wateringfrom nose and eyes. His pulse is 120/min, lowvolume, BP 90/60 mm Hg, respiration shallow, pupilconstricted, muscles flabby with occasional fasciculations.Which is the most likely type of poisoning:
A. Belladonna
B. Barbiturate
C. Anticholinesterase
D. Dicophane (DDT)

c) A 35-year-old male presented with an attack of acutegout. He was treated with a 10-day course of naproxen. His blood uric acid level is high. Whatfuture line of treatment is most appropriate:
A. No regular medication. Treat attacks ofacute 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 2months followed by long-term allopurinoltreatment

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

e) The following is a skeletal muscle relaxant that actsas a central α2 adrenergic agonist:
A. Tizanidine
B. Brimonidine
C. Chlormezanone
D. Quinine

f) Benzodiazepines differ from barbiturates in the following aspects **except:**
A. They have a steeper dose response curve
B. They have higher therapeutic index
C. They have lower abuse liability
D. They do not induce microsomal drug metabolizingEnzymes

g) The most effective antiemetic for controlling cisplatininduced vomiting is:
A. Prochlorperazine
B. Ondansetron
C. Metoclopramide
D. Promethazine

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

i) Drug metabolism can be induced by the followingfactors **except:**
A. Cigarette smoking
B. Acute alcohol ingestion
C. Exposure to insecticides
D. Consumption charcoal broiled meat

j) Injection of adrenaline along with a local anaestheticserves the following purpose:
A. Lowers the concentration of the local anaestheticto 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 marks
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 mechanism of action, uses and adverse effects of Triptans
5. Explain Pharmacological basis of use of Adrenaline in Anaphylactic shock

Q3.Structured Long Question (attempt any two out of three) 2x10=20 marks
1. Classify Anti-parkinsonism drugs. Describe in brief about different anti-parkinsonism drugs with their mechanism of action and adverse effects.
2. Classify drugs used in Peptic Ulcer. Write the Mechanism of action, Uses and Adverse effects of Proton pump inhibitors.
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

Q4. MCQs

a) Alkalinization of urine hastens the excretion of:
A. Weakly basic drugs
B. Weakly acidic drugs
C. Strong electrolytes
D. Nonpolar drugs

b) If the total amount of a drug present in the body at agiven moment is 2.0 g and its plasma concentration is25 µg/ml, its volume of distribution is:
A. 100 L
B. 80 L
C. 60 L
D. 50 L

c) Neostigmine is preferred over physostigmine for treatingmyasthenia gravis because:
A. It is better absorbed orally
B. It has longer duration of action
C. It has additional direct agonistic action onnicotinic receptors at the muscle end plate
D. It penetrates blood-brain barrier

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

e) A patient of chronic bronchial asthma was maintainedon oral prednisolone 20 mg/day for 3 months. It was decided to switch him over to inhaled beclomethasonedipropionate 200 µg 4 times a day. What should be done to the oral prednisolone medicationafter 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 oneweek and then tapered
D. Its dose should be doubled for one week andthen tapered

f) Select the skeletal muscle relaxant that is commonlyused for endotracheal intubation despite causing histamine release, K+ efflux from muscles andcardiovascular changes:
A. Pipecuroniun
B. Succinylcholine
C. Pancuronium
D. Cisatracurium

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

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

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

j) Patients treated with the following drug should becautioned not to consume alcoholic beverages:
A. Mebendazole
B. Metronidazole
C. Methimazole
D. Metamizol

Q5. Structured short notes (attempt any four out of five) 4x5=20 marks

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 mechanism of action, uses and adverse effects of Valproic acid

Q6. Structured Long Question (attempt any two out of three) 2x10=20 marks

1. Describe in detail Factors modifying drug action.
2. Classify drugs usedin Bronchial Asthma. Describe the Mechanism of action, Uses and Adverse effect of Salbutamol.
3. Classify Antidepressant Drugs. Describe the advantages, indications and contraindications of Selective Serotonin Reuptake Inhibitors (SSRIs)

Third MBBS Part-I Examination

OTO-RHINO-LARYNGOLOGY (OR) EAR NOSE AND THROAT (E.N.T.) (1310)

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 :

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

i. Describe the basic 'pathophysiology' of common Ear, Nose and Throat (ENT) diseases and emergencies;
ii. Adopt the rational use of 'commonly used drugs' keeping in mind their adverse reactions;
iii. Suggest 'common investigative procedures' and their interpretation

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

i. Examine and 'diagnose common Ear, Nose and Throat (ENT) problems' including the premalignant and malignant disorders of the head and neck;
ii. Manage Ear, Nose and Throat (ENT) problems at the 'first level of care' and be able to refer whenever necessary;
iii. Assist/ carry out 'minor surgical procedures' like earsyringing, ear dressing, nasal packing etc.
iv. Assist in certain procedures such as tracheostomy, endoscopies and removal of foreign bodies.

(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 the theory paper)

Notes :

The paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory. Each section shall be answered in separate answer book.

Question number 1 in section A and Question number 4 in section B of the Paper shall be compulsory.

Section A of the paper will be assessed by the External Examiner and Section B of the paper by the Internal Examiner.

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)
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 (1310)
(Section A)
Ear
Anatomy and Physiology of Ear

(1) Anatomy of External Ear
   a. Auricle; External Auditory Canal; Tympanic Membrane; Middle Ear Anatomy;
   b. Parts of Middle Ear (Tympanum); Boundaries of Middle Ear; Ossicles ;
   c. Intratympanic Muscles; Intratympanic Nerves; Middle Ear Mucosa;
   d. Compartments and Folds of Middle Ear; Mastoid Antrum; Types of Mastoid;
   e. Korner's Septum; Blood Supply; Lymphatic Drainage of Ear

(2) Anatomy of Internal Ear
   a. Bony Labyrinth; Membranous Labyrinth ; Inner Ear Fluids; Organ of Corti; Vestibular Receptors; Blood Supply of Labyrinth ; Internal Auditory Canal

(3) Development of Ear

(4) Central Connections (Neural Pathways)
   a. Auditory Neural Pathways; Central Vestibular Connections; Physiology of Hearing; Conduction of Sound;Transduction of Mechanical Energy to Electrical Impulses; Medial Geniculate Body and Temporal Lobe Auditory Cortex

(5) Physiology of Vestibular System
   a. Semicircular Canals Functions; Utricle and Saccule Functions

(6) Maintenance of Body Equilibrium

(7) Otologic Symptoms and Examination
   a. Ear Symptoms
   b. Ear Examination
   c. Otalgia (Earache)
   d. Otorrhea
   e. Ear Polyp
   f. Tinnitus
   g. Hyperacusis

Hearing Evaluation

(1) Audiology and Acoustics
(2) Types of Hearing Loss
(3) Need of Hearing Evaluation
(4) Methods of HearingEvaluation; Tuning Fork Tests; Pure Tone Audiometry
(5) Speech Audiometry; Impedance Audiometry
(6) Electrocochleography; Brainstem Evoked Response Audiometry
(7) Otoacoustic Emissions ; Auditory Steady State Response (ASSR)

Conductive Hearing Loss and Otosclerosis
(1) Classification of Hearing Loss
(2) Conductive Hearing Loss
(3) Otosclerosis
(4) Stapedectomy
Sensorineural Hearing Loss
(1) Sensorineural Hearing Loss
(2) Labyrinthitis; Syphilis
(3) Cisplatin; Aminoglycoside Antibiotics
(4) Noise Trauma
(5) Sudden Sensorineural Hearing Loss
(6) Presbycusis; Genetic Sensorineural Hearing Loss
(7) Non-Organic Hearing Loss; Degree of Hearing Loss
(8) The Only Hearing Ear
Hearing Impairment in Infants and Young Children
(1) Etiology; Clinical Features
(2) High-Risk Registry
(3) Universal Newborn Hearing Screening (UNHS)
(4) Evaluation of Universal Newborn Hearing Screening Refer Infants
(5) Other Hearing Tests; Treatment ;Rehabilitative Measures
Hearing Aids and Cochlear Implants
(1) Training; Hearing Aids; Assistive Devices
(2) Implantable Hearing Aids; Cochlear Implants;Auditory Brainstem Implant
Diseases of External Ear and Tympanic Membrane
(1) **Disorders of Auricle**
   a. Congenital Disorders
   b. Traumatic Disorders
   c. Erysipelas
   d. Perichondritis and Chondritis
   e. Chondrodermatitis Nodularis
   f. Chronica Helicis
   g. Relapsing Polychondritis
(2) **Disorders of External Auditory Canal**
   a. Congenital Disorders of External Auditory Canal
   b. Trauma of External Auditory Canal
   c. Foreign Bodies of Ear
   d. Ear Maggots
   e. Otitis Externa
   f. Otomycosis
   g. Furunculosis
   h. Keratosis Obturans
   i. Ear Wax ;Ear Syringing
   j. Herpes Zoster Oticus-Ramsay Hunt Syndrome (Varicellazoster Virus)
   k. Bullous Otitis Externa andMyringitis
(3) **Disorders of Tympanic Membrane**
   a. Granular Myringitis
   b. Malignant or Necrotizing Otitis Externa
   c. Retracted Tympanic Membrane
   d. Tympanosclerosis
   e. Perforation of Tympanic Membrane

f. Traumatic Rupture of Tympanic Membrane

(4) **Disorders of Eustachian Tube**

a. Anatomy; Physiology
b. Examination of Eustachian Tube
c. Tests for Eustachian Tube Function
d. Obstruction of Eustachian Tube
e. Patulous Eustachian Tube

Acute Otitis Media and Otitis Media with Effusion

(1) **Acute Otitis Media**

a. Etiopathology
b. Clinical Features
c. Diagnosis and Treatment
d. Recurrent Acute Otitis Media
e. Acute Necrotising Otitis Media

(2) **Otitis Media with Effusion**

a. Etiology
b. Clinical Features
c. Diagnosis and Treatment
d. Sequelae and Complications
e. Aero Otitis Media (Otitic Barotrauma)

Chronic Suppurative Otitis Media and Cholesteatoma

(1) Mastoid Pneumatization;
(2) Atelectasis and Adhesive Otitis Media;
(3) Chronic Suppurative Otitis Media;
(4) Atticoantral CSOM or Chronic OM with Cholesteatoma;
(5) Tubotympanic CSOM or Chronic OM without Cholesteatoma

Complications of Suppurative Otitis Media

(1) Factors Influencing Development of Complications and Pathways of Spread;
(2) Acute Mastoiditis;
(3) Masked (Latent) Mastoiditis;
(4) Extratemporal Complications (Abscesses);
(5) Petrositis or Petrous Apicitis;
(6) Facial Nerve Paralysis;
(7) Labyrinthitis;
(8) Extradural (Epidural) Abscess;
(9) Subdural Abscess or Empyema; Meningitis;
(10) Otogenic Brain Abscess;
(11) Lateral Sinus Thrombophlebitis;
(12) Otitic Hydrocephalus

Evaluation of Dizzy Patient

(1) Evaluation–General Outline;
(2) Description of Dizziness; Onset, Duration and Progression; Provoking Factors; Associated Symptoms; Personal, Family and Past History;
(3) Spontaneous Nystagmus; Dynamic Ocular Examination;
(4) Fistula Test; Valsalva Maneuver; Dix-Hallpike Maneuver; Optokinetic Test; Rotation Tests; Caloric Test; Tandem Walking; Romberg's Test; Cerebellar Tests;
(5) Hyperventilation;
(6) Orthostatic Hypotension;
(7) Special Vestibular Investigations;

(8) Differences between Central and Peripheral Vertigo

Peripheral Vestibular Disorders

(1) Benign Paroxysmal Positional Vertigo;
(2) Acute Vestibular Neuritis;
(3) Ménière's Disease (Idiopathic Endolymphatic Hydrops);
(4) Delayed Endolymphatic Hydrops;
(5) Recurrent Vestibulopathy;
(6) Middle Ear Effusion;
(7) Labyrinthine Fistula;
(8) Serous Labyrinthitis;
(9) Suppurative (Purulent) Labyrinthitis;
(10) Perilymphatic Fistula

Central Vestibular Disorders

(1) Migraine;
(2) Vertebrobasilar Insufficiency;
(3) Subclavian Steal Syndrome;
(4) Wallenberg's Syndrome;
(5) CerebellarInfarction ;
(6) Cerebellar Hemorrhage;
(7) Multiple Sclerosis;
(8) Motion Sickness;
(9) Phobic Postural Vertigo;
(10) Hyperventilation; Agoraphobia;
(11) Cervical Vertigo or Whiplash Vertigo

Facial Nerve Disorders

(1) Pertinent Anatomy;
(2) Surgical Landmarks;
(3) Clinical Evaluation of Facial Palsy;
(4) Pathophysiology of NerveInjury;
(5) Sunderland Classification;
(6) Differences between Upper and Lower Motor Neuron Palsy;
(7) Investigations and Causes of Facial Nerve Paralysis;
(8) Sequelae/Complication of Facial Nerve Palsy;
(9) Bell's Palsy; Recurrent FacialPalsy; Melkersson's Syndrome; Ramsay Hunt Syndrome or Herpes Zoster Oticus (Varicella-Zoster Virus);Temporal Bone Fracture; Lyme Disease (Bannwarth's Syndrome); Sarcoidosis;
(10) Mobius Syndrome Iatrogenic or Surgical Trauma;
(11) Hyperkinetic Disorders of Facial Nerve;
(12) Surgical Treatment of Facial Nerve Palsy

Tumors of the Ear and Cerebellopontine Angle

(1) Benign Tumors of External Ear;
(2) Malignant Tumors of External Ear;
(3) Tumors of Middle Ear and Mastoid;
(4) Internal Auditory Canal and Cerebellopontine Angle

Middle Ear and Mastoid Surgeries

(1) Myringotomy and Tympanostomy Tubes (Grommet);
(2) Mastoidectomy; Cortical Mastoidectomy; Radical Mastoidectomy; Modified Radical Mastoidectomy;
(3) Tympanoplasty

Instruments used in procedures of Ear

(1) OPD Instruments;
(2) Mastoid and Ear Microsurgery & all other instruments.

Diagnostic Imaging related to Ear

(1) Conventional Radiology;
(2) Computerized Tomography; Magnetic Resonance Imaging; Applications of CT, MRI; CT Anatomy of Ear & other diagnostic imaging related to ear.

Nose & Paranasal Sinuses

Anatomy and Physiology of Nose and Paranasal Sinuses

(5) Anatomy of Nose
   a. External Nose; Internal Nose; Anatomy of Paranasal Sinuses
(6) Physiology of Nose
   a. Respiration; Air-Conditioning of Inspired Air; Protection of Airway; Vocal Resonance; Nasal Reflexes;Olfaction
(7) Physiology of Paranasal Sinuses
   a. Functions; Ventilation of Sinuses

Nasal Symptoms and Examination

(1) History Taking
(2) Examination
   a. External Nose; Vestibule;
   b. Anterior Rhinoscopy (Examination of Nasal Cavity);
   c. Posterior Rhinoscopy;
   d. Patency of Nasal Cavities;
   e. Sense of Smell;
   f. Paranasal Sinuses
(3) Special Investigations of Nasal Complaints
   a. Smell;
   b. Measurement of Mucociliary Flow;
   c. Nasal Obstruction;
   d. Nasal Valves Disorders;
   e. Radiological Imaging;
   f. Diagnostic Antrum Puncture;
   g. Allergic Tests

Diseases of External Nose and Epistaxis

(1) Diseases of External Nose
   a. Infections; Deformities of External Nose; Tumors of External Nose
(2) Epistaxis
   a. Pertinent Anatomy; Causes; Evaluation; Sites of Epistaxis; Investigations; Treatment

Infectious Rhinosinusitis

(1) Classification; Viral Rhinosinusitis (Common Cold); Pandemic Influenza A H1N1 (Swine Flu);
(2) Acute Bacterial Rhinosinusitis; Chronic Rhinosinusitis;
(3) Pediatric Rhinosinusitis;
(4) Complications of Rhinosinusitis; Mucocele/Pyocele; Orbital Complications; Osteomyelitis/Osteitis; Cavernous Sinus Thrombosis ;
(5) Intracranial Complications; Hypertrophied Turbinates;
(6) Nasal Polyps;
(7) Fungal Sinusitis;
(8) Atrophic Rhinitis (Ozena)

Nasal Manifestation of Systemic Diseases

(1) Wegener's Granulomatosis;
(2) Peripheral T-Cell Neoplasm (Nonhealing Midline Granuloma, Polymorphic Reticulosis);
(3) Rhinitis Sicca;
(4) Rhinitis Caseosa;
(5) Sarcoidosis;
(6) Churg-Strauss Syndrome ;
(7) Rhinoscleroma;
(8) Tuberculosis, Nontuberculous Mycobacteria, Leprosy;
(9) Lupus Vulgaris and Syphilis;
(10) Fungal Sinusitis Histoplasmosis; Rhinosporidiosis;

Allergic and Nonallergic Rhinitis

(1) Allergy and Immunology
   a. Types of Immunologic (Hypersensitivity) Mechanism
(2) Allergic Rhinitis
   a. Etiology; Classification; Investigations; Treatment
(3) Nonallergic Rhinitis (Vasomotor Rhinitis)
   a. Pathophysiology; Classification; Clinical Features; Investigations; Treatment

Nasal Septum

(1) Fracture of Nasal Septum;
(2) Deviated Nasal Septum;
(3) Septal Hematoma and Septal Abscess;
(4) Perforation of Nasal Septum;
(5) Hypertrophied Turbinates;
(6) Nasal Synechia;
(7) Choanal Atresia

Maxillofacial Trauma

(1) Etiology Classificationand General Principles; Evaluation;
(2) Soft Tissue Injuries;
(3) Frontal Sinus ;Supraorbital Ridge;
(4) Frontal Bone; Nasal Bones and Septum; Naso-Orbital Ethmoid (Noe); Zygoma(Tripod Fracture); Zygomatic Arch; Orbit (Blowout Fracture); Naso-Maxillary Complex; Mandible;
(5) Oroantral Fistula;
(6) Cerebrospinal Fluid Rhinorrhea;
(7) Foreign Body Nose;
(8) Rhinolith;
(9) Nasal Myiasis (Maggots Nose)

Tumors of Nose, Paranasal Sinuses and Jaws

(1) Tumors of Nose and Paranasal Sinuses
   a. Neoplasms in Children; Diagnosis; Angiofibroma; Intranasal Meningoencephalocele; Gliomas Nasal Dermoid; Monostotic Fibrous Dysplasia; Squamous Papilloma; Osteomas; PleomorphicAdenoma; Chondroma ; Schwannoma and Neurofibroma; Ossifying Fibroma and Cementoma;Odontogenic Tumors; Inverted Papilloma; Meningiomas; Hemangiomas; Hemangiopericytoma;Plasmacytoma;
   b. Malignant Neoplasms; Malignancy of Maxillary Sinus; Malignancy of Ethmoid Sinus;Malignancy of Frontal Sinus; Malignancy of Sphenoid Sinus; Adenocarcinoma; Adenoid CysticCarcinoma; Malignant Melanoma; Olfactory Neuroblastoma; Sarcomas; Rhabdomyosarcoma
(2) Tumors and Related Jaw Lesions

a. Management of Jaw Swellings; Fissural Cysts; Periapical Cysts; Follicular (Dentigerous) Cysts ;Odontogenic Keratocyst; Basal Cell Nevus Syndrome; Retention Cyst; Ameloblastoma; Ossifying Fibroma; Fibrous Dysplasia; Cherubism; Adenomatoid Odontogenic Tumor

Operations of Nose and Paranasal Sinuses

(5) Sinus Operations
   a. Preoperative Assessment; Diagnostic Nasal Endoscopy (Sinuscopy); Endoscopic Sinus Surgery; Antral Puncture or Proof Puncture; Inferior Meatal Antrostomy; Caldwell-Luc Operation

(6) Surgery of Nasal Septum
   b. Submucous Resection of Nasal Septum; Septoplasty; Postoperative Care; Complications

Instruments used in procedures of Nose

(1) Antrum Puncture; Inferior Meatal Antrostomy; Nasal Fracture Reduction Forceps; Nasal Septal and Sinus Surgery; & all other OPD Nose instruments.

Diagnostic Imaging related to Nose

(1) Conventional Radiology; Computerized Tomography; Magnetic Resonance Imaging; Applications of CT, MRI; Ct Anatomy of Nose & other diagnostic imaging related to nose.

(Section B)

Oral Cavity & Salivary Glands

Anatomy and Physiology of Oral Cavity, Pharynx and Esophagus

(1) Oral Cavity
(2) Salivary Glands

Oral Symptoms and Examination

(1) Oral Cavity;
(2) Evaluation of Cancer Lesions;
(3) Salivary Glands;
(4) Diagnostic Imaging; Fine NeedleAspiration Cytology

Oral Mucosal Lesions

(1) Red/White Lesions
   a. Oral Submucous Fibrosis;
   b. Leukoedema; Oral Leukoplakia;
   c. Oral Hairy Leukoplakia;
   d. Oral Lichen Planus;
   e. Chronic Discoid Lupus Erythematosus;
   f. Candidiasis (Moniliasis);
   g. Fordyce's Spots;
   h. Nicotine Stomatitis

(2) Vesiculobullous/Ulcerative Lesions
   a. Pemphigus Vulgaris; Mucous Membrane Pemphigoid or Cicatricial Pemphigoid;
   b. Herpes Simplex Virus: Herpetic Gingivostomatitis or Orolabial Herpes; Herpangina
   c. Hand, Foot and Mouth Disease;;
   d. Acute Necrotizing Ulcerative Gingivitis;
   e. Recurrent Aphthous Stomatitis;
   f. Behçet's Syndrome;
   g. Erythema Multiforme;
   h. (Eosinophilic) Granuloma;
   i. Traumatic Ulcers;
   j. Radiation Mucositis;

k. Blood Disorders;
l. Drug-InducedOral Lesions

(3) Pigmented Lesions
a. Melanotic Macules; Melanoma; Amalgam Tattoo

(4) Lesions of Tongue
a. Geographical Tongue or Migratory Glossitis;
b. Hairy Tongue;
c. Fissured Tongue;
d. TongueTie (Ankyloglossia)

Disorders of Salivary Glands

(1) Inflammatory Disorders
a. Acute Suppurative Sialadenitis; Parotid Abscess;
b. Neonatal Suppurative Parotitis; Recurrent Parotitis of Childhood; Chronic Sialadenitis; Tuberculous Mycobacterial Disease;
c. Nontuberculous Mycobacterial Disease; Actinomycosis; Cat Scratch Disease; Toxoplasmosis; HIV

(2) Obstructive Disorders
a. Sialolithiasis

(3) Neoplasms of Salivary Glands
a. Histogenesis of Neoplasms; Pleomorphic Adenoma; Warthin's Tumor or Adenolymphoma (Papillary Cystadenoma Lymphomatosum);
b. Oncocytoma; Hemangiomas; Lymphangiomas; Mucoepidermoid Carcinoma; Adenoid Cystic Carcinoma (Cylindroma); Acinic Cell Carcinoma;
c. Squamous Cell Carcinoma; Malignant Mixed Tumor; Adenocarcinoma; Lymphoepithelial Carcinoma or Undifferentiated Carcinoma
d. Xerostomia Sjögren's Syndrome; Diffuse Infiltrative Lymphocytosis Syndrome; Frey's Syndrome (Gustatory Sweating)

Neoplasms of Oral Cavity

(1) Benign Tumors of Oral Cavity
a. Papilloma; Pleomorphic Adenoma; Hemangioma; Lymphangioma; Granular Cell Tumor;Ameloblastoma; Torus;
b. Pyogenic Granuloma; Irritation Fibroma; Mucocele;Ranula; Dermoid Cysts

(2) Carcinoma of Oral Cavity
a. Carcinoma Lips; Carcinoma Gingiva/Alveolar Ridge; Carcinoma Oral Tongue; Carcinoma Floor of Mouth;
b. Carcinoma Buccal Mucosa; Carcinoma Hard Palate; Carcinoma Retromolar Trigone; Minor Salivary Gland Tumors; Melanoma; Kaposi's Sarcoma

Adenotonsillectomy

(1) Preoperative Assessment; Indications for Tonsillectomy; Indications for Adenoidectomy;Contraindications;

(2) Surgical Techniques; Preoperative Measures; Anesthesia; Position; Surgical Instruments; Operative Steps; Postoperative Care; Complications

Instruments related to Oral Cavity & Salivary glands

(1) Mouth Gags and Retractors; Adenotonsillectomy;

(2) Incision and Drainage of Quinsy; & all other OPD instruments related to Oral Cavity.

Diagnostic Imaging related to Oral Cavity & Salivary glands

(1) Conventional Radiology; Orthopantomogram; Ultrasound; Computerized Tomography; Magnetic Resonance Imaging; Radionuclide Imaging; Interventional Radiology; Applications of CT, MRI and Us; Ct Anatomy of oral cavity & salivary glands.

Pharynx & Esophagus

Anatomy and Physiology of Pharynx and Esophagus

(1) Pharynx
   a. Waldeyer's Ring
   b. Nasopharynx - Adenoids
   c. Oropharynx - Palatine (Faucial) Tonsils
   d. Laryngopharynx

(2) Esophagus
   c. Physiology of Swallowing
   d. Embryology

Pharyngeal Symptoms and Examination

(1) **Evaluation of Pharynx**
   a. Nasopharynx; Oropharynx; Laryngopharynx

(2) **Evaluation of Esophagus**
   a. Barium Esophagography; Esophageal Manometry; Ambulatory 24-Hours Esophageal ph Recording; Esophagoscopy

(3) **Dysphagia**
   a. Evaluation

Pharyngitis and Adenotonsillar Disease

(1) Pharyngitis ; Infectious Mononucleosis; Streptococcal Tonsillitis-Pharyngitis; Faucial Diphtheria; Tonsillar Concretions/Tonsilloliths;

(2) Intratonsillar Abscess; Tonsillar Cyst; Keratosis Pharyngitis; Diseases of Lingual Tonsils; Chronic Adenotonsillar Hypertrophy; Adenoid Facies and Craniofacial Growth Abnormalities; Obstructive Sleep Apnea

Sleep Apnea and Sleep-Disordered Breathing

(1) Pathophysiology of Obstructive Sleep Apnea; Diagnosis and Evaluation of OSA ; Severity of OSA ; Complications of OSA ;

(2) Nonsurgical Treatment; Surgical Treatment of OSA ; Surgical Treatment of Snoring without OSA

Tumors of Nasopharynx

(1) Juvenile Nasopharyngeal Angiofibroma; Nasopharyngeal Carcinoma; Teratomas; Thornwaldt's Disease (Pharyngeal Bursitis); Proptosis (Exophthalmos)

Tumors of Oropharynx

(1) Malignant Tumors
   a. Histopathology; Risk Factors; Evaluation; Staging; Treatment;
   b. Carcinoma Base of Tongue; Carcinoma Tonsil; Lymphoma; Carcinoma Soft Palate; Carcinoma Posterior Pharyngeal Wall

(2) Benign Swellings
   a. Parapharyngeal Tumors; Stylalgia (Eagle's Syndrome)

Malignant Tumors of Hypopharynx

   a. Risk Factors; Pathology; Clinical Features; Diagnosis; Staging; Management;
   b. Carcinoma Pyriform Sinus; Carcinoma Postcricoid;
   c. Carcinoma Posterior Pharyngeal Wall

Disorders of Esophagus

(1) Perforation of Esophagus; Corrosive Burns; Mallory Weiss Syndrome; Foreign Bodies; Pill-Induced Esophagitis;

(2) Gastroesophageal Reflux Disease; Barrett's Esophagus; Benign Strictures; Hiatus Hernia; Schatzki's Ring; Plummer-Vinson (Patterson Brown-Kelly) Syndrome; Infectious Esophagitis; Cricopharyngeal Spasm; Diffuse Esophageal Spasm; Nutcracker Esophagus;

(3) Cardiac Achalasia; Scleroderma or Progressive Systemic Sclerosis; Zenker Diverticulum; Globus Hystericus Pharyngeus; Benign Neoplasms; Carcinoma Esophagus

Endoscopies

(1) Esophagoscopy
   a. Indications; Contraindications of Esophagoscopy; Rigid Esophagoscopy; Flexible Esophagoscopy

Instruments related to Pharynx & Esophagus

Diagnostic Imaging

(1) Conventional Radiology; Ultrasound; Computerized Tomography; Magnetic Resonance Imaging; Radionuclide Imaging;
(2) Interventional Radiology; Applications of CT, MRI and Us; Ct Anatomy of Pharynx & Esophagus.

Larynx, Trachea & Bronchus

Anatomy and Physiology of Larynx and Tracheobronchial Tree

(1) Anatomy of Larynx
   a. Cartilages ; Joints ; Membranes and Ligaments; Cavity of the Larynx ; Mucous Membrane of theLarynx ; Lymphatic Drainage ;
   b. Spaces of the Larynx ; Functional Divisions of Vocal Folds ; Phase Difference ; Muscles of Larynx ; Nerve Supply of Larynx ; Development
(2) Functions of Larynx
   Protection of Lower Airways; Phonation and Speech; Respiration; Fixation of Chest
(3) Anatomy of Tracheobronchial Tree
   a. Trachea and Bronchi; Tracheal Cartilages; Mucosa; Bronchopulmonary Segments

Laryngeal Symptoms and Examination

(1) Symptoms; Clinical Examination; Endoscopy; Laryngoscopic Parameters and Patient's
(2) Task; Stroboscopy; Direct Laryngoscopy (Microlaryngoscopy) and Bronchoscopy
(3) Hoarseness of Voice
(4) Stridor
(5) Assessment of Patient with Stridor; Treatment

Infections of Larynx

(1) Acute Laryngotracheobronchitis Croup or Laryngotracheitis; Bacterial Tracheitis; Pediatric Epiglottitis; Adult Supraglottitis; Whooping Cough; Diphtheria; Chronic Nonspecific Laryngitis;
(2) Atrophic Laryngitis (Laryngitis Sicca); Tuberculosis; Lupus; Syphilis; Leprosy (Hansen's Disease); Scleroma;Edema of Larynx .

Benign Tumors of Larynx

(1) Vocal Nodules (Singer's or Screamer's Nodules); Vocal Polyp; Reinke's Edema (Bilateral Diffuse Polyposis); Contact Ulcer or Granuloma; Intubation Granuloma; Leukoplakia or Keratosis; Amyloid Tumors; Ductal Cysts; Saccular Cysts; Laryngocele; Recurrent Respiratory Papillomatosis; Chondroma; Hemangioma

Neurologic Disorders of Larynx

(1) Neurological Disorders of Larynx; Classification of Laryngeal Paralysis; Positions of Vocal Cords; Causes of Laryngeal Paralysis; Unilateral Recurrent Laryngeal Nerve (Rln) Paralysis;
(2) Bilateral Recurrent Laryngeal Nerve (Abductor) Paralysis; Unilateral Superior Laryngeal Nerve Paralysis; Bilateral Superior Laryngeal Nerve Paralysis; Unilateral Combined (Complete) Paralysis of Recurrent and Superior Laryngeal Nerve;
(3) Bilateral Combined (Complete) Paralysis of Recurrent and Superior Laryngeal Nerve; Congenital Vocal Cord Paralysis; Phonosurgery

Voice and Speech Disorders

(1) Voice and Speech; Classification of Voice and Speech Disorders; Dysphonia Plica Ventricularis (Ventricular Dysphonia); Functional Aphonia (Hysterical Aphonia); Puberphonia (Mutation Falsetto Voice);
(2) Phonasthenia; Hyponasality (Rhinolalia Clausa); Hypernasality (Rhinolalia Aperta); Spasmodic Dysphonia; Vocal Tremor; Stuttering; Myoclonus; Tourette's Syndrome; Botulinum Toxin Therapy

Malignant Tumors of Larynx

(1) Risk Factors; Evaluation; Staging; Management; Glottic Cancer; Supraglottic Cancer; Subglottic Cancer; Verrucous Carcinoma; Organ Preservation Therapy; Photodynamic Therapy; Post-Laryngectomy
(2) Vocal Rehabilitation

Management of Impaired Airway

(1) Tracheostomy/Tracheotomy
    a. Cricothyrotomy (Laryngotomy or Coniotomy); Percutaneous Dilational Tracheostomy
(2) Congenital Lesions of Larynx
    a. Laryngomalacia; Congenital Vocal Cord Paralysis; Congenital Subglottic Stenosis; Laryngeal Web/Atresia; Subglottic Hemangiomas; Laryngoesophageal Cleft
(3) Foreign Bodies of Air Passages
    a. Laryngotracheal Trauma

Endoscopies

(1) Direct Laryngoscopy/Microlaryngoscopy
    a. Indications; Contraindications; Anesthesia; Position; Procedures; Postoperative Care;Complications; Flexible Nasopharyngolaryngoscopy
(2) Bronchoscopy
    b. Indications for Bronchoscopy; Rigid Bronchoscopy; Flexible Fiberoptic Bronchoscopy

Instruments related to Larynx, Trachea & Bronchus

Endoscopes; Tracheostomy; Airway Devices

Diagnostic Imaging

(1) Conventional Radiology; Computerized Tomography; Magnetic Resonance Imaging; Radionuclide Imaging; Interventional Radiology;
(2) Applications of CT, MRI and Us; Ct Anatomy of Larynx, Trachea & Bronchus.

Neck

Anatomy of Neck

(1) Surface Anatomy ; Triangles of Neck ; Cervical Fascia ; Lymph Nodes of Head and Neck ; Neck Dissection ; Thyroid Gland ; Parathyroid Glands ; Development

Cervical Symptoms and Examination

(1) Neck
    a. History; Physical Examination; Diagnostic Tests
(2) Thyroid Gland
    a. History; Examination; Investigations

Neck Nodes, Masses and Thyroid

(1) Neck Nodes and Masses; Thyroid Neoplasms

Deep Neck Infections

(1) Pertinent Anatomy; Sources of Infections; Microbiology; Clinical Features; Investigations; Treatment; Peritonsillar Infections;

(2) Parapharyngeal Space Abscess or Pharyngomaxillary Abscess or Lateral Pharyngeal Space Abscess; Acute Retropharyngeal Abscess; Chronic Retropharyngeal Abscess or Prevertebral Space Abscess;
(3) Ludwig's Angina; Abscess of Space of Body of Mandible; Masticator Space Abscess; Trismus

Instruments related to Neck.

Diagnostic Imaging

(1) Conventional Radiology; Ultrasound; Computerized Tomography; Magnetic Resonance Imaging; Radionuclide Imaging; Interventional Radiology; Applications of CT, MRI and Us; Ct Anatomy of Neck

Miscellaneous

Bacteria and Antibiotics

(1) Bacteria
   a. Staphylococci ; Streptococci ; Corynebacterium Diphtheriae ; Neisseria Species ; Morexella Catarrhalis ;Haemophilus Influenzae ; Bordetella Pertussis ;
   b. Pseudomonas Aeruginosa ; Enterobacteriaceae ;Anaerobes ; Microaerophilic Bacteria; Mycobacteria ; Mycoplasma Pneumoniae ; Chlamydiae ;Spirochaetes
(2) Antibiotics
   a. Inhibitors of Bacterial Cell Wall Synthesis (Beta-Lactam Antibiotics) ; Inhibitors of Nucleic Acid Synthesis ;Inhibitors of Bacterial Protein Synthesis (Ribosomal) ; Antitubercular Drugs ; Nonspecific Antiseptics

Fungi and Viruses

(1) Fungi
(2) Antifungal Therapy
(3) Viruses
(4) Antivirals
   a. Pandemic Influenza A H1N1 (Swine Flu)

Human Immunodeficiency Virus Infection

(1) HIV/AIDS; Cervical Adenopathy ; Neoplasms ; Nose and Sinuses ; Nasopharynx ; Ear ; Oral Cavity ; Occupational Exposure

History and Examination

(1) Otorhinolaryngology History Taking; Physical Examination General Set-Up; Swellings and Ulcers; Examination of Cranial Nerves; Headache; Facial Pain; Temporomandibular(Craniomandibular) Disorders

Radiotherapy and Chemotherapy

(1) Radiotherapy
   a. Basic Physics; Radiobiology; Therapeutic Window; Modes of Radiotherapy; Combined Modality Treatment; Planning of Radiotherapy; Complications of Radiotherapy
(2) Chemotherapy
   a. Palliative Chemotherapy; Combined Modality Therapy; Organ Preservation; Intra-Arterial Chemotherapy; Prevention of Cancer

Anesthesia

(1) General Anesthesia; Immediate Airway Management; Local Anesthesia

Laser Surgery and Cryosurgery

(1) Laser
   a. Related Physics; Control of Laser; Tissue Effect; Laser In Otolaryngology; Photodynamic Therapy
(2) Radiofrequency Surgery

(3) Cryosurgery
(4) Hyperbaric Oxygen Therapy
(5) Harmonic Scalpel
(6) Coablation**.**

4.2 Practical

Instrument

(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
    a) Water's view

b) Caldwell view
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

5. 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

OPHTHALMOLOGY (1320)

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 action required 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 tomotivate for 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 anintegrated approach 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 :

The paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory. Each section shall be answered in separate answer book.

Question number 1 in section A and Question number 4 in section B of the Paper shall be compulsory.

Section A of the paper will be assessed by the External Examiner and Section B of the paper by the Internal Examiner.

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)

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(1340)
(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

(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

5. BOOKS:

1.Parson’s diseases of the eye - Sihota and Tandon
2.Ophthalmology - Kanski JJ
3.Anatomy and Physiology of eye - A K Khurana
4.Principles and practices of Ophthalmology - Peyman, Sander & Goldberg

COMMUNITY MEDICINE INCLUDING HUMANITIES (1330)

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		
1. Theory	**100**	**100 +100 = 100 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 :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

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:

4.2 Theory

Paper – I (1330-I)

(Section – A)

Concept of health and disease

(1) Indicators of health
(2) Concept of causation
(3) Concept of prevention
(4) Modes of intervention
(5) Population medicine etc

Principles of Epidemiology and epidemiological methods

(1) Definition
(2) Morbidity and mortality rates and ratio
(3) Incidence and prevalence
(4) Descriptive epidemiology
(5) Case control and cohort study
(6) Randomized controlled trials
(7) Uses of epidemiology
(8) Dynamics of disease transmission
(9) Immunization
(10) Investigation of epidemic etc

Screening of disease

(1) Concept of screening
(2) Criteria of screening etc

Biostatistics

(1) Normal distribution curve
(2) Measures of central tendency
(3) Measures of dispersion
(4) Tests of significance etc

(Section – B)

Health programmes in India

(1) National vector borne disease control program
(2) National leprosy eradication program
(3) Revised national tuberculosis control program
(4) National AIDS control program
(5) National program for control of blindness
(6) National rural health mission
(7) Reproductive and child health program
(8) Integrated management of neonatal and childhood illnesses
(9) National cancer control program
(10) National mental health program
(11) National program for prevention and control of diabetes, cardiovascular disease and stroke
(12) Integrated disease surveillance project
(13) Minimum need program
(14) 20 point program etc.

Nutrition and health

Genetics and community health

Health education

Communication in health education

Environmental health

Paper-II (1330-II)

(Section – A)

Epidemiology of Communicable diseases

(1) Respiratory infections: chicken pox, measles, rubella, mumps, influenza, diphtheria, whooping cough, meningococcal meningitis, acute respiratory infections, SARS, tuberculosis
(2) Intestinal infections: poliomyelitis, viral hepatitis, acute diarrheal diseases, cholera, typhoid fever, food poisoning, amoebiasis, ascariasis hookworm infection, dracunculiasis etc
(3) Arthropod borne infections: dengue fever, malaria, lymphatic filariases
(4) Zoonosis:
    a. Viral: rabies, yellow fever, JE, KFD, chikungunya fever
    b. Bacterial: brucellosis, leptospirosis, plague, human salmonellosis etc
    c. Rickettsial diseases: scrub typhus, murine typhus, tick typhus, Q fever
    d. Parasitic zoonosis: Taeniasis, hydatid disease, leishmaniasis
(5) Surface infection: trachoma, tetanus, leprosy, STD, AIDS, Yaws

Epidemiology of Non communicable diseases

(1) Cardiovascular diseases
(2) Coronary heart disease
(3) Hypertension
(4) Stroke
(5) Rheumatic heart disease

(6) Cancer
(7) Diabetes
(8) Obesity
(9) Blindness
(10) Accidents and injuries

Demography & family planning
Preventive medicine in obstetrics, paediatrics and geriatrics
School Health
Disaster management
Occupational health

(Section – B)

(1) Urban Health
(2) Mental Health
(3) Health planning & Management
(4) International health.

Practical

(1) Epidemiological and Statistical Exercise
(2) Spotting
(3) Viva-voce

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.

Third MBBS Part-I Examination

paper code

FORENSIC MEDICINE (1340)

1. GOAL:

The broad goal of the teaching of undergraduate students in Forensic Medicine is to produce a physician who is well informed about medicolegal responsibilities in practice of medicine. He/She shall also be capable of making observations and inferring conclusions by logical deductions to set enquiries on the right track in criminal matters and connected medicolegal problems. He/She should acquire knowledge of 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 medicolegal aspects of hospital and general practice;
ii. Define the medicolegal 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 medicolegal 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 enquiries in criminal matters and medicolegal 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 medicolegal responsibilities of physicians at all levels of health care. Integration with relevant discipline will provide scientific basis of 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 :
Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory. Each section shall be answered in separate answer book.

Question number 1 in section A and Question number 4 in section B of the Paper shall be compulsory.
Section A of the paper will be assessed by the External Examiner and Section B of the paper by the Internal Examiner.
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)
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.

4. SYLLABUS:

1.1 Theory

Paper (1240)
(Section A)
History of Forensic Medicine
(1) Introduction and definition
(2) Origin and development of Forensic medicine in India and abroad
Legal Procedure in Criminal Courts
(1) Definitions
(2) Legal Procedure in India
(3) Difficulties in the detection of Crime
(4) Criminal courts and their powers, Evidence, Witness
Personal Identity
(1) Definition
(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
Postmortem Examination (Autopsy)
(1) Objectives, Rules, Instruments, Procedure of Examination, Examination of decomposed bodies,
(2) Examination of mutilated bodies and fragments, Examination of bones, Conflagrated human remains, Care in postmortem room. Preservation of Viscera.
Exhumation
(1) Definition
(2) Objectives of exhumation, Rules for exhumation, Examination, Time of exhumation
Postmortem Artefact
(1) Introduction
(2) Artefactof decomposition, Third party Artefact, Artefact of environment, Other Artefact
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) Definition
(2) Modes and manner of death, Sudden death, Signs of Death, Time Since Death, Presumption of Death, Presumption of Survivorship

Death from Asphyxia

(1) Introduction, Hanging, Strangulation, Suffocation, Drowning

Death from Starvation, Cold and Heat

(1) Starvation, Cold (Hypothermia), Systemic effects of Heat.

Injuries from Burns, Scalds, Lighting and Electricity

(1) Burns and Scalds, Lighting, Electricity

Injuries by Mechanical Violence

(1) Introduction
(2) Bruises (Contusions), Abrasions, Wounds
(3) Introduction to firearms and Ammunition and Firearm injuries, Blast injuries.

The Medicolegal 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 after life
(6) Difference between Suicidal, Homicidal and Accidental Wounds

Traffic Injuries

(1) Road Injuries, Railway Injuries, Aircraft Injuries

Regional Injuries

(1) Head, Face, Neck, Spine and spinal cord, Chest, Abdomen, Muscles, Bones

Impotence, Sterility and Artificial Insemination

(1) Impotence and Sterility
(2) Artificial Insemination, Surrogate Birth, Semen Banking
(3) Assisted Conception, Carriage and Delivery - Examination and medicolegal significance.

Virginity, Pregnancy and Delivery

(1) Virginity, Pregnancy, Delivery - Signs and medicolegal significance.

Sexual Offences

(1) Introduction
(2) Rape, Incest, Unnatural, sexual offences, sexual perversions and AIDS linked medico social aspect

Legitimacy and Legal Aspects of Marriage Annulment

(1) Introduction
(2) Cases in which Question of Legitimacy may arise
(3) Medicolegal points,Legal Aspects of marriage annulment

Infanticide

(1) Definition
(2) The Abandoning of Infants, Concealment of Birth, Sudden Infant Death Syndrome (SIDS),Non – Accidental Injury of Children

Abortion and Medical Termination of Pregnancy

(1) Definition
(2) Classification of Abortion, Evidence of Abortions

(3) Criminal Abortion and the Duties of the Registered Medical Practitioners.

Medico-Legal Aspects of Sterilisation

(1) Introduction, Vasectomy, Tubectomy and medicolegal aspect

Insanity and its Medico-Legal Aspects

(1) Introduction
(2) Causes of Mental Health, Indications of Mental Health
(3) Classification of mental Diseases, Diagnosis of Mental Health, Feigned Mental Health, Violent Behavior
(4) Assessment of Dangerousness, Restraint of the mentally person
(5) Civil Responsibility, Criminal Responsibility

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) Medicolegal 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 Medicine

(1) Introduction
(2) Definition, Reasons for Torture, Types of torture, Sequele of Torture
(3) Management of Torture, Victims
(4) Medicolegal and Ethical Aspects of Torture
(5) Poisons and their medical legal aspects, Concept and Scope of toxicology
(6) Law relating to Poisons

(Section-B)

Introduction

(1) Definition, poison and drug, Rules related to sale of poisons, Poisoning in India, Classification of poisons, Routes of Administration
(2) Post Absorbative Behaviour of Poisons, Routes of Elimination of poison, Action of poisons
(3) Diagnosis of poisoning, Modern Analytical Techniques
(4) Duty of a Medical Practitioner in a Case of Suspected Poisoning, General guideline of treatment in cases of poisoning
(5) 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

Inorganic Irritant Poisons (I)

(1) Introduction, General Symptoms, Diagnosis

a. **Non-metallic Poisons and their Componds**
Phosphorus, Phosphoretted Hydrogen, Organophosphorous and Allied poisons, Triothrocresyl phosphate, Phosphine, Chlorine, Bromine, Iodine, Boron

Inorganic Irritant Poisons (II)

(1) **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 (I)

(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, Delphinium Staphisagria, Hellebores Niger, Cytisus laburnum
(4) Taxus baccata, Juniperus Sabina, Gamboges, Alap, Acammony, Kaladana Seeds, Lpomoea turpethum
(5) Cuscuta reflexa, Euphorbium, Cleistanthus collimus, Jatropha curoas, Jatropha multiphida
(6) Jatropha urens, Aloes, Urginea scilla, Gloriosa superb, Arum maculatum, Crimum deflexum
(7) Argemone Mexicana, Cocculus suberosus, Moringa ptergyosperma, Ruta graveolens
(8) Sapindas trifoliatus, Terminalia bellerica

Organic Irritant Poisons (II)

(1) Animal poisons, Cantharides (Lytta), Snakes (Phidia), Poisonous Insects, Food poisoning
(2) Fish poisoning, Ptomaines, Poisoning by Hormones

Mechanical Irritant Poisons

(1) Powdered glass, Diamond powder, Needles, Chopped animal hairs, Vegetable hairs

Somniferous Cerebral Poisons

(1) Introduction

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 Tetrachloride
(3) Tetrachlorethane, DDT or Chlorophenothane, Endrin, Bromoform, Iodoform, Chloral hydrate
(4) Sulphonal barbiturate, Veronal, Mandrax, Thalidomide, Tranquillisers, Anthihistamine, Amphetamine sulphate, Non Steroidal Anti inflammatory Agents, Cinchophen sulphonamide, Aniline, Coal-Tar Naphtha
(5) Naphthalene, Benzene, Nitrobenzene, Dinitrobenzene, Dinitrophenol, Dinitrocresol, Trinitrotoluene
(6) 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

(1) Examination of an individual for Age
(2) Exam of an Injured
(3) Postmortem exam, (10 PMs of various types will be witnessed by students in group of 20)
(4) Exam of cases of Drunkenness
(5) Exam. Of cases of Poisoning
(6) Exam. Of Victims of Sexual Offences
(7) Exam. Of Accused of Sexual Offences
(8) Examination of Bones
(9) Demonstration on Court Procedure.
(10) Exam of Weapons
(11) Identification and medicolegal significance of Poisons.
(12) Soft specimens of medicolegal importance
(13) Exam of Foetal product.

(14) P.M. Instrument.
(15) Models
(16) Exam of Blood Group
(17) Exam of Stains
(18) Ethics and State Medicine, expiation with illustrations.

5. 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.

1310) Oto-Rhino-Laryngology (or) Ear Nose and Throat (E.N.T.)

(Section – A & B)

(Ear, Nose and Paranasal sinuses, Throat-Pharynx and Larynx)

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

1310) Oto-Rhino-Laryngology (or) Ear, Nose and Throat (E.N.T)
(Section-A & B)
(Ear, Nose and Paranasal Sinuses, Throat-Pharynx and Larynx)

Maximum Marks : 100

Use separate answer- book for each Section

Question No.1 in Section A and Question No. 4 in Section B (10 marks each) is compulsory

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

SECTION A

Question 1 MCQ 1 X 10= 10 marks

a) Regarding cholesteatoma, which of the following is true:

i) It consists of squamous epithelium
ii) It is a malignant tumour
iii) It should be left untreated
iv) It may metastasise to distant sites
v) It is mainly treated medically

b) Communication between middle ear and eustachian tube is obliterated surgically in:

I. Cortical mastoidectomy
II. Radical mastoidectomy
III. Myringoplasty
IV. Modified radical mastoidectomy
V. Bondy's mastoidectomy

c) The cough response caused while cleaning the ear canal is mediated by stimulation of: 5^{th} CN

I. Innervation of external ear canal by C1 and C2
II. Branches of the 7^{th} CN
III. 8th CN
IV. 10^{th} CN

d) Otoacoustic emissions are produced by:

1. Inner hair cells
2. Basilar membrane
3. Auditory nerve
4. Outer hair cells
5. Utricle

e) 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?

Epstein- Barr virus
I) Agranulocytosis
ii) Corynebacterium diphtheriae
iii) Neisseria gonorrhoea
iv) Group a beta haemolytic streptococcus

f) Pyriform fossa lies:

a. Medial to aryepiglottic fold
b. Lateral to aryepiglottic fold
c. Inferior to aryepiglottic fold
d. Superior to aryepiglottic fold

g) A 10 year old girl presented with pain between the eyes, frontal headache, 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. Sphenoidal tumor
e. Chronic ethmoidal sinusitis

h) Nasal septal hematoma:

I. It is only associated with trauma
II. It is benign tumour
III. It is a collection of blood between nasal mucosa and perichondrium
IV. It is mostly unilateral
V. It is mainly treated by aspiration

I) Sluder's neuralgia:

1. Decongestants resolves the pain temporarily
2. It is synonymous to posterior ethmoid neuralgia
3. Pain localized on both sides of face
4. Due to compression of deviated septum and inferior turbinate
5. Pain described as dull type

j) Which of the following is not true regarding acute retropharyngeal abscess:

1. It is common in children
2. Produces difficulty in breathing and suckling
3. It is limited to one side of the midline
4. Incision and drainage is done from outside through carotid sheath
5. It forms due to suppuration in retropharyngeal lymph node

SHORT NOTES (attempt any 4 out of five): 4 X 5= 20 marks

1. Carhart's notch
2. Rhinosporidiosis
3. Otosclerosis
4. Atrophic rhinitis
5. Faucial diphtheria

LONG QUESTIONS

(Attempt any 2 out of three) 2 X 10= 20 marks

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

Question 4 MCQ

a) All are true for Gradenigo's syndrome except:

I. Associated with conductive hearing loss
II. It is seen in petrositis
III. It leads to involvement of the 5^{th} and 6^{th} cranial nerves
IV. It is characterized by retro-orbital pain
V. Otalgia

b) In the right middle ear pathology, weber's test will be:
   a. Lateralized to right side
   b. Positive
   c. Lateralized to left side
   d. Centralized
   e. Normal

c) Type B tympanogram is found in:
   I. Normal person
   II. Tympanosclerosis
   III. Otosclerosis
   IV. Secretary otitis media
   V. Disconnection of the ossicles

d) Augmentation power of the sound wave by the tympanic membrane is:
   I. 14 times
   II. 1.4 times
   III. 18 times
   IV. 17 times
   V. 22 times

e) 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 posterior pharyngeal wall
   d. Squamous cell carcinoma of larynx
   e. Squamous cell carcinoma of postcricoid

f) A new born baby presented with weak cry and hoarseness, the most probable diagnosis:
   a. Laryngomalacia
   b. Subglottic stenosis
   c. Subglottic hemangioma
   d. Vocal cord palsy
   e. Tracheomalacia

g) Thronwaldt's cyst is seen in:
   a. Floor of mouth
   b. Oropharynx
   c. Nasopharynx
   d. Hypopharynx
   e. Larynx

h) 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 associated with purulent nasal discharge
   e. It is not uncommon disease

i) Inflammation of the external nose:

a. Furunculosis is due to streptococcus infection
b. Furunculosis cannot be complicated by cavernous sinus thrombosis
c. Usually painless
d. Needs many investigations for diagnosis
e. Infections should be treated with antibiotics

j) Brown sign is seen in:

a. Glomus tumor
b. Meniere's disease
c. Acoustic neuroma
d. Otosclerosis

SHORT NOTES (attempt any 4 out of five): 4 X 5= 20 marks

(1) Juvenile multiple papilloma larynx
(2) Rhinoscleroma
(3) Tuning fork test
(4) Quinsy
(5) Types of tympanoplasty

LONG QUESTIONS (attempt any 2 out of three) 2 X 10= 20 marks

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.

(1320) 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)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1320) OPHTHALMONLOGY

Time: 3 hrs
Max. Marks: 100

Use separate answer –book for each section.

Section – A

Question1 MCQ 1 (Each) X10 Marks

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 supplied by?
   a. 3rd Cranial nerve
   b. 4th Cranial nerve
   c. 6th Cranial nerve
   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.Herpeticconjunctivitis
   c.Ophthalmianeonatorum
   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. Jaegers 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

Question2. Short notes (attempt any 4) 4(Each)X5=20marks

1. Types of cataract
2. Draw a schematic diagram of eye with labeling all the structure
3. Lens induced glaucoma
4. Proptosis
5. Bacterial corneal ulcer

Question3.Long question and answer 2(Each) X10=20marks

1. Classification of Uveitis and clinical features
2. Difference between myopia and hypermetropia

SECTION B

Question4. MCQ

1. Which of the following is the wing shaped fold of the conjunctiva encroaching upon the cornea?
   a.Catract b.Allergic conjunctivitis
   c.Pterygiumd. 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. Upper temporal 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 permeablilty 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 heterochromiciridocyclitis 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 IV injection, following which the symptoms go away .Which of the following is the most likely diagnosis?

a. Myasthenia gravis b.6th Nerve palsy

c. 3rd 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 acqueous 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

Question 5.Short notes:

a. Retinoblastoma
b. Stye v/s chalazion
c. Orbital cellulitis
d. Staphyloma
e. Acute Uveitis

Question6.Long answers

1. Diabetic retinopathy
2. Primary open angle glaucoma

(1330-I) Community Medicine including Humanities

Paper-I

(Section – A & B)

(Concept of health, General Epidemiology, Biostatistics, Environmental Health, Nutrition, Genetics and community health, sociology and community health, health education)

Time: 3 hrs.

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1330-1) Community Medicine including Humanities

Paper -I
(Section –A & B)
(Concept of health, General Epidemiology, Biostatistics, Environmental Health, Nutrition, Genetics and community health, sociology and community health, health education)

Time: 3 hrs.
Maximum Marks: 100
Use separate answer—book for each Section.
Question No. 1 in Section A and
Question No. 4 in Section B (10 marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Question. 1 MCQ **1X10= marks**

a) In 'Iceberg phenomenon', submerged portion does not consist of:
(1) Latent period
(2) Carriers
(3) Undiagnosed cases
(4) Healthy Population

b) Which of the following is the most logical sequence?
(1) Impairment-Disease-Disability-Handicap
(2) Disease-Impairment-Disability-Handicap
(3) Disease-Impairment-Handicap-Disability
(4) Disease-Handicap-Impairment-Disabilit

c) Reference protein is-
(1) Egg
(2) Milk
(3) Pulses
(4) Fish

d) Twin fortified salt" contains:
(1) Iodine + Fluorine
(2) Iodine + Calcium
(3) Iodine + Iron
(4) Iodine + Chlorine

e) PQLI is-
(1) IMR, Life expectancy, literacy
(2) MMR, Life expectancy, literacy
(3) MMR, IMR, Life expectancy
(4) IMR, Life expectancy at 1 year of age, Socio-economic status.

f) In fresh bleaching powder available chlorine is-
1. 20%
2. 30%
3 33%
4. 40%

g) If land is available the ideal method of waste disposal is-
1. Composting
2. Incineration
3. Controlled tipping
4. None

h) Bitot's spots are found in-

1. Measles
2. Mumps
3. Vit.A deficiency
4. Diphtheri

I) The limiting amino acids in wheat is-

(1) Alanine & threonine
(2) Lysine & threonine
(3) Alanine
(4) Tyrosine & methionine

j) Human Development Index (HDI) does not include:

1. Mean years of schooling
2. Life expectancy at age 1
3. Real GDP per capita
4. Adult literacy rate

Two MCQ should be problem based learning (nice to Know)

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

1. Human development index.
2. Steps of epidemic investigation
3. Measunes of dispersion
4. Iodine deficiency disorder
5. Secondary attack rate.

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

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

Question .4 MCQ

a) Expectation of life, free of disability is known as-

1. Park's index
2. Sullivan's index
3. Smith's index
4. Life index

b) DALY is –

1. Disease adjusted life year.
2. Disability adjusted life year
3. Disease associated life year.
4. Disability associated life year.

c) The recommended level of fluorides in drinking water in India is accepted as:

1. 0.5 to 0.8 mg per liter
2. 1 to 2 mg per liter
3. 3 to 6 mg per liter
4. 7 to 12 mg per liter

d) Decrease in the incidence of a disease to a level where it ceases to be a public health problem is-
(1) Control
(2) Elimination
(3) Eradication
(4) Surveillance

e) In an outbreak of Cholera in a village of 2000 population 20 cases have occurred and 5 have died. Case fatality rate is-:
(1) 1%
(2) 0.25%
(3) 5%
(4) 25%

f) Food poisoning is an example of:
(1) Common source, single exposure epidemic
(2) Common source, continuous exposure epidemic
(3) Propagated epidemic
(4) Modern epidemic

g) Prevalence of cataract at one point of time can be determined by-
(1) Longitudinal study
(2) Cross-sectional study
(3) Surveillance
(4) Cohort Study

h) Incidence can be calculated in-
(1) Retrospective Study
(2) Case control study
(3) Prospective Study
(4) Cross-sectional study

i) Which of the following vaccine is not administered at birth?
(1) BCG
(2) OPV
(3) Hepatitis-B
(4) Hib

j) Late expanding stage of population in India is due to?
1. Birth rate stationary, death rate continues to fall
2. Death rate declines faster than birth rate
3. Birth rate declines, death rate same
4. Birth rate is less than death rate

1x10=10 marks

Two MCQ should be problem based learning (nice to Know)

Q.5 Structured short notes (attempt any 4 out of five) 4x5=20marks
1. Sanitary barrier
2. PEM
3. Acculturation
4. Social Audits
5. Juvenile delinquency

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

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.

(1330-II) Community Medicine including Humanities

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)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1330-1) Community Medicine including Humanities

Paper -II
(Section –A & B)
(Epidemiology of specific diseases, demography &family planning, Maternity & Child Health, School Health, UrbanHealth, Mental Health, Health planning & Management, Occupation health,
International health)

Time: 3 hrs.
Maximum Marks: 100
Use separate answer—book for each Section.
Question No. 1 in Section A and
Question No. 4 in Section B (10 marks each) is compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Question 1 MCQ **1X10= marks**

a) If Birth rate -32 & death rate 21 then annual growth rate-
1. 11%
2. 1.1%
3 0.25%
4. 2.5%

b) Community X has 30% below 15 years of age and 10% over 65 years of age. Dependency ratio for community X is-
1. 20%
2. 40%
3. 66.6%
4. 3%

c) Best Indicator of fertility?
1. Crude birth rate (CBR)
2. Total fertility rate (TFR)
3. Net reproductive rate (NRR)
4. General reproductive rate (GRR)

d) WHO defines adolescent age between-
(1) 10-19 years of age
(2) 10-14 years of age
(3) 10-25 years of age
(4) 9-14 years of age

e) In Cu-T 380 A, 380 represents-
1. No. of turns of Copper wire
2. Surface area of Cu-T in Sq.mm
3. Surface area of Copper in Sq.mm
4. Effective life of Cu-T in quarters

f) Serious complication of oral contraceptive is:
1. Leg vein thrombosis
2. Headache
3. Break through bleeding
4. Breast tenderness

g) Best contraceptive for a newly married healthy couple-
(1) Natural method
(2) IUCD
(3) Oral Contraceptive Pills
(4) Barrier method

h) When there is contact between two people with different type of culture, there is diffusion of culture both ways which is called:
1. Socialization
2. Acculturation
3. Adjustment
4. All the above

I) "Moron" is one with IQ of -
1. 0-24
2. 25-49
3. 50-69
4. 70-79

j) Learned behavior which is permanent and consistent but liable to change is:
1. Cultural belief
2. Attitude
3. Knowledge
4. Practice

Two MCQ should be problem based learning (nice to Know)

Q.2 Structured short notes (attempt any 4 out of five) 4x5=20marks
1. Target couple
2. Categories of Biomedical waste.
3. TRIAGE.
4. Behavior communication.
5. Urban Health

Q.3 Structured long question (attempt any two out of three) 2x10=20 marks
1. What are the Millennium Development Goals related to Maternal and Child Health Describe .
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

Question .4 MCQ

a) Best Study of first choice for assessment of UNKNOWN or New disease with no etiological Hypothesis-
(1) Case control study
(2) Cohort study
(3) Cross-sectional study
(4) Descriptive epidemiology

b) Minimum recommended concentration of free residual chlorine is
(1) 0.1 mg/L
(2) 0.5 mg/L
(3) 1 mg/L
(4) 1.5 mg/L

c) The vital layer of the slow sand filter is also known as :
(1) Superficial layer
(2) Sand bed layer
(3) Biological layer
(4) Chemical layer

d) The main greenhouse gas which is largely contributing to Global warming is
(1) Carbon dioxide
(2) Methane
(3) Nitrous oxide
(4) Fluorocarbons

e) Who discovered the transmission of Malaria by Anopheline mosquitoes ?
1. Ronald Ross
2. Luis Pasteur
3. Edward Jenner
4. Robert Koch

f) World Health Day is celebrated on?
1. 1st December
2. 31st May
3. 7th April
4. 8th May

g) What is the causative organism for Malaria?
1. Anopheles
2. Culex
3. Plasmodium
4. Yersinia

h) Modifiable risk factors in coronary artery disease are all except-
1. Smoking
2. Obesity
3. High blood pressure
4. Age

i) Recommendded number of populations for primary health centers & subcenter for rural area is-
1. 30,000 & 5,000 respectively
2. 50,000 & 10,000 respectively
3. 1,00,000 & 30,000 respectively
4. 1,00,000 & 50,000 respectively

j) Primary health care involves all Except:
1. Sanitation & water supply
2. Supply of essential drugs
3. Referral system
4. Health education

1x10=10 marks

Two MCQ should be problem based learning (nice to Know)

Q.5 Structured short notes (attempt any 4 out of five) 4x5=20marks

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 marks

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.

Third MBBS Part-I Examination

Forensic Medicine.

Paper code **1340**

(Main/ Remanded) examination Month /Year

FORENSIC MEDICINE

(Section – A & B)

(Forensic Medicine including Medical Jurisprudence & state medicine, Toxicology including treatment of Poisonings, Medicolegal duties of Medical officer in poisoning cases)

Time: Three Hours

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

Third (Final) MBBS PART-II Examination

Paper I

MEDICINE (1410)

1. GOAL :

The broad goal of the teaching of undergraduate students in Medicine is tohave 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 able to:

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)

Notes :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

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 (1410-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, investigationand 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 distrubances
(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 tumours
(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

(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 diarrhoeal 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. Amobiasis
        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 (1410-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 tuberclosis
(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 melitus

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
    a. Male hypogonadism
    b. Gynaecomastia
    c. Impotence
    d. Short stature and delayed puberty
    e. Cryptorchidsm
    f. Hirsutism
    g. Secondary amenorrhoea
    h. 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

(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 disroders
(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 Kideny 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 recturm
    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) Ischaemic 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 non alcoholic 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 gyoderma
(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

4.2 Practical

1. All varieties of medical cases
2. Instruments, X-rays, Pathology specimen
3. Table viva and Grand viva

4.3Teaching and Learning Methodology

Department stress on teaching of basic fundamentals of internal medicine through various methods especially bed side teaching.

The following tools are employed :

1. Didactic lectures: discussion a particular topic at length in one hour feature
2. Seminars : conducted by a combined team of clinician, pathologist and microbiologist dicussing a particular topic for two hours
3. Clinical training: The clinical training of undergraduate medical students occurs in four phases:
   a. 3rd semester – 21 days wards posting in 2 batches of 25 students. Each batch is divided into six groups attached to 6 medical units.
      Time : 9 a.m. – 12 noon
   b. 4th /5th semester- 50 days posting in 4 batches of about 12 students each at medical out patient department.
      Time : 9 a.m. to 12 noon
   c. 6th semester – 40 days posting in 4 batches of about 12 students, each batch divided into 3 groups attached to 6 medical units.
      Time: 9 a.m. – 1 p.m.
   d. 8th semester – same as in 6th semester.
4. During medical posting undergraduates will also be asked to attend specialised department like cardiology, neurology, emergency department, nephrology.
5. Medical students are supposed to complete the logbook and signed by faculty after every clinical case discussion. Their logbook will be evaluated at the time of examination.

5. TEXT BOOKS:

2. Davidson's Principles and Practice of Medicine, ELBS Livingstone publications.
3. Kumar & Clark' Clinical Medicine-A textbook for medical students and doctors ELBS publications.
4. Harrison's Principles of Internal Medicine, McGraw Hill Publications (Reference Book)
5. Oxford Textbook of Medicine Vol I & II, ELBS publication (Reference Book)
6. Hutchison's Clinical Methods, ELBS publications
7. Macleod's Clinical Examinations, ELBS publications
8. API text book of Medicine

Paper II

SURGERY (1420)

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:

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

i. Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children.
ii. Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion.
iii. Define asepsis, disinfection and sterilization and recommended judicious use of antibiotics.
iv. Describe common malignancies in the country and their management including prevention.
v. Enumerate different types of anesthetic agents; their indications, mode of administration, contraindications and side effects.
vi. Understands principles of Laparoscopic surgery.

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

i. Diagnose common surgical conditions both acute and chronic, in adults and children.
ii. Plan various lab. test for surgical conditions and interpret the results.
iii. Identify and manage patients of haemorrhagic, septicaemic and other types of shock.
iv. Be able to maintain patient air-way and resuscitate a critically injured patient.
v. Be able to manage a patient of cardio-respiratory failure.
vi. Monitor patients of head, chest, spinal and abdominal injuries both in adults and children.
vii. Provide primary care for a patient of burns.
viii. Acquire principles of objective surgery, including pre-operative, operative and post-operative care and monitoring.
ix. Treat open wounds including preventive measures against tetanus and gas-gangrene.
x. Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/ tertiary centres.
xi. Identify congenital anomalies and refer them for appropriate management.

He shall have observed/ assisted/ performed the following :

xii. Incision and drainage of abscess;
xiii. Debridment and suturing of open wound;
xiv. Venepuncture, Venesection;
xv. Excision of simple cyst and tumors;
xvi. Biopsy of surface malignancy;
xvii. Catheterisation and nasogastric intubation;
xviii. Circumcision;
xix. Meatotomy;
xx. Vasectomy;

xxi. Peritoneal and pleural aspirations;
xxii. Diagnostic proctoscopy;
xxiii. Hydrocele operation;
xxiv. Endotracheal intubation;
xxv. Tracheostomy
xxvi. Chest tube insertion;

(c) **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 :
   i. Explain the principles of bone injuries and dislocation;
   ii. Apply suitable methods to detect and manage common infections of bones and joints;
   iii. Identify congenital, skeletal anomalies and their referral for appropriate or rehabilitation;
   iv. Recognize metabolic bone disease as seen in the country;
   v. Explain etiognesis, manifestations, diagnosis of neoplasm affecting bones.

(b) **Skills :** At the end of the course, the student shall be able to :
   i. Detectsprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colles' forearm, phalanges etc;
   ii. Use techniques of splinting, plaster, immobilization etc;'
   iii. Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
   iv. Advise aspects of rehabilitation for polio, cerebral palsy and Amputation.

(c) **Integration :** Integration with anatomy, surgery, pathology, radiology, Forensic Medicine be bone.

Anesthesiology

2.2 Objectives

(a) **Knowledge:** At the end of the training the student should be able to:
   i. Perform cardio-pulmonary resuscitation with the available resources and transfer the patient to a bigger hospital for advanced life support.
      1. Set up intravenous infusion, C.V.P. line etc.
      2. Clear and maintain airway in an unconscious patient.
      3. Administer oxygen correctly
      4. Perform simple nerve block
      5. 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 :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

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 (1420-I)

(General Surgery & Orthopaedics)

(Section – A)

Gastrointestinal tract, abdominal wall, Hernias, Endocrine, Skin, Head and Neck Region, Laparoscopic Surgery

(1) Pathogenesis, causes, epidemiology, Clinical Presentation, Investigations, and management of the diseases in the following systems:

a. Oesophagus: dysphagia, reflux, hiatus hernia, benign and malignant tumours.
b. Stomach and duodenum: Peptic ulcer- stomach and duodenum, carcinoma of the stomach, gastritis.
c. Small intestine: Small bowel obstruction, intestinal tuberculosis.
d. Colon and rectum: Amoebic colitis, Ulcerative colitis, colorectal cancer.
e. Appendix: Acute appendicitis.
f. Anus: Haemorrhoids, Pruritus ani, Fissure-in-ano, Anorectal abscesses, Fistula-in-ano, cancer of the anus.
g. Peritoneum and intraperitoneal abscesses: peritonitis.
h. Liver: Hepatic trauma, abscesses, cancer.
i. Biliary tract: gall stone disease, carcinoma of the gallbladder.
j. Pancreas: Acute panacreatitis, pancreatic cancer.
k. Acute abdomen
l. Hernias of the abdominal wall: Inguinal hernias, femoral hernia, umbilical and epigastric hernia.
m. 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).
n. 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)

(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 (1420-II)

(General Surgery & Anaesthesia, Radiology)

(Section – A)

Breast, Genitourinary system, venous and arterial disorders, Minor Surgery, and Emergency Surgery

(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, arterial emboli.
(4) Veins: varicose veins, deep vein thrombosis, pulmonary embolism.

(Section – B)

Allied subjects (Anaesthesia, Radiology, Pediatrics 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
    a. Infiltration anesthesia
    b. Digital block
    c. Ankle block
    d. 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

(1) Basics of allied subjects

4.2 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

Paper III

OBSTETRICS & GYNAECOLOGY (1430)

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 makeappropriate referrals.
ii. Conduct a normal delivery, recognise complications and provide postnatalcare.
iii. Resuscitate the newborn and recognise congenital anomalies.
iv. Advise a couple on the use of various available contraceptivedevices and assist in insertion in and removal of intra-uterine contraceptivedevices.
v. Perform pelvic examination, diagnose and manage commongynaecological problems including early detection of genital malignancies.
vi. Make a vaginal cytological smear, perform a post coital test and wet vaginalsmear examination for Trichomonas vaginalis, moniliasis and gram stain forgonorrhoea.
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 andbring about coordinations of family welfare programmes for the national goal ofpopulation control.

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 :

Each paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory.Each section shall be answered in separate answer book.

Question number 1 in section A of Paper I and Paper II shall be compulsory.

Question number 4 in section B of Paper I and Paper II shall be compulsory.

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

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)

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 (1430-I)

(Section - A)

(6) Anatomy Of Female Reproductive Organs
(7) Fundamentals Of Reproduction
(8) The Placenta And Fetal Membranes
(9) The Fetus
(10) Physiological Changes During Pregnancy
(11) Endocrinology In Relation To Reproduction
(12) Diagnosis Of Pregnancy
(13) The Fetus- In-Uterus
(14) Fetal Skull And Maternal Pelvis
(15) Antenatal Care, Pre-Conception Counseling And Care
(16) Antenatal Assessment Of Fetal Well Being
(17) Normal Labour
(18) Normal Puerperium
(19) Contracted Pelvis
(20) Abnormal Uterine Action
(21) Malposition, Malpresentation And Cord Prolapse
(22) Prolonged Labour, Obstructed Labour, Dystocia Caused By Fetal Anomalies
(23) Complications Of The Third Stage Of Labour

(24) Injuries To The Birth Canal
(25) Abnormalities Of The Puerperium

(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(1430-II)

(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

(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 followup

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.

Paper IV

PAEDIATRICS (1440)

1. GOAL :

The broad goal of the teaching of undergraduate students in Paediatrics is to acquire adequate knowledge and appropriate skills for optimally dealing with major health problems of children to ensure their optimal growth and development.

2. OBJECTIVES :

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

i. Describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations Thereof;
ii. Describe the common paediatric disorders and emergencies in terms of Epidemiology, aetiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation.
iii. Age related requirements of calories, nutrients, fluids, drugs etc. in health and disease;
iv. Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse:
v. Outline national Programmes relating to child health including immunization Programmes.

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

i. Take a detailed paediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common bed side investigative procedures, interpret common laboratory investigation results and plan and institute therapy.
ii. Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, start an intravenous saline and provide nasogastric feeding.
iii. Conduct diagnostic procedure such as a lumbar puncture, liver, bone marrow aspiration, pleural tap and ascitic tap.
iv. Distinguish between normal newborn babies and those requiring special care and institute early care of all new born babies including care of preterm and low birth weight babies, provide correct guidance and counseling in breast feeding:
v. Provide ambulatory care to all sick children, identify indications for specialized/ inpatient care and ensure timely referral of those who require hospitalization.

(c) **Integration :**The training in paediatrics should 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 team in an integrated form with other disciplines, e.g. Anatomy, Physiology, Forensic Medicine, Community Medicine and Physical Medicine and Rehabilitation and other specialities.

3. SCHEME OF EXAMINATION:

Theory	**100 Marks**	**100 + 100= 200 Total**
Practical + Oral	**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 :

The paper will consist of two Sections A & B of three questions each, out of which one question from each section will be multiple choice questions of 10 marks each and shall be compulsory. Each section shall be answered in separate answer book.

Question number 1 in section A and Question number 4 in section B of the Paper shall be compulsory.

Section A of the paper will be assessed by the External Examiner and Section B of the paper by the Internal Examiner.

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)

4. SYLLABUS:

4.1 Theory

Paper (1440)

(Section – A)

(1) Normal growth and development of children, Adolescents &its disorders
(2) Fluid and electrolyte disturbances
(3) Nutrition & micronutrients in health and disease
(4) Immunity & Immunization
(5) Neonatology Care of newborn and common disorders
(6) Infections and infestations
(7) Primary complex, Pulmonary and extra pulmonary Tuberculosis
(8) Integrated Management of neonatal & childhood illness
(9) Rights of children
(10) Common poisionings, injuries and accidents
(11) Assessment of a seriously ill child, paediatrics basic & Advanced Life Support
(12) Common rheumatological disorders
(13) Genetics and disease, Common inborn errors of metabolism
(14) Neonatology: Systematic instructions in growth and development, nutritional needs of a child, immunization schedules and management of common diseases of infancy and childhood including scope for Social Paediatrics and counselling.

(Section B)

(1) Respiratory system
(2) Cardiovascular system
(3) Central Nervous System, Neuromuscular system
(4) Renal urinary tract disorders
(5) Common endocrine & metabolic disorders
(6) Common skin, eye, 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

4.2 Practicals

(1) 1-2 short or long cases of systemic illness

(2) 4-5 stations for viva including vaccines, neonatal resuscitation, equipments, instruments, drugs, radiological exam and others.

5. BOOKS:

1. Nelson Textbook of Pediatrics - Behrman
2. Forfar Textbook of Pediatrics - Campbell
3. Rudolph's Pediatrics - Rudolph
4. New born Medicine - GordonAvery
5. Textbook ofPediatrics - Udani
6. Manual of Neonatal Care - Cloherty
7. Mcleod's clinical methods.
8. IAP Textbook ofPediatrics
9. Harriet Lane Handbook - Barone

(1410-I) Medicine

Paper-I

General Medicine

(Section – A & B)

(General, Clinical Pharmacology, Nutrition and metabolic disorders Critical care medicine, Neurological diseases, Water and electrolyte imbalance, Poisonings, Infections, Hematological disorders, Immune disorders)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1410-II) Medicine

Paper-II

General Medicine including Psychiatry, Dermatology and STD

(Section – A & B)

(CVS, Respiratory system, Endocrine system, Kidney and Genitourinary system, Gastrointestinal system, Immune system and diseases of connective tissue and joints Skin diseases, Psychiatry)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1420-I) Surgery

Paper-I

(General Surgery, Orthopaedics)

(Section – A & B)

(Gastrointestinal tract, abdominal wall, Hernias, Endocrine, Clinical, Laparoscopic Surgery and Orthopaedics in Sec. B)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1420) Surgery
Paper – I
(General Surgery, Orthopaedics)
(Section A & B)
(Gastrointestinal tract, abdominal wall, Hernia, Endocrine, Clinical, Laparoscopic Surgery and Orthopaedics I Sec. B)
Time:3hrs.
Maximum Marks:100
Use separate answer – book for each section
Question No. 1 in Section A and
Question No. 4 in Section B (10 Marks each) is compulsory
(Any Question having parts should be answered as whole at one place only)

Paper I
Section A

1×10=10 Marks

Question 1 MCQs

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) USG

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 sigmoidoscopic 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 CO_2 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 Marks

1. Porcelain gallbladder
2. Annular pancreas
3. Zollinger – Ellison syndrome
4. Raspberry tumor
5. Murphy's sign

Q. 3. Structured Long questions (Attempt any two out of three) 2 × 10 = 20 Marks

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

Question 4 MCQs 1×10 =10 marks

1. Which of following vessels is most commonly injured in supracondylar fractures of the humerus?
   1. Axillary artery
   2. Radial artery
   3. Brachial artery
   4. Ulnar artery

2. Acute osteomyelitis of long bones commonly affects the:
   1. Epiphysis
   2. Metaphysis
   3. Diaphysis
   4. Articular surface

3. Fracture of the shaft of the ulna with dislocation of a proximal radio-ulnar joint:
   1. Galeazzi Fracture
   2. Smith's Fracture
   3. Monteggia Fracture
   4. Rolando's Fracture

4. Most common type of Supracondylar Fracture is:
   1. Extention type
   2. Flexion type
   3. Abduction type
   4. Adduction type

5. Multiple bone Fractures in a new born is seen in:
   1. Scurvy
   2. Syphilis
   3. Osteogenesis Imperfecta
   4. Morquio's Disease

6. Duga's test is helpful in:
   1. Dislocation of Hip
   2. Scaphoid fracture
   3. Fracture neck of femur
   4. Anterior dislocation of shoulder

7. Sprengle's deformity of scapula is:
   1. Undescended/ Elevated scapula
   2. Undescended neck of scapula
   3. Exostosis scapula
   4. None of above

8. Spina Ventosa results from
   1. Sarcoidosis
   2. Tuberculosis
   3. Histiocytosis X syndrome
   4. Both A + B but not C

9. Onion peel appearance in X-ray suggests:
   1. Osteosarcoma
   2. Ewing's sarcoma
   3. Osteoclastoma
   4. Chondrosarcoma

10. Sudek’s atrophy is associated with
    1. Osteoporosis
    2. Osteophyte formation
    3. Osteopenia
    4. Osteochondritis

Q5. Structured short notes(attempt any 4 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

Q6. 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 Spince.

(1420-II) Surgery

Paper-II

(General Surgery including Allied Specialties)

(Section – A & B)

(Breast, Genitourinary system, venous and arterial disorders, Family welfare, Minor Surgery, and Emergency Surgery, 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.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1420-II) Surgery
(General Surgery including Allied Specialties)
Section – A & B
(Breast, Genitourinary system, venous and arterial disorders, Family welfare, Minor Surgery and Emergency Surgery, basic sciences and allied subjects (Anaesthesia, Radiology, Pediatrics Surgery, Neurosurgery, Cardio thoracic surgery and Plastic Surgery, Dental sciences and Miscellaneous))

Time:3 hrs
Maximum Marks:100
Use separate answer-book for each Section

Question No 1 in Section A and Question No. 4 in Section B (10 marks each) is compulsory.
Any question having parts should be answered as whole at one place only
(Breast, Genitourinary system, venous and arterial disorders, Family welfare, Minor Surgery and Emergency Surgery)

Paper II
Section A

Q.1. MCQs:

Q.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

Q.2. The commonest bladder stone is?
(a). Triple Phosphate
(b). Xanthine
(c). Uric acid
(d). cysteine

Q.3. Not a feature of acute arterial occlusion:
(a.).Cyanosis
(b). Pollen
(c). Paralysis
(d). Paraesthesia

Q.4. Brodies trendelenburg test possible in:-
(a). Saphenofemoral incompetence
(b). Perforator competence above knee
(c). Deep vein incompetence
(d). Perforator comptence below knee

Q.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

Q.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

Q.7. Trauma to spleen in a stable patient is best diagnosed by:-

(a). x- Ray abdomen
(b). USG
(c). CT Scan
(d). DPL

Q.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

Q.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

Q.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 Marks

(1). Staging carcinoma breast
(2). Burger's Disease
(3). Paraphymosis
(4). EDH versus SHD
(5). Bladder outlet obstruction

Q. 3. Structured Long questions (Attempt any two out of three) 2 × 10 = 20 Marks

1. Describe DVT, its Pathophysology and Management
2. Describe Investigation and Management of Bladder outlet obstruction
3. Describe Thyroglossal Cyst

Section B

Q 1. MCQs

Q.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

Q.2. Middle meningeal vessels damage results in ?
(a). SDH
(b). SAH
(c). EDH
(d). Intracerebral hemorrhage

Q.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

Q.4. Orchidopexy is done in case of undescended testis at the age?
(a). Infancy
(b). 1-2 Years
(c). 5 Years
(d). Puberty

Q.5. Tripod fracture is seen is:
(a). Zygomatic bone
(b). temporomandibular joint
(c). Maxilla
(d). Frontal bone

Q.6. Most common coagulopathy noted in surgical patients?
(a). Thrombocytopenia
(b). Afibrinogenemia
(c). Fibrinolysis
(d). Factor VIII deficency

Q.7. Hypothermia is used in :
(a). Cardiac Surgery
(b). Neonatal Ischemia
(c.) Cardiac arrhythmia
(d). GI Surgery

Q.8. All of the following tumors may be malignant except:

(a). Glioma
(b). Astrocytoma
(c). Hemangioblastoma
(d). Ependymoma

Q.9. Air Embolism in Neurosurgery maximum which position?

(a). Sitting
(b). Supine
(c). Trendelenberg
(d). Left Lateral

Q.10. Commonest artery for cannulation is:

(a). Radial
(b). Ulnar
(c). Brachial
(d). Cubital

Q.2. Structured short notes (Attempt any four out of five) 4 × 5 = 20 Marks

(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 × 10 = 20 Marks

1. Describe Briefly PVD
2. Describe Investigation and Management of Bladder outlet obstruction
3. Describe Management of Emphysema chest

(1430-I) Obst. & Gynaecology

Paper-I

(Sec 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, Drug and imaging in pregnancy, fetus and new born, operative obstetrics, Safe Motherhood, Epidemiology Of Obstetrics

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1430-I) 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, Drug and imaging in pregnancy, fetus and new born, operative obstetrics, Safe Motherhood, Epidemiology of Obstetrics

Time: 3 Hours

Maximum Marks: 100

Use separate answer – book for each section.

Question no. 1 in section A and

Question no. 4 in section B (10 marks each) is compulsory.

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

SECTION – A

Q.1. MCQ **1 × 10 = 10 marks**

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 any4 out of five) 4 × 5 = 20 marks

1. Active management of 3rd stage of labour.
2. Management of threatened abortion
3. Partograph
4. Abnormalities of placenta
5. Complications of eclampsia

Q.3. Structured long question (attempt any two out of three 2 × 10 = 20 marks

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.4. MCQ 1 × 10 = 10 marks

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.5. Structured short notes (attempt any 4 out of five) 4 × 5 = 20 marks

1. Apgar score
2. Immunization during pregnancy
3. Hyperemesis gravidarum
4. Ventous delivery
5. Down syndrome

Q.6. Structured long question (attempt any two out of three 2 × 10 = 20 marks

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.

((1430-II) Obst. & Gynaecology
Paper-II
(Sec A & B)

Anatomy including embryology of female pelvic organs, Normal and Abnormal Puberty, Menstruation and Menopause, 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.

Question No.1 in Section A and
Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1
2
3
4
5

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

1
2
3

Section B

Question 4 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1
2
3
4
5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1
2
3

(1430-II) Obst. & Gynaecology

Paper – II

(Section A & B)

Anatomy including embryology of female pelvic organs, Normal and Abnormal Puberty, Menstruation and Menopause, Gynae Examination, Infections and Infertility, Contraception, Benign and Malignant Disorders, Urogynecology, Operative Gynae including Endoscopy, Hormones and Drugs

Time: 3 Hours

Maximum Marks: 100

Use separate answer – book for each section.

Question no. 1 in section A and

Question no. 4 in section B (10 marks each) is compulsory.

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

SECTION – A

Q.1. MCQ **1 × 10 = 10 marks**

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 marks

1. Precocious puberty
2. Classification and management of secondary dysmenorrhea.
3. Causes & diagnosis of primary amenorrhea.
4. Normal semen analysis
5. Complications of uterovaginal prolapse

Q.3. Structured long question (attempt any two out of three) 2 × 10 = 20 marks

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.4. MCQ 1 × 10 = 10 marks

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.5. Structured short notes (attempt any 4 out of five) 4 × 5 = 20 marks

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.6. Structured long question (attempt any two out of three) 2 × 10 = 20 marks

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.

(1440) Pediatrics

(Section – A & B)

(General Pediatrics, Systemic Pediatrics and Neonatology)

Time: 3 hrs

Maximum Marks: 100

Use separate answer -- book for each Section.

Question No.1 in Section A and

Question No.4 in Section B (10 marks each) is compulsory.

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

Section A

Question 1 MCQ 1x10= 10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

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

1

2

3

4

5

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

1

2

3

Section B

Question 4 MCQ 1x10 =10 marks

a) b) c) d) e) f) g) h) i) j)….

Two MCQ should be problem based learning (nice to know)

Q5 structured short notes (attempt any 4 out of five) 4x5=20 marks

1

2

3

4

5

Q6 structured long question (attempt any two out of three) 2x10= 20 marks

1

2

3

(1440) Pediatrics
(Section-A& B)
(General Pediatrics, Systemic Pediatrics and Neonatology)
Time: 3hrs
Maximum Marks: 100
Use separate answar—book for each Section.
Question No.1in Section A and
Question No.4 in Section B (10 marks each) in compulsory.
(Any Question having parts should be answered as whole at one place only)

Section A

Question 1 MCQ **1x10= 10 marks**

(I). Blood cholesterol is increased in
A. Acute nephritis
B. Nephrotic syndrome
C. Mumps
D. None of the above

(II). Head circumference at birth
A. 32 cm
B. 35 cm
C. 45 cm
D. 50 cm

(III) Caloric requirement of one year old child is
A. 400 Calories
B. 1500 Calories
C. 1000 Calories
D. 2000 Calories

(IV) 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

(V) Early sign of rickets at six months is
A. Craniotabes
B. Double malleoli
C. Rickety rosary
D. Bent tibia
E. Knock Knees

(VI) Petechial haemorrhage seen in the gums is due to deficiency of
A. Vitamin'K'
B. Ascorbic acid
C. Cholecalciferol
D. Nicotinic and

(VII) Koplik's spots are diagnostic of
A. German measles
B. Measles
C. Chickenpox
D. Mumps

(VIII) Boy presenting with fever, confusion, leucopenia and bradycardia- the most likely diagnosis is
A. Meningitis
B. Cerebral abscess
C. Typhoid
D. Ricketssiae

(IX) 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
E. Lipoid pneumonia

(X) 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
E. Bronchitis

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

- X-ray findings of Rickets .
- Febrile Seizure
- Milestones at age of 1 Yr.
- Difference between Kwashiorkor & marasmus
- Newer Diagnostic criteria of Rheumatic fever

Q.3 Structured long question (attempt any 2 out of three) **10x2 =20 marks**

- Describe differential diagnosis, Lab Investigation and management of Hematuria with swelling face in 3 yr. Old child.
- Enumerate causes of lower moter neuron palsy. Write difference between upper moter neuron and lower moter neuron disease.
- 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.

Section B

Q.4 MCQ **1x10 = 10 Marks**

(I) Length of a neonate
A. 40 cm
B. 50cm
C. 70 cm
D. 100 cm

(II) 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

(III) Commonest cause of convulsions in newborn is
A. Meningitis
B. Septicemia
C. Birth trauma
D. Birth asphyxia

(IV) 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

(V) 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

(VI) 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

(VII) 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

(VIII) 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
E. Pneumonia

(IX) 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
E. Tuberculous meningitis

(X) 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.5 Structured short notes (attempt any 4 out of five) **4x5=20 marks**

- Management of dengue hemorrhagic fever
- Stem cell transplantation
- Management of Preterm baby
- Difference between Intra & exterahepatic portal hypertension
- Describe the clinical feature of Down syndrome

Q.6 Structured long question (attempt any 2 out of three) **2x10 = 20 marks**

- Define & classify shock in pediatrics, management of shock in emergency room.
- Case: Fatima is 18 month old. She weights 11.5kg. Her Temperature. is 37.5C . The physician asked “What are the child’s problems. 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?
- Enumerate the clinical features and discrible the diagnosis & treatment of acute Idiopathic thrombocytopenic purpura