SECTION - B

MUHS

CURRICULA I

1. PHASE-I (FIRST M.B.B.S.)

A) Introduction

As per the regulations on graduate medical education the M.B.B.S. course is divided in to phases – I, II, and III. During phase – I every student shall undergo a period of study of pre-clinical subjects for two semesters. These subjects are

1 – Human Anatomy

2 – Physiology including bio-physics

3 – Biochemistry

4 – Introduction to community medicine including Humanity.

At the end of second term there will be Ist professional university examination.

B) Time distribution :- The first two semesters (approximately 240 teaching days) shall be occupied in the phase I (pre-clinical) subjects and introduction to a broader understanding of the perspectives of medical education leading to delivery of health care.

Following minimum teaching hours are prescribed in various disciplines for two semester

Anatomy	650 hours
Physiology	480 hours
Biochemistry	240 hours
Community Medicine	060 hours
Total	1430 hours

Didactic lectures should not exceed 1/3 of the time schedule, 2/3 schedule

should include practicals and group discussions/ seminars / tutorials. Learning

processes should include living experiences and problem oriented approaches.

Passing in phase –I is compulsory before proceeding to phase-II training.

C) Attendance:

75% of attendance in a subject for appearing in the examination is

compulsory provided he/she has 80% attendance in non lecture teaching. i.e.

seminars, group discussions, tutorials, demonstrations and practicals.

Internal assessment:

i. Pattern of Examination for formative evaluation (internal assessment) first

semester will have one (1) periodical short tests each carrying 25 marks each

in Theory & practicals. There will be Terminal examination before the

completion of 1 st Semester. The Terminal examination will include one

theory paper of 60 marks & practical of 40 marks and viva 20 marks. -Similarly second semester will have one (1) periodical short tests

examination will be at the end of second Semester. It will have Theory 100

marks (2 papers of 50 marks each), Viva 20 marks & Practicals of 40 marks.

Detail table is as follows..

ii. Internal Assessment- Total marks 40 (Theory 20 & practical 20)University examination:

There shall be one main university examination in a year at the end of

second semester in the subjects of Anatomy, Physiology and Biochemistry.

Distribution of Marks: As per the following table

Appendix - A

First M.B.B.S. Examination

SN Subject Theory /Oral /

Practical/

	Internal Assessment Maximum marks in each part of the subject	Minimum marks required to pass in each part of the subject	Minimum marks required to pass in each subject
1 ANATOMY a) Theory - Paper I			
- Paper II	50	50	50
b) Oral	20	--	
c) Theory	100	60	

d) Practical 40 20

e)Internal Theory

Assessment Practical

20

20

20

150

2 PHYSIOLOGY a) Theory - Paper I

- Paper II

50

50

50

b) Oral 20 --

c) Theory +Oral 120 60

d) Practical 40 20

e)Internal Theory

Assessment Practical

20

20

20

150

3 BIOCHEMISTRY a) Theory - Paper I

- Paper II

50

50

50

b) Oral 20 --

c) Theory +Oral 120 60

d) Practical 40 20

e)Internal Theory

Assessment Practical

20

20

20

150

In each of the subjects a candidate must obtain 50% in aggregate with

a minimum 50% in theory, 50% in Theory+orals, 50% in practicals and 50%

in Internal Assessment.REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR: - First MBBS

SN Subject

1

st

Term End Preliminary Examination

Semester Theory Practical Semester Theory Practical

(A) (B) (C) (D)

1. Anatomy I 60 40 II 100 40

2. Physiology I 60 40 II 100 40

3. Biochemistry I 60 40 II 100 40

(B) Calculation Method:-

I) Theory Marks to be sent to the University out of 20 =

(A)+(C)

8

=

60+100

8

=

16

80

= 20

II) Practical Marks to be sent to the University out of 20 =

(B)+(D)

4

=

40+40

4

=

80

4

= 20MODEL TIME TABLE

PHASE -.I

MODEL TIME- TABLE

(Subject to modification as per local situation)

First Semester :

Days 8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4

Time

Mon Anat. Anat. Anat. Anat. L Phys- Phys- Phys-

Tues Anat. Anat. Anat Anat. U Phys Phys - Phys-

Wed Anat. Anat. Anat. Anat. N Bioch - Bioch BiochThurs Anat. Anat. Anat. Phy. C Phys- Phys- Phys-

Fri Anat. Anat, Anat. Bioc. H Bioch. Bioch- BiochSat Anat. Anat. Anat. Phys- Phys- Phys Phys

Second Semester;

Days 8-9 9-10 10-11 11-12 12-1 1-2 2-3 3-4

Time

Mon Phys. Phys Phys Anat L Anat Anat

Anat

Tues Phys Phys Phys Anat. U Anat. Anat.

Anat.

Wed Bioch Bioch Bioch Bioch N Anat Anat

Anat

Thurs Phys Phys Phys Phys C- Anat Anat

Anat

Fri Bioch Bioch Bioch Anat H Anat Anat

Anat

Sat Phys Phys Phys Phys Anat Anat Anat

NOTE: Community Medicine lecture be arranged in consolation with other

preclinical departments in the above things. SUBJECTWISE SYLLABI:

HUMAN ANATOMY

(i)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 involved and the anatomical basis for the disease presentations.

(ii)Objectives

A-Knowledge:

At the end of the course the student shall be able to

(a) Comprehend the normal disposition, clinically relevant interrelationships, functional and cross sectional anatomy of the various structures in the body

(b) Identify the microscopic structure and correlate elementary ultrastructure of various organs and tissues and correlate the structure with the functions as a pre requisite for understanding the altered state in various disease processes.

(c) 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 shall be able to locate the site of gross lesions according to the deficits encountered.

(d) Demonstrate knowledge of the basic principles and sequential development of the organs and systems, recognize the critical stages of development and the effects of common teratogens, genetic mutations and environmental hazards. He/she shall be able to explain the developmental basis of the major variations and abnormalities.

B-Skills

At the end of the course the student shall be able to;

(a) Identify and locate all the structures of the body and mark the topography

of the living anatomy.

(b) Identify the organs and tissues under the microscope.

(c) Understand the principles of karyotyping and identify the gross

congenital anomalies.

(d) Understand principles of newer imaging techniques and interpretation of

CT scan, sonogram etc.(e) Understand clinical basis of some common clinical procedures i.e.

intramuscular and intravenous injection, lumbar puncture and kidney

biopsy etc.

C-Integration

From the integrated teaching of other basic sciences, student shall be

able to comprehend and regulation and integration of the functions of the

organs and systems in the body and thus interpret the anatomical basis of

disease process.

(iii) Detail syllabus of Human Anatomy is given under following heads.

A) General Anatomy

B) Regional Anatomy

I - Upper limb

II - Lower limb

IIII - Abdomen

IV - Thorax

V - Head Face Neck

VI - Spinal Cord & Brain

C) Micro-Anatomy I - General Histology

II - Systemic Histology

D) Developmental Anatomy I - General Embryology

II - Systemic Embryology

E) Genetics

F) Radiological Anatomy, USG, CT, MRI

G) Surface Anatomy, Living Anatomy

H) University Exam pattern, Theory & Practical

I) Books recommended Detail syllabus of Human Anatomy

A) GENERAL ANATOMY

I) DESCRIPTIVE TERMS

Terms used for describing the position of the body, Anatomical planes,

Commonly used terms in Gross Anatomy, Terms used in Embryology,

Terms related to limbs, for hollow organs, for solid organs, to indicate the

side, for describing muscle, for describing movements

II) General Osteology

Definition, Nutrition & Morphological Classification, Distribution and

Functions of bone Appendicular, Axial.

Diaphysis, Metaphysis, Epiphysis, Types of epiphysis

Primary centres, Secondary centers, Law of ossification, Epiphyseal plate,

Blood supply of long bone

CARTILAGE

Definition, Types, structure, Distribution, Nutrition

III) General Arthrology

Classification, Synarthrosis, Amphiarthrosis, Diarthrosis.

Cartilaginous. Primary, Secondary

Synovial - Axis of movement, Structure of typical synovial joints

Classification of synovial joints, according to the shape ,axes of movement

and morphology

Simple, Compound ,Complex joints,Blood supply & nerve supply.

IV) General Myology

Definition, types: Origin, Insertion, Morphological classification

Actions of muscles, nerve supply

Functional classification, Prime movers, Fixators, Antagonists, Synergists

BURSA, Structure, Functions,types:

LIGAMENTS, Types & functions,Sprains

RETINACULA & APONEUROSESV) INTEGUMENT

a) Skin - Introduction : Surface area

Types :Thin, Thick, hairy, Functions, innervation

Structure :

Epidermis, Dermis, Appendages

b) SUPERFICIAL FASCIA

Distribution of fat, functions

c) DEEP FASCIA

Features, Modifications, Functions

VI) General Angiology

Arteries: Muscular, Elastic; Arterioles; Capillaries: Sinusoids, Veins -

Anastomosis: End arterial; Vasa vasorum, nerve supply of blood vessels

Lymphatic system

Lymph vessels, Central lymphoid tissue, Peripheral lymphoid organs,

Circulating lymphocytes - T and B lymphocytes

VII) General Neurology

Structure of nervous tissue,

Neurons:Synapses :Structural – type, Functional types

Classification of neurons : According to polarity and According to relative lengths of axons and dendrites:

Neuroglia:Nerves :Cranial – Spinal, Structure of typical spinal nerve

Autonomic nervous system :Sympathetic :Sympathetic ganglia, postganglionic fibres

Parasympathetic :Cranial outflow, sacral outflow

Level 2: Mechanical properties of bones.

synthesis, histogenesis, growth of Cartilage,Factors limiting range of movement,

Kinesiologically: Sellar, Ovoid, Joint position: Loose-packed, Close-packed

Number and diameter of fibres, Range of contraction, Active insufficiency,Passive insufficiency, shunt, swing, spin

Adventitious bursae - Housemaid's knee, Clergyman's knee, Student's elbow, Weaver's bottom, Porter's shoulder

Clinical correlation, significance of Langer's lines, Tension lines, flexure lines Transplant

Collateral circulation, Functional end arteries, Arteriosclerosis,

Level 3: Effect of hormones on bony growth, Wolff's law, Surface topology of articular surfaces, Spin, Swing, Cartilage Grafts, Kinesiology, Body liver system,Skin grafts,Ischaemia, Infarct,BursitisB) Regional Anatomy

I) UPPER LIMB

REGIONS : Mammary gland, Axilla, Cubital fossa, Fascial spaces of the hand

Relations and functional importance of individual structures, Dupuytren's

contracture, Hand as a functional unit – grips, Nerve injury, carpal tunnel

syndrome, Clavipectoral fascia; Salient features about carpals;

ARTHROLOGY

Shoulder girdle; Shoulder joint; Elbow; Radioulnar joints; Wrist;

Carpometacarpal joint of thumb; Bones taking part

Classification of joints, Movement with muscles causing movements,

midcarpal joint, metacarpophalangeal joints,

interphalangeal joints

Fall on the outstretched hand

Level 2Axilla: Collaterals Lymph nodes (breast) Axillary sheath cervicoaxillary canal, Abscess drainage, Palm: comparative anatomy (thumb,

palmaris brevis), position of rest and of function, collaterals, Fascial

spaces: Surgical significance

OSTEOLOGY

Identification; Anatomical position; Parts; Joints formed; Development;

identification of individual carpals in and articulated hand)

Clavicle: Line of force transmission, commonest site of fracture

Humerus: fractures -

Colles' fracture, Smith's fracture

Carpals, Metacarpals, Phalanges: Carpal tunnel syndrome, fracture

scaphoid

Surgical approaches, Subluxation of head of radius, carrying angle

MYOLOGY:

Muscles of upper limb, attachment, Nerve supply, Actions

Applied aspects: Volkmann's ischaemic contracture

Quadrangular and triangular spaces, Triangle of auscultation

ANGIOLOGY: Axillary, Brachial, Radial, Ulnar Arteries, veins,

lymphatics

Commencement, Termination, Main area of distribution and drainage,

Anastomosis –

Applied aspects, Artery : Damage to vessels, Raynaud's disease, Veins:

Thrombosis, Lymphatics: Lymphangitis (red streaks), lymphadenitis, NEUROLOGY:

A. Nerves

Axillary, median, ulnar, musculocutaneous, radial, Origin, course,

distribution, Root value

B. Plexus: Brachial

Applied aspects: Nerve injury at various sites - Tendon reflex - Winging

of scapula, Erb's palsy, Klumpke's palsy, Crutch palsy, ulnar paradox

II) LOWER LIMB

REGION: boundaries, major contents; Gluteal, femoral triangle;

Adductor canal, compartments of thigh, leg; Popliteal fossa, Adductor

canal , Sole, Arches of foot,; Gluteal IM injections

Femoral hernia

blood supply to head of femur; Fracture neck of femur, mechanics

movement of joints; hip and knee, Trendelenburg test; Knee joint :

derangement, injuries to cruciate ligaments, menisci; (tear - bucket handle

type); Ankle : Sprain

mechanism of venous return, varicose veinsz

Applied aspects of Adductor canal, popliteal aneurysms

OSTEOLOGY: Identification, region, anatomical position; parts, joints

formed,

For tarsals - identification of individual tarsals in an articulated foot.

Level 2

Applied aspects: Bony specialization for bipeds, walking and

transmission of weight,

Fracture, femoral torsion, neck shaft angle, bone grafts

ARTHROLOGY

Hip, knee, ankle, subtalar, Tibiofibular

Hip joint : dislocation, congenital, traumatic, surgical approaches to joints

(anatomical basis), traumatic effusion, bursitis

MYOLOGY

Attachments, nerve supply, actions of: Muscles of lower limb

calf pump, antigravity muscles

ANGIOLOGY

Artery: Femoral, profunda femoris, popliteal, dorsalis pedis,

Commencement, termination, main area of supply, course, relations &

applied

Vein: Venous drainage of lower limb, long and short saphenous veins,

Communication and valves. VaricoseLymphatics: Inguinal group of lymph nodes

Lever 2 :intermittent claudication, clinical significance of anastomosis:

around knee, venous thrombosis

NEUROLOGY

a. Plexus: Lumbar and sacral, Location, Formation, Distribution

b. Nerves: Root value of sciatic, femoral, obturator, tibial, common

peroneal nerves; Origin, course, distribution; sciatica, foot drop

Level 2 :Pes cavus, equinovarus, clawing of toes

III) ABDOMEN

i) ANTERIOR ABDOMINAL WALL

Rectus sheath, quadrants and regions, Testes, epididymis, spermatic cord, scrotum

Level 2: Surgical incisions of abdomen types of inguinal herniae

Peritoneum, Lesser Omentum, Omental Bursa, Epiploic Foramen, Testes

Morphology, blood supply, lymphatic drainage

25. SPERMATIC CORD

Definition, beginning, end, course and contents, coverings, vasectomy

ii) Abdominal organs : Morphology relations blood supply, lymphatics nerve supply & applied Anatomy of following organs

STOMACH,SPLEEN, LIVER:,BILIARY APPARATUS,

PANCREAS, SMALL INTESTINE,LARGE INTESTINE AND

VERMIFORM APPENDIX,KIDNEYS, URETERS,SUPRARENAL

GLANDS

Level 2: peptic ulcer ,Splenic circulation, splenic vascular segments,liver, biopsy, Support of liver,Gall stones ,Duct system of pancreas ,Surgical approach to kidney , stones (Renal), Ureter,Sites of constrictions, Hydronephrosis, pheochromocytoma

Level 3: Gastroscopy, Achlorhydria,Splenectomy ,Liver transplant,Pancreatitis, diabetes,Renal transplant,Stones in ureter, Cushing's disease

iii) Pelvic Viscera :- Morphology, relations, blood supply nerve supply & applied anatomy

URINARY BLADDER & URETHRA, UTERUS, OVARIES AND

UTERINE TUBES, PROSTATE, RECTUM AND ANAL CANAL,

UROGENITAL DIAPHRAGM (UGD)Level 2: Supports and micturition, stones in bladder ,Ovarian cyst,

enlargement complications, Fistula, Fissure, piles

Level 3: cystoscopy, Hysterectomy,cancer, Supports of rectum

iv) Perineum – Ischiorectal fossa, pudendal canal, perianal spaces

Urogenital

diaphragm, male urethra, penis – perineal pouches

Level 2: Ischiorectal hernia

v) MYOLOGY

Anterior abdominal wall, Rectus sheath, Psoas major, Quadratus

lumborum, Thoracoabdominal diaphragm, pelvic diaphragm,

Thoracolumbar fascia, perineal spaces & muscles

Level 3: Psoas abscess

vi) OSTEOLOGY

Level 2: Pelvis - types

(various diameters), lumbar vertebrae, anatomical basis of disc prolapse,

nerve compression

Level 3: Sacralization, Lumbarization

ARTHROLOGY

Movements of lumbar vertebrae, lumbosacral, sacroiliac, sacrococcygeal

joints

vii) ANGIOLOGY :- Origin, course, termination, relations, branches &

applied

anatomy of

PORTAL VEIN

Level 2: portasystemic communications

Level 3: Portasystemic communications in detail; Development

INFERIOR VENA CAVA,ABDOMINAL AORTA,INTERNAL ILIAC

ARTERY

viii)NEUROLOGY,LUMBAR PLEXUS,SACRAL PLEXUS

IV) THORAX

i) THORACIC WALL,THORACIC INLET

Boundaries and contents

THORACIC OUTLET, Boundaries and contents, major openings and levels,

Typical intercostal space, Boundaries and contents, muscles Atypical

intercostal space, Movements of respirationLevel 2: importance and minor openings in outlet, Accessory muscles of

respiration

Level 3: Applied aspects: Barrel chest, pectus excavatum, rickety rosary

ii) MEDIASTINUM

Divisions and major contents

Level 2: Mediastinitis, mediastinoscopy

SUPERIOR AND POSTERIOR MEDIASTINA, LIST OF STRUCTURES

Boundaries and contents:

Level 2 : Superior mediastinal Syndrome, Course, relation and branches /

area of drainage

Level 3: Coarctation of aorta, aneurysm, developmental anomalies

iii)PLEURA

Pleural reflections, recesses, innervation

Level 2: importance of recesses

Level 3: pleural effusion

LUNGS

Gross description including lobes, fissures and bronchopulmonary segments

Level 2: relations, blood supply, nerve supply

Level 3: Postural drainage, surgical importance, of bronchopulmonary

segments, foreign body inhalation

iv)PERICARDIUM & HEART

Divisions of pericardium and sinuses

Level 2: referred pain

Level 3: Pericardial effusion

HEART

Anatomical position, location, surfaces and borders, interior of all chambers,

conducting system of heart; vessels of heart

Level 2: Relations, nerve supply - foramen ovale, patent IV septum, overriding aorta, referred pain, functional end arteries - coronaries

Level 3: PDA, Fallot's tetralogy, etc.

v)OSTEOLOGY

IDENTIFICATION and parts of VERTEBRAE , RIBS – and STERNUM

Level 2: Identification of T1, T9, T10, T11, T12, vertebrae and atypical ribs

- 1, 2, 11, 12. relations, attachments, ossification

Level 3: Fracture ribs, flail chest, compression fracture of vertebraV) HEAD-FACE NECK

i) REGIONS AND ORGANS, FASCIAE OF THE NECK TRIANGLES

OF NECK

Level 2 Spaces and spread of infections, axillary sheath , Relations of

contents, Damage to accessory nerve, sialogram, approach to gland,

bidigital palpation of submandibular gland,Dangerous area of face, squint

Level 3: surgical neck incisions, external jugular vein - air embolism, LN biopsy, JVP, pulse, Frey's syndrome

GLANDS

Thyroid, Parathyroid, Parotid, Submandibular, sublingual, Pituitary

Morphology, capsule, relations, nerve supply, blood supply

FACE

Muscles, nerve supply - blood supply

SCALP,PALATE,TONGUE,LARYNX, PHARYNX, ORBIT,

EYEBALL,STYLOID APPARATUS,NASAL CAVITY,

EAR,INTERNAL EAR,MIDDLE EAR,EXTERNAL EAR,MENINGES

ii) OSTEOLOGY

Identification, anatomical position, parts, foramina in the skull, structures passing through them, norma basalis, verticalis, frontalis, lateralis, occipitalis and interior of cranial cavity

Foetal skull; Mandible: Age changes

Level 2: Fontanelles, Dental formula

Level 3: Fractures of the skull, Age of dentition, cervical rib, disc herniation

iii) ARTHROLOGY

TM JOINT

Level 2: Dislocation

iv) MYOLOGY

Sternomastoid, Digastric, Mylohyoid, Hyoglossus, Muscles of facial expression, mastication, larynx, pharynx, tongue, palate and, Extra-ocular muscles

Level 2 Relations, development

Level 3 facial nerve palsy

v) ANGIOLOGY

ARTERIES

Origin, parts, course, relations, branches of:

Subclavian, Internal carotid, External carotid, Vertebral, Lingual, Facial,

Maxillary

Level 2: Sub-branches, distributions

Level 3: Subclavian steal syndrome, Subclavian-axillary anastomosis

VEINS

External and internal Jugular veins, venous drainage of face

VENOUS SINUSES

Names, locations, drainage, classification

EMISSARY VEINS, CAVERNOUS SINUS, LYMPHATIC

DRAINAGE OF HEAD FACE NECK

vi) NEUROLOGY

Cranial nerves,Nucleus, course, relations, branches, distribution, reflex

pathways & applied anatomy, PLEXUS: Cervical, Brachial,

PARASYMPATHETIC GANGLIA, CERVICAL SYMPATHETIC

CHAIN

VI) NEUROANATOMY

i) SPINAL CORD

Gross features: Extent (child / adult), enlargements, conus medullaris,

filum terminale, spinal meninges Tracts Ascending and Descending

Level 2: Spinal segments, vertebral correlation, significance of

enlargements

nuclei of grey matter at upper & lower cervical, mid-thoracic, Lumbar &

sacral levels

Clinical correlation of lesions

Level 3: anomalies,lamination, syringomyelia, PID, tumours, TB,

trauma, dislocation, myelography

ii) MEDULLA OBLONGATA

Gross features: Motor decussation: Sensory decussation: Inferior

olivary nucleus Cranial nerve nuclei

Level 2: Tuber cinereum, pontobulbar body, Order of neurons, Details of

nuclei and organisation of white matter

Level 3: medullary syndromes-Bulbar palsy, increased ICT, ArnoldChiari malformation,iii) PONS

Cross sections at the level of:

♦ Facial colliculus, Trigeminal nucleus

General features: Peduncles, Floor of the fourth ventricle

Level 2: Relations

Level 3: Tumours, pontine haemorrhage

iv) CEREBELLUM

Gross features: Division, Lobes, relations, internal structure -

Level 2: connections of,cerebellar cortex and intracerebellar nuclei,

white matter classification, Purkinje neuron,

Level 3: dysfunction,-dysequilibrium, ataxia, hypotonia

Nuclei: Names of nuclei and important connections

Peduncles : Important tracts in the peduncles

Functions : Of archicerebellum, paleocerebellum & neocerebellum

v) MIDBRAIN

General features :

relations, contents of interpeduncular cistern, connections of red nucleus

Level 2: Weber's syndrome, Benedikt's syndrome

Level 1 :T.S. at inferior colliculus, TS at superior colliculus

vi) CEREBRUM

CORTEX, WHITE MATTER, BASAL NUCLEI, LIMBIC LOBE

Surfaces, borders, major sulci, gyri, poles, lobes, major functional areas,

interior - gray and white matter

Gray - cortex - granular / agranular, striate, Basal nuclei - names, White

matter - classification with examples; Components of limbic lobe

Level 2: handedness, Connections of limbic lobe

vii) DIENCEPHALON

Dorsal thalamus Epithalamus Metathalamus Hypothalamus Subthalamus

Boundaries, parts, relations (gross), cavity, major nuclei, gross

connections

viii) VENTRICULAR SYSTEM

Parts, boundaries, foramina, correlation with parts of brain

Level 2: Choroid fissure, recesses, Queckenstedt's test

Level 3: Hydrocephalus, VA shunt

ix) BLOOD SUPPLY OF BRAIN

Circle of Willis, subarachnoid space, arteries, veins

Level 2: blood brain barrier, Hemiplegia

Level3: End arteries, CSF formation

x) MENINGES

Cerebral and spinal meninges, folds of dura, contents of subarachnoid spaces, arachnoid villi and granulations, direction of flow of CSF, lumbar puncture Cisterns, Definition, terminology, cisterna magna

Level 2: cisternal puncture, Queckensted's test, vertebral venous plexus, choroid plexus

Extracerebral and intracerebral communication, CSF block,

Level 3: Epidural space

C) MICROANATOMY

I) GENERAL HISTOLOGY

i) MICROSCOPE,

Light microscope: parts, magnification, resolution,Electron microscope,

Level 2 Micro techniques, H and E staining

Level 3: Polarizing microscope, phase contrast, scanning EM

ii) CYTOLOGY

Cell,Cytoplasm and nucleus,Cytomembranes,Unit membrane, Cell organelles

Mitochondrial DNA, mitochondrial myopathy

Level 2 Specialisations of cell surface, Sarcoplasmic reticulum of muscle, Primary and secondary lysosomes, residual bodies, Effect of colchicine and anticytotic drugs on spindles preventing mitosis, Endocytosis, exocytosis, movement of microvilli; Cell mitotic activity

Level 3 Lysosomal storage disease

NUCLEUS - Structure, nuclear envelope, chromatin, Barr body, nucleolus

iii) Epithelial

Definition, Classification, Structure of various types & subtypes of epithelia

Level 2: Nutrition, Renewal, Innervation,

Level 3: Metaplasia;

Surface modifications,Cilia; Microvilli; Stereocilia; Cell junction and junctional complexes;

Glands, Classification; Unicellular and Multicellular; Exocrine, Endocrine, Amphicrine. Exocrine: Simple, Compound; Apocrine, Merocrine, Holocrine; Tubular, alveolar, tubuloalveolar; Serous; Mucous; Mixed iv) Connective tissue, classification, structure, fibres, ground substance,

loose areolar tissue, adipose tissue

Level 2 : Glycosaminoglycans

Level 3 : Scurvy, oedema, inflammation

v) Bone & Cartilage

Bone, Compact, Cancellous, Developing bone; ossification, Woven, lamellar bone

Cartilage, Classification, types, Perichondrium, functions

Level 2: Growth: Interstitial, Appositional; Bone callus, Osteomalacia , Osteoporosis , Osteoma

Level 3: Chondroma

vi) Muscle

Skeletal muscle Plain muscle Cardiac muscle Intercalated disc, syncitium; Sarcomere, I and A bands, myofibrils, myofilaments,; Sarcoplasmic reticulum,

Level 2: Innervation, Red fibres, white fibres

Level 3: Hypertrophy, Hyperplasia ,Rigor mortis , Myasthenia gravis

vii) Nervous

Neurons, types; Neuroglia, types; Myelinated nerve fibre LS; Nonmyelinated nerve fibre; Peripheral nerve ; Nodes of Ranvier; Synapses;

viii) Vessels

Large sized artery Medium sized artery, Arteriole;Capillary,

Sinusoid;Medium sized vein;

Level 2: Atherosclerosis, Aneurysm, Infarcts, clotting

Lymphoid tissue

T cells, B cells;Mucosa Associated Lymphoid Tissue;Humoral immunity,

Cell mediated immunity;Lymph node section; Thymus, Spleen, Tonsil

Level 2: Blood-thymus barrier, Open and closed circulation in the spleen

Level 3: Organ transplantation, Graft rejection, Autoimmune disease

II) SYSTEMIC HISTOLOGY

Basic organization, salient features, Identification

Structure and function correlation, individual features

i) Integumentary system

Skin – Types; Epidermis and dermis; various cells, Appendages of skin

Level 2: Renewal of epidermis

Level 3: Albinism, melanoma, Acne ii) Alimentary system

a) Oral tissues

Lip, Tongue, taste buds, Papillae; Tooth, Developing tooth, Salivary

glands

Level 2: Striated duct, ion transport

b) GI Tract

Basic organization - 4 layers;Oesophagus with glands Stomach - Fundus, Chief cells, Parietal cells, intrinsic factor; Stomach – Pylorus Duodenum Brunner's glands; Small intestine - with Peyer's patch, Appendix, Large intestine

Level 3: Pernicious anaemia, ulcer, gastritis, Hirschsprung's disease or megacolon

c) Glands

Pancreas: Exocrine, islets of Langerhans; Liver, Hepatic lobule, portal lobule,;portal acinus; Gall bladder

Level 2: Liver as an endocrine gland

Level 3: Diabetes mellitus, Cirrhosis of liver, liver regeneration, Chalones

iii) Respiratory system

Olfactory mucosa; Epiglottis; Trachea, Lung, Bronchus, bronchiole, alveolar duct, sac, alveoli, pulmonary type I and II cells

Level 2: Double spirally arranged bronchial smooth muscle

Level 3: Bronchial asthma, Hyaline membrane disease, Heart failure cells

iv) Urinary system

Basic organization; Nephron - Parts, podocytes, Collecting system; Kidney - Cortex, Medulla Ureter; Urinary bladder, Urethra

Level 2: Juxtaglomerular apparatus

v) Male reproductive system

Basic organization; Gonads, Tract, Accessory glands; Testis; Epididymis ; Vas deferens; Prostate ; Penis; Seminal vesicle

Level 2: Stages of spermatogenesis

Level 3: Immotile sperm

Female reproductive system

Basic organization; Gonads, Tracts, Accessory glands; ; Ovary - with

corpus luteum; Fallopian tube; Uterus ; Cervix; Vagina, Mammary gland

Active , Passive

Level 2: Stages of maturation of ovarian follicle , Phases of menstruation

Colostrum, IgA, Placenta: Maternal unit, Foetal unit, Umbilical cord:

Wharton's jellyvi) Endocrine system:

Pituitary; Adenohypophysis; Neurohypophysis; Thyroid ; Follicular,

parafollicular cells; Parathyroid ; Chief cells, oxyphil

cells; Adrenal; Pancreas; Testis ; Ovary

Level 2: Hypothalamo-pituitary Portal system

Level 3: Pheochromocytoma

vii) Nervous system

A. Central

Basic organization; Cerebrum; Cerebellum; Spinal

cord; Cervical; Thoracic; Lumbar;

Sacral;

B. Peripheral

Sensory ganglia; Autonomic ganglia (sympathetic ganglion); Peripheral

nerve

Special senses

I. Visual: Eyeball

Cornea ; Sclerocorneal junction ; Canal of Schlemm; Lens ; Retina

; Optic nerve

Level 3: Kerattoplasty, eye donation, glaucoma, retinal detachment

2. Auditory:

Internal ear; Cochlea ; Semicircular canals; Vestibule;

3. Olfactory

Nasal cavity

4. Gustatory

Tongue with taste buds

D) DEVELOPMENTAL ANATOMY

I) GENERAL EMBRYOLOGY

i) Introduction: Stages of human life phylogeny

Ontogeny, Trimester, Viability,

Terms of reference: e.g. Cranial, Rostral, Caudal, Dorsal, Ventral,

Lateral, Medial, Median, Planes of section

Level 3: The law of recapitulation, "Critical period", malformations,

USG, Amniocentesis Chorionic Villus Biopsy, Fetoscopy, etc

Teratology History of Embryology

ii) Gametogenesis: Menstrual cycle other reproductive cycles, Germ cell

Transport and Fertilisation, Sperm capacitation, Methods of

contraception, Sex determination

Level 3: Teratogenic influences; Fertility and Sterility, Surrogate

motherhood; Social significance of “Sex-ratio”,

iii) Cleavage, Blastocyst, Cytotrophoblast, Syncytiotrophoblast

Implantation: Normal sites, Abnormal sites,; Placenta praevia, Extraembryonic Mesoderm and Coelom; Bilaminar disc - Prochordal plate

Level 2: “abortion”; Decidual reaction, Chorionic Gonadotropins -

Pregnancy test,

iv) Primitive streak Notochord, Neural tube and its fate Neural crest cells - their fate, Development of somites, Intra-embryonic coelom, Foetal membranes :Chorionic villi, Amnion, Yolk sac, Allantois

Level 2: Congenital malformations, Nucleus pulposus, Sacrococcygeal teratomas, Neural tube defects, Anencephaly

Level 3: Signs of pregnancy in the first trimester, Role of teratogens, Alpha-fetoprotein levels

v) Folding of the embryo: Derivatives of germ layers, Pharyngeal arches

Level 2: Thalidomide tragedy, Estimation of Embryonic Age - Superfoetation & superfoecundation

vi) Fetal membranes: Formation Functions, fate of: Chorion ; Amnion; Yolk sac; Allantois; Decidua; Umbilical cord; Placenta - Physiological functions; Foetomaternal circulation, Placental barrier, Twinning: monozygotic, dizygotic

Level 2: Placental hormones, Uterine growth, Parturition, Estimation of fetal age,

Level 3: Types of cord attachments, Chorion villus biopsy and Amniocentesis;

Uses of amniotic membranes, Trophoblastic tumours - Rh incompatibility, Haemolytic disease of newborn,

II) Systemic Embryology

i) Cardiovascular System - Venous System; Heart - Chambers - Septa - Truncus -

Aortic arches - Fetal circulation - Changes at birth, ASDs, VSDs, PDA,

Fallot's Tetralogy.

Level 2: Veins, abnormalities, Surgical corrections

ii) The Respiratory System: Development of Larynx, Trachea, Bronchi,

Lungs; Tracheo-oesophageal Fistula

Level 2: malformations

Level 3: Respiratory Distress Syndrome; Premature births

iii) The Alimentary System: Foregut: Oesophagus, Stomach, (Lesser sac);

Duodenum - Hepatobiliary apparatus, Pancreas, Spleen, Portal vein;

Midgut : Rotation and Fixation, Caecum and Appendix, Meckel's

diverticulum; Hindgut : Cloaca; Rectum and Anal CanalLevel 2: Malformation - Tracheo-oesophageal fistulae; Congenital

Hypertrophic Pyloric Stenosis; Atresia; Omphalocele, Hernia;

Malformations - Fistulae, Situs inversus; Nonrotation; Mixed rotation of

gut

iv) The Urogenital System, Development of Kidneys and Ureters; Cloaca -

Urinary Bladder and Urethra; Suprarenal gland; Genital System - Testis

and Ovary; Ducts and associated glands; External genital organs,

Mesonephric and paramesonephric ducts, Uterine tube, Uterus and

vagina

Level 2: congenital malformations; Ambiguous genitalia and

Hermaphroditism ; Remnants and Vestiges of Ducts and Tubules

v) Integument: Development of mammary gland, skin & appendages

vi) Pharyngeal arches, nerves, muscles, cartilage, development of face,

palate

vii) Endocrine : Glands, Adrenal, Thyroid, Parathyroid, Pituitary

viii) The Nervous System: Neural Tube: Spinal Cord and Brain i.e.,

Forebrain, Midbrain and Hindbrain, Hypophysis cerebri; Neural Crest :

Peripheral Nervous System,

Level 2: correlation Spina bifida; Anencephaly, Hydrocephalus, Retinal

detachment; glaucoma; Coloboma iris,

Level 3: Myelination of tracts shortening of spinal cord, Neural Tube

Defects

Organs of the special senses - Eye and Ear

Ear - Internal ear -; External and middle ear - anomalies of the Ear

E) GENETICS

i) Introduction – Mendelism, Laws Genetic code

Level 2: Evolution, Eugenics and Polygenic inheritance, Radiation and

mutation , Sex chromatin, Population genetics

ii) Cytogenetics

Structure and function of chromosomes, Cell cycle, Cell divisions,

Spermatogenesis, Oogenesis

iii) Molecular genetics (Normal)

Gene, Genetic code, Structure and types of DNA, Structure of RNAiv) Inheritance: Single gene inheritance, Multifactorial inheritance,

Polygenic inheritance, Mitochondrial inheritance, Pedigree charts with

symbols

Genetic basis of variation

Mutation, Polymorphism, Multiple allelism

Level 2: Types, Factors influencing mutational load

Developmental genetics

chromosomes; Lyon’s hypothesis; Hermaphroditism and

pseudohermaphroditism; teratogenesis

Gonadal dysgenesis, Adrenogenital syndrome Androgen insensitivity

Level 3: Counselling

Pedigree charting

Chromosomal basis of disease: Numerical, Structural abnormalities

Down's, Cri-du-chat, Turner's, Klinefelter's

Level 2: Dermatographics

Level 3: Counselling

Prenatal diagnosis

Maternal Serum Sampling; Fetal USG; Fetal Amniocentesis; Fetal

Chorion Villus Sampling

Level 2: (cordocentesis); Foetoscopy

Level 3: Eugenics

F) Radiological Anatomy

I) Introduction

Principles of plain radiograms and CT scan.

Identification of gross anatomical features in plain and contrast

radiographs.

Identification of gross anatomical features in normal CT scan especially

of the Abdomen and Head-Face-Neck-Brain regions.

Diagnostic procedures. Technical details (e.g. dye) are not necessary.

Level 2 :Estimation of age if epiphyseal line seen.

II) UPPER LIMB – X-Ray of III) LOWER LIMB

Shoulder region Hip region

Arm Thigh

Elbow region Knee region

Fore arm Leg

Wrist and hand Ankle region

Foot IV) ABDOMEN V) THORAX

Plain X-ray Plain X-ray

Ba meal Ba swallow

Ba meal follow through Bronchogram

Ba enema CT mediastinum

Oral cholecystogram High resolution CT lung

Intravenous urogram

Cystogram

Ascending pyelogram

Abdominal Aortogram

Hystero-salpingogram

Myelogram

CT abdomen

VI) HEAD-NECK

X-ray skull plain

Carotid angiogram

Vertebral arteriogram

CT Scan Brain

NECK

Plain X-ray cervical region

G) SURFACE ANATOMY

I) SURFACE MARKING:II) LIVING ANATOMY:

i) Upper Limb

(BONY) LANDMARKS(PALPATION OF):

Clavicle, Spine of scapula, Inferior angle, Coracoid process, Epicondyles of humerus, Olecranon process of ulna; Head and styloid processes of radius and ulna, Heads of metacarpals (knuckles), Pisiform, Hook of Hammate

JOINTS (DEMONSTRATION OF MOVEMENTS):

Shoulder girdle, Shoulder joint, Elbow joint, Radio-ulnar joints, Wrist joint, 1st carpo-metacarpal joint, MP and IP joints

MUSCLES (DEMONSTRATION OF ACTION)

Principle of testing: Trapezius, Serratus anterior, Latissimus dorsi, Pectoralis major, Deltoid, Biceps Brachii, Brachioradialis, Brachialis, Extensors at the elbow, Supinators, Wrist extensors, Wrist flexors, Small muscles of the hand

NERVES: Dermatomes, Ulnar

Ulnar nerve thickening in Leprosy

VESSELS (PALPATION OF): Axillary artery, Brachial artery, Radial artery

OTHERS: Axillary groups of lymph nodes; Anatomical snuff-box (boundaries)

ii) Lower Limb

(BONY) LANDMARKS (PALPATION OF): Anterior superior iliac spine, Iliac crest, Tubercle of the iliac crest, Ischial tuberosity, Greater trochanter, Adductor tubercle, Head and neck of fibula, Lateral and

medial malleoli, Tibial tuberosity, Subcutaneous surface of tibia, Patella

JOINTS (DEMONSTRATION OF MOVEMENTS): Hip , Knee , Ankle ,

Subtalar Joints

MUSCLES (DEMONSTRATION OF ACTION): Hip-Flexors,

Extensors, Abductors, Adductors

Knee: Flexors, Extensors,

Ankle: Dorsiflexors, Plantar flexors

Subtalar: Invertors, Evertors

NERVES: Dermatomes, Sciatic, Tibial, Common peroneal, Femoral,

Obturator

Thickening of common peroneal nerve in LeprosyVESSELS (PALPATION OF): Femoral, Popliteal, Dorsalis pedis,

Posterior tibial

OTHERS: Ligamentum patellae, Inguinal lymph nodes

TENDONS: Semitendinosus, Semimembranosus, Biceps femoris,

Iliotibial tract

iii) ABDOMEN

(BONY) LANDMARKS (PALPATION OF): Anterior superior iliac

spine, Pubic tubercle

JOINTS (DEMONSTRATION OF MOVEMENTS): Intervertebral

MUSCLES (DEMONSTRATION OF ACTION): Obliques, Transversus

abdominis, Rectus abdominis

NERVES: Dermatomes

OTHERS: Enlarged liver, spleen, kidneys, Abdominal quadrants and

regions; Position of superficial and deep inguinal rings; Renal angle;

McBurney's point;

Level2: Murphy's sign

iv) THORAX (BONY) LANDMARKS(PALPATION OF): Sternal angle,

Counting of rib spaces, locating thoracic spines

JOINTS (DEMONSTRATION OF MOVEMENTS): Intervertebral

MUSCLES (DEMONSTRATION OF ACTION): Respiratory

movements

NERVES: Dermatomes

OTHERS: Apex beat, Apices of the lungs, Triangle of auscultation

v) HEAD FACE NECK - (BONY) LANDMARKS (PALPATION OF):

Nasion, Glabella, Inion, Mastoid process, Suprameatal triangle, Zygoma,

Zygomatic arch, Angle of mandible, Head of mandible,

JOINTS (DEMONSTRATION OF MOVEMENTS):

Temporomandibular joint

MUSCLES (DEMONSTRATION OF ACTION): Of Mastication, Of

Facial expression

Cranial nerves (I to XIII) testing

(PALPATION OF): Superficial temporal artery, Facial artery

(PALPATION OF): Symphysis menti, Hyoid bone, Thyroid cartilage,

Cricoid cartilage, Tracheal rings, Suprasternal notch, Transverse process

of atlas, Spine of C7

(DEMONSTRATION OF MOVEMENTS): Atlanto-occipital joint,

Cervical joints

(DEMONSTRATION OF ACTION): Sternocleidomastoid, Neck flexors

and extensors

(PALPATION OF): Common carotid artery, External carotid artery

OTHERS: Thyroid gland, Cervical lymph nodes, (Horizontal and

vertical), Midline structures in the neckNOTE :- Level 2 and 3 mentioned in the above syllabus includes the

topics " desirable to know" (level-2) and " Nice to know" (level-3.

The remaining topics fall under the group " Must Know" (level-1.

H) University Exam. Pattern

I) Theory Examination Pattern (In Anatomy)

ANATOMY PAPER 1-includes gross anatomy, systemic histology and

systemic embryology of the region

above diaphragm.

ANATOMY PAPER 11-Includes the gross anatomy, systemic histology and

systemic '1 embryology of the region below diaphragm. It also includes General

histology, General 1 embryology, general anatomy & genetics. NATURE OF EACH QUESTION PAPER

Faculty with Year : FIRST MBBS

Subject : ANATOMY

Paper : I

Total Marks : 50 Time : 2 ½ Hours

Section "A" (10 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..

2) Use blue/black ball point pen only.

3) Each question carries half mark.

4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the circle

once marked.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of

act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (10 marks)

Question No. Question Description Division of Marks Total Marks

1. Total MCQs : 20 20 X ½ 10

Section "B" & "C" (40 Marks)

Instructions:-

1) All questions are compulsory.

2) The number to the right indicates full marks.

3) Draw diagrams wherever necessary.

4) Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

6)

Section "B" : SAQ (24 Marks)

Question No. Question Description Division of Marks Total Marks

2. Brief answer questions (any six out of seven)

(two should be based on Applied Aspects)

a) b) c) d) e) f) g)

6 X 4 24

Section "C" : LAQ (16 Marks)

Question No. Question Description Division of Marks Total Marks

3. Solve any two out of three:

(Long answer question only)

a) b) c)

2 X 8 16Faculty with Year : FIRST MBBS

Subject : ANATOMY

Paper : II

Total Marks : 50 Time : 2 ½ Hours

Section "A" (10 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..

2) Use blue/black ball point pen only.

3) Each question carries half mark.

4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the circle once marked.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (10 marks)

Question No. Question Description Division of Marks Total Marks

1. Total MCQs :20 20 X ½ 10

Section "B" & "C" (40 Marks)

Instructions:-

1) All questions are compulsory.

2) The number to the right indicates full marks.

3) Draw diagrams wherever necessary.

4) Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : SAQ (24 Marks)

Question

No.

Question Description Division of Marks Total Marks

2. Brief answer questions (any six out of seven)

(two should be based on Applied Aspects)

a) b) c) d) e) f) g)

6 X 4 24

Section "C" : LAQ (16 Marks)

Question No. Question Description Division of Marks Total Marks

3. Solve any two out of three:

(Long answer question only)

a) b) c)

2 X 8 16II) Practical Exam. Pattern:

Marks for viva - 20

i) Axial Skeleton ...10 marks }Total 20 marks

ii) Appendicular skeleton ...5 marks }of viva

iii)Embryology models …5 marks

Practical marks ..40

iv) Soft parts dissected body, ...20 marks }

organs, viscera, brain

v) Histology -spotting …..6marks 10 marks

-one slide for discussion …….4marks

vi) Radiology ...5 marks

vii) Surface living anatomy ….5 marks

I) Anatomy books recommended

1) Gray's Anatomy

2) Sahana's Human Anatomy

3) Chouraia's Human Anatomy 3 volumes

4) Cunningham's manual of Practical Anatomy

5) Regional Anatomy by R. J. Last

6) Human Histology by Inderbir Singh

7) Atlas of Human Histology- DIFORE

8) Surgical Anatomy- McGregor

9) Histolgoy- by ham,

10) Human Embryology – Inderbir Singh,

11) Medical Embryology – Langman,

12) Surface Anatomy & Radiology – Halim Das,

13) General Anatomy by – Chowrisia

14) Text book of Neuroanatomy – Inderbir Singh

15) Central Nervous System – Podar Bhagat

16) Clinical anatomy for medical students – Richard Snell

17) J.S.P. Lumbley at all – M.C.Q's in AnatomyFIRST M.B.B.S. - SYLLABUS

HUMAN PHYSIOLOGY

I) GOAL

The broad goal of the teaching of undergraduate students in physiology

aims at providing the student comprehensive knowledge of the normal functions

of the organ systems of the body to facilitate an understanding of the

physiological basis of health and diseases.

II) EDUCATIONAL OBJECTIVES:

1)At the end of the course, the student will be able to: describe the normal

functions of all the organ systems, their regulatory mechanisms and interactions of the various systems for well-coordinated total body function.

2)Understand the relative contribution of each organ system in the maintenance of the milieu interior (homeostasis).

3)Explain the physiological aspects of normal growth and development. Analyse the physiological responses and adaptation to environmental stresses.

4)Comprehend the physiological principles underlying pathogenesis and treatment of disease.

5)Correlate knowledge of physiology of human reproductive system in relation to National Family Welfare Program.

III) SKILL :

At the end of the course the student shall be able to :

1) Conduct experiments designed for study of physiological phenomena.

2) Interpret experimental/investigative data.

3) Distinguish between normal & abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.IV) INTEGRATION :

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

V) COURSE CONTENT :

Theory

List of topics.

A) GENERAL PHYSIOLOGY. (5 hours)

Must know.

- Introduction to Physiology

- Branches of Physiology

- Functional organization of human body.

- External and internal environment

- Homeostasis, Biofeedback mechanisms

Cell Physiology:

- Transport across cell membrane.

B) HEMATOLOGY : (15 hours)

Must know

- Composition of blood

- Functions of blood

- Plasma proteins: Types, concentration, functions.

- Erythrocytes: Morphology, functions, normal count physiological

variations in normal count & anaemia, polycythemia.

- Haemopoesis: general concepts

- Erythropoiesis: stages, Sites, regulation, reticulocyte & its clinical

significance.

- Haemoglobin: Functions, normal values, physiological variations.

- Fate of erythrocytes: life span, Catabolism of Hb, bilirubin metabolism,

jaundice.

- Physiological basis of anaemia, nutritional anaemia.

- Polycythemia: Primary & secondary.- Leukocytes: differences between R.B.C. & W.B.C., types of W.B.C.s

normal count & differential W.B.C. count, physiological variations,

properties, functions of W.B.C.s,,

Granulopoiesis – stages, regulation,

Lymphopoiesis.

Pathological variations in total & differential W.B.C. count.

- Immunity: definition, concept of antigen & antibody, types of immunityInnate & Acquired, & their mechanism, cell mediated & humeral

immunity, B lymphocytes, T lymphocytes & their types.

Primary & secondary response, basis of vaccination.

- Blood groups: Landsteiner's law,

ABO System – type A & B antigen, ABO system & inheritance, relation to

transfusion, cross matching major & minor.

Rh System – inheritance, Rh incompatibility & blood transfusion,

Erythroblastosis foetalis.

- Blood transfusion: indications, storage of blood & changes during storage,

transfusion reactions.

- Monocyte - macrophage system: Classification, functions, functions of

spleen.

- Hemostasis: definition, basic mechanisms of Hemostasis,

- Platelets:structure, normal count & variations, functions, role in platelet

plug formation, Hemostasis & clot retraction.

- Blood coagulation: Coagulation factors in plasma, basic mechanism of

blood clotting, intrinsic & extrinsic pathways & difference between two

pathways, role of calcium in coagulation, role of vitamin K, fate of clot.

Anticoagulants – commonly used & their mechanism of actions,

blood coagulation tests – bleeding time, clotting time.

Haemophilia.

- Body fluid compartments: role of water in body & its distributions,

different body fluid compartments & composition of their fluid.- Blood volume: normal value, physiological & pathological variations,

blood volume regulation in detail (To be taken at end of lectures on C.V.S,

kidney and endocrines)

Desirable to know

- Physical properties of blood.

- Plasma proteins: Plasmapheresis, role of liver in plasma protein synthesis,

relationship of diet & plasma protein synthesis.

- R.B.C.: advantages of biconcave shape.

- Bone marrow structure and cellular elements.

- Common Haemoglobinopathies (Hbs, Hbc, Thalassaemia)

- Method of determination of life span of R.B.Cs.

- Types of jaundice.

- Polycythemia – effects on haemodynamics,.

- Immunity: Antibody structure & types, antigen – antibody reactions.

- Blood group: M. N. system, other blood groups.

- Thrombocytosis, thrombocytopenia purpura.

- Anticoagulants: used in vitro & in vivo.

- Other blood coagulation tests.

- Classification of haemorrhagic diseases, D.I.C.

- Measurement of: total body water, blood volume, plasma volume, I.C.F.

volume.

Nice to know

- Blood component therapy.

- Effects of splenectomy.

- Plasmin system.C) NERVE (5 hours)

Must know:

- Distinctive histological features relevant to functions of nerve fibers.

- Classification of nerve fibers: based on structure, diameter, functions and only for sensory nerves.

- R.M.P. definition, production & maintenance, method of measurement, significance.

- Action potential: definition,

Phases – depolarization, repolarisation, ionic basis of depolarization & repolarisation.

Production & propagation of A.P.,

Properties of A.P., significance.

- Properties of nerve fibers.

- Strength duration curve: chronaxie and factors affecting it.

- Factors affecting conduction in a nerve.

Desirable to know:

- Experimental techniques to study the mechanism of production of R.M.P. & A.P.: patch clamp, voltage clamp

- Methods of recording of A.P.

D) MUSCLE (7 hours)

Must know.

- Classification of muscles,

- Structure of skeletal muscle:

Electronomicroscopic structure, muscle proteins – contractile, regulatory, structural & enzymatic.

Sarcoplasmic tubular system: concept of sarcoplasmic triads & their

functions.

- Neuromuscular transmission: Physiologic anatomy, events, N-M

blocking & its clinical significance, applied aspect – myasthenia gravis.- Excitation – contraction coupling.

- Molecular basis of skeletal muscle contraction: sliding filament theory,

power stroke – corss bridge cycle, role of calcium.

- Energetics: fuel used by skeletal, muscle at rest & in exercise, metabolic

pathways involved to yield A.T.P.,

Oxygen debt: definition, types (lactic, alactic), incurring of debt, repaying

the debt, significance.

- Properties of skeletal muscle: excitability, refractory period (absolute,

relative), conductivity, contractility – types (isometric, isotonic), effects

of summations (multiple motor unit summation, frequency summation &

tetanizibility), all or none law, extensibility & elasticity, fatiguability.

- Factors affecting development of tension in the muscle:

a) number of motor units contracting- type of muscle, number of muscle

fibers in each unit activated, supraspinal influences.

b) length – tension relationship

c) frequency of stimuli, duration of stimulation

d) load

e) type of contraction

f) Chemical composition of muscle fibers and ions.

- E.M.G. (in brief)

- Skeletal muscle circulation.

- Smooth muscle: structure, distribution, types molecular mechanism of

contraction, properties, regulation, and disorders.

Desirable to know

- Heat liberated during various phases of contraction, Fenn effect.

- Recording of muscle activity.

Nice to know

- E.M.G. details.E) RESPIRATORY PHYSIOLOGY (15 hours)

Must know:

- Physiologic anatomy

- Functions of respiratory system, non respiratory functions of lung

- Mechanics of respiration:

Ventilation :

Inspiratory & expiratory muscles, intraplural pressure, lung & thoracic compliance, factors affecting compliance, work of breathing, surface tension forces & role of surfactant, airway resistance, elastic resistance.

- Lung volumes and capacities. Measurement, physiological & significance (tidal volume, vital capacity, forced vital capacity – details)

- Pulmonary ventilation, alveolar ventilation, alveolar dead space, - applied aspect,

Maximum breathing capacity & breathing reserve.

Diffusion of Gases :

- Exchange of respiratory gases at alveolar – capillary membrane, factors affecting diffusion.

Gas Transport :

- Transport of oxygen, role of Haemoglobin, oxygen dissociation curve & factors affecting it.

- Transport of carbon dioxide

Control of Breathing :

Neural control – higher centers, reflexes.

Chemical control – central & peripheral chemoreceptors role of CO_2, O_2,

H^+

Pulmonary Circulation

- Characteristics

- Ventilation perfusion ratio

- Respiratory adjustment in exercise.

- Hypoxia: types & high altitude hypoxia.- Artificial respiration:

- Pulmonary function tests - principles

Desirable to know.

- Method of determination of dead space, residual volume, functional

residual capacity.

- Oxygen therapy: indications, hazards of hyperbaric oxygen & use.

Nice to know

- Concept of P50

- Positive pressure breathing.

F) CARDIOVASCULAR PHYSIOLOGY (20 hours)

Must know:

- Introduction, functions & importance of the system.

- General organization.

- Structure of heart, pericardium, myocardium, endocardium, nerve supply,

Histology, details of cell junctions, syncytium, contractile & conducting

fibers.

- Properties of cardiac muscle: excitability, conductivity, contractility, autorhythmicity, all or none law, long refractory period.
- Junctional tissues of heart, pacemaker potential, action potential of cardiac muscle.
- Generation & conduction of cardiac impulse.
- ECG: lead arrangement, normal waves & their significance with reference to lead II
- Cardiac cycle: pressure – volume changes, heart sounds & their clinical significance, correlation of pressure, volume, ECG, heart sounds in cardiac cycle.
- Heart rate & its regulation.
- Haemodynamics - def.,blood flow, resistance
- Cardiac output: normal values, physiological variations, factors affecting cardiac output – details, regulation, measurement – principles. - Blood pressure: Normal levels, measurement, determinants, short term & long term regulation - details.
- Capillary circulation, tissue fluid formation.
- Lymphatic system: Anatomy & structure, formation of lymph, composition of lymph, functions of lymphatic system, lymphflow & factors affecting it.
- Regional circulation: Physiologic anatomy, factors affecting, special features: coronary, cerebral , skin, portal
- Adaptation of cardiopulmonary system to various grades of exercise.
- Hemorrhagic shock – stages & compensatory mechanisms, effects on body, physiological basis of treatment in brief.Desirable to know:

- Ion channel & receptors (physiological, pharmacological & clinical significance)

- E.C.G. – electrical axis of heart, heart blocks, arrhythmias, ischaemia, infarctions.

- Heart sounds: murmurs & their clinical significance.

Nice to know

- Experimental methods of studying cardiovascular physiology,

- Patho physiology of oedema

G) RENAL PHYSIOLOGY (10 hours)

Must know:

- General introduction, structure & functions of kidney.

- Renal circulation: special features from functional point of view.

- Concept of clearance: to study renal physiology, for :

a) GFR – Inulin, Creatinine, basic principle of radioisotope method.

b) Renal blood flow – PAH

c) Concentration & dilution of urine – free water.

- Formation of urine:

1) Glomerular stage – GFR (definition, dynamics, factors affecting & measurement))

2) Tubular stage – Reabsorption & secretion.

a) Sodium, potassium, glucose : details

b) Handling of water – concentration & dilution of urine.

c) Secretion of H

+

3) Role of kidney in acid – base balance.

- Physiology of micturition: basic reflex & control, cystometrogram.

- Artificial kidney: basic principles of dialysis.

Desirable to know:

- Experimental studies for renal functions.

Nice to know

- Disorders of micturition.H) BODY TEMPERATURE REGULATION: (2 hours)

Must know:

- Homeothermia – Balance between heat gain & heat loss.

- Regulation of body temperature,

Desirable to know:

- Hyperthermia, Hypothermia.

I) ALIMENTARY SYSTEM: (12 hours)

Must know:

- General introduction & organizational plan, innervations and blood supply.

Salivary secretion:

- General principles & basic mechanisms of secretion composition ,and functions of saliva, mechanism & regulation of salivary secretion.

Mastication and deglutition:

- Three phases of deglutition- physiologic anatomy, mechanism & control

Gastric secretion:

- Functional anatomy, histology, functions of stomach, composition of gastric juice, cellular mechanism of gastric secretion of acid, pepsin, intrinsic factor, other enzymes, phases of gastric secretion, regulation of gastric secretion.

- Gastric Motility:

Electrical activity of stomach, pylorus, emptying of the stomach-pyloric pump, regulation & factors promoting & inhibiting emptying.

Pancreatic secretion:

- Structure, composition & mechanism of secretion of electrolytes & enzymes, regulation of secretion.

- Liver & gall bladder:

Microscopic structure, functions of liver, composition of bile, cellular mechanism of bile formation, enterohepatic circulation of bile salts, control of secretion, concentration & storage of bile in gall bladder. filling & evacuation of gall bladder functions of gall bladder

Intestinal secretion:- Structure, innervations.

- Composition & mechanism of secretion of small intestinal juice, regulation of secretion.

- Secretion of large intestine: mucous, water, electrolyte.

- Motility of small intestine:

Structure & innervation electrical activity of smooth muscle, resting membrane potential, slow waves, spike potentials, rhythmic segmenting contractions, peristalsis, control – neural & hormonal, functions of ileocecal valve.

- Motility of large intestine:

- Structure & innervation,'mixing & mass movements, defecation reflex' and its control

- G.I. hormones: in brief.

Digestion & absorption:

Digestion & absorption of - carbohydrate,

- Proteins

- Fats

absorption of water, electrolytes and vitamins.

Desirable to know:

- Gastric mucosal barrier, experiments to study regulation of gastric juice secretion, disorders of secretion, peptic ulcer., inhibitors of gastric secretion

- Effects of vagotomy, abnormal gastric motility vomiting.

- Barium meal studies, endoscopy, biopsy.

- Pathophysiology of small intestinal motility, paralytic ileus, diarrhea, obstruction.

- Pathophysiology of colonic motility, irritable bowel syndrome, drugs, constipation.

- Pancreatic function tests.

- Gall stone, effects of removal of gall bladder

Nice to know

- Disturbances of esophageal motility, spasm, achalasia, hiatus hernia.

- Methods for study of intestinal absorption.

- Effects of hepatectomy.J) NUTRITION: (2 hours)

Must know:

- concept of balanced diet

- factors affecting caloric requirements

- requirements of various nutrients, sources, daily needs.

- nutrition under special conditions – pregnancy, lactation, growing child.

K) ENDOCRINE SYSTEM (10 hours)

Must know:

- Introduction

- Endocrine functions of Hypothalamus – releasing hormones, Mechanism

of hormone action

- Anterior pituitary hormones:

functions, regulation, disorders.

posterior pituitary hormones,ADH, Oxytocin. functions, regulation,

disorders.

Thyroid:

hormone: synthesis, fate, functions, regulation, disorders.

- Parathyroid:

hormone: synthesis, functions, regulation, disorders – tetany.

- Adrenal cortex: and medulla.

hormone: secretion, functions, regulation, disorders

- Pancreatic hormones:

secretion, functions, regulation, disorders.

Desirable to know:

- Radioimmuno assays.

Nice to know

- Experimental studies.

L) REPRODUCTIVE PHYSIOLOGY: (8 hours)

Must know:

- Sex chromosomes, sex determination, sex differentiation

- Functional anatomy of reproductive system.

- Puberty: changes in males & females and its control.

- Spermatogenesis: stages & regulation Semen analysis.

- Testosterone: actions & regulation.

- Male sexual act.

- Menstrual cycle & ovarian cycle:

Phases & hormonal regulation.

- Menopause.

- Ovulation: indicators & importance

- Fertilization, implantation of ovum.

- Functions of placenta

- Physiology of pregnancy;

- Maternal changes during pregnancy

- Parturition: in brief – stages and mechanism.

- Lactation: initiation & maintenance and control.

advantages of breast-feeding.

- Contraception: to be taken as integrated topic.

Desirable to know:

- Sex chromosomes: Barr bodies.

- Development of genitals & gonads

Nice to know

- Precocious & delayed puberty.

M) SPECIAL SENSES (8 hours)

Must know:

- Eye:

Functional anatomy of eye, optics, microscopic structure of retina with

retinal circuits, image formation,

Photochemistry of vision (photopic & scotopic vision, dark & light

adoption),

Pupillary reflexes, Accommodation reaction, Errors of refraction and their

correction, Colour vision – physiological & neural basis, accepted theoryof colour vision, classifications, basis of colour blindness and tests of

colour blindness, significance.

Visual pathway – processing of information at different levels in visual

pathway, organisation of visual cortex. Effects of lesion at different levels

in visual pathway,

Movements of eyeballs: functions & control.

- Ear:

Physics of sound, decibel system,

Functions of external ear,

Functional anatomy of middle ear, functions of middle ear in detail,

assessment of functions of middle ear, Functional anatomy of cochlea,

functions of inner ear, place principle, theories of hearing.

- Audiometry,

Auditory pathway & important features, auditory cortex (role in hearing &

speech development)

- Taste:

Functional anatomy of taste buds, different taste modalities, pathway,

factors affecting taste sensation,

- Smell:

Functional anatomy of receptors, primary olfactory sensations, pathway,

factors affecting smell sensation,

Desirable to know:

- Resolution of images,

- Electrophysiology of internal ear: cochlear micro phonics.

Nice to know

- Electrophysiology of retina.

- Theories of hearing.N) CENTRAL NERVOUS SYSTEM: (50 hours)

Must know

- Outline of nervous system.

1) General nervous system:

Synapse: definition, physiological anatomy, sequence of events of synaptic transmission, properties, (state the property & its significance), significance of synaptic transmission, applied aspect.

Neurotransmitters – in brief.

Receptors: definition, classification (basis of each classification with example), properties (state each property with underlying mechanism & significance), significance (homeostasis, conscious awareness of environment, tone posture, protection).

Sensations: different modalities, classification with examples and significance

- sensation of touch, pain proprioception : details of each

Reflexes: definition, classification (basis of classification with example), reflex arc & its components, properties (state each property with basis & importance)

Stretch reflex – definition, muscle spindle (details with innervation, role of gamma motor neurons) role of supra spinal control – in brief, functions of

stretch reflex (regulation of muscle tone) inverse stretch reflex.

Polysynaptic reflexes: withdrawal reflex.

2) Tracts:

Ascending & descending tracts: details of each tracts – (situation & extent in spinal cord, origin, course & termination, collaterals, somatotopic arrangement, functions, applied aspect, tests)

Ascending tracts: Basic plan of somato sensory pathway for conscious Sensation, pathway from head, face region.

Descending tracts: pyramidal tracts – details., extra pyramidal tracts, differences between UMN & LMN lesions.2) Sections at various levels in CNS :

a) Spinal transection – spinal animal.

Complete – 3 stages – spinal shock, stage of recovery, stage of reflex failure – details of each stage.

Incomplete. Transection

Hemisection

b) Low midbrain section – decerebrate animal : Decerebrate rigidity.

(Classical & ischaemic with mechanisms, characteristics features, physiological significance)

c) High midbrain section – High decerebrate animal.

d) Thalamic or Decorticate animal.

3) Posture - & Equilibrium.

Definition, classification of postural reflexes.

(Details of each reflex and its function.)

regulation of posture (integrating centers at various levels of CNS)

vestibular apparatus : Physiologic anatomy, mode of function of utricle &

saccule and semicircular canals, vestibulo occular & vestibulo spinal reflexes.

4) Thalamus :

Functional classification of Thalamic nuclei, with connections of

different nuclear groups, functions of thalamus, thalamic syndrome.

5) Hypothalamus :

Functional classification of different hypothalamic nuclei, connections in

brief, functions in details.

6) Limbic system :

Parts of limbic system, connections in brief, functions.

7) Reticular formation :

Introduction, anatomy in brief, functional divisions.

(A)Ascending reticular activating system – details with connections &

role in sleep wakeful cycle, applied aspect.(B)Descending reticular system – role in regulation of muscle tone by

pontine & medullary regions.

(C)Visceral centres.

8) E. E. G. :

Definition, different waves, characteristics & functional significance of

each wave, physiological variation, clinical application in brief.

9) Sleep & Wakefulness :

Concept of alertness & wakefulness with their physiological basis,

Definition of sleep, stages of sleep correlated with EEG, sleep cycle –

types of sleep, salient features of NREM & REM sleep, physiological

effects of sleep on different systems of the body, Neurophysiological

mechanisms of sleep, functions of sleep.

10) Cerebellum :

Introduction, functional classification, intracortical circuit, deep cerebellar nuclei, connections of different lobes, functions of cerebellum, cerebellar function tests, effects of lesion in brief.

11)Basal Ganglia :

Introduction, classification of nuclei, connections, intracortical circuits, functions, lesions - Pa rkinsonism.

12) Cerebral Cortex :

Gross anatomy & divisions, concept of Broadmann's mapping with diagram, Parietal lobe – anatomical & functional divisions, details of each functional part as regards connections, topographic organisation, functions. Frontal lobe – excitomoter Cortex – anatomical & functional parts, details of each part as regards connections, topographic organisation, functions.

Prefrontal Cortex – different areas, connections in brief, functions, effects of lobectomy.13) speech –

Afferent and efferent mechanisms and role of cortical centers in speech, concept of cerebral dominance, development of speech, vocalization.

14) Memory :

Definition, stages, types, physiological basis, factors affecting, applied – amnesias in brief.

15) Learning :

Definition, types with examples, stages, factors influencing, role of motivation (positive & negative reinforcement, reward & punishment), physiological basis – role of different parts of CNS, structural, biochemical changes.

16) Conditioned reflexes :

Definition, difference between unconditioned & conditioned reflexes,

development of conditioned reflexes, properties, significance.

17) Autonomic nervous system :

Organization and functions of Parasympathetic & Sympathetic and their

control.

18)CSF :

Introduction, composition, normal CSF pressure, formation & circulation,

functions, applied aspect – brief, blood brain barrier, blood CSF barrier.

19)“ Physiology of Brain Death & changes after that ” (This topic included vide

Academic Council Resolution No. 303/2008 dated 29/07/2008)

Introduction of “ Brain Death and Organ Donation” topic in subjects

of Physiology , Preventive & Social Medicine, Psychiatry, Medicine &

SurgeryDesirable to know :

General nervous system :

Neurotransmitters – details, susceptibility of synapse to hypoxia drugs etc.,

Mechanisms of referred pain, differences between superficial & deep pain,

central analgesia system, supraspinal control of stretch reflex – details.

Thalamus - applied aspects – effects of lesions.

Hypothalamus - applied aspects – effects of lesions

Reticular formation – effects of lesion

EEG – Method of recording, abnormal patterns.

Basal Ganglia – lesions, involuntary movements.

Cerebellum – Embryology, evolution, effects of stimulation & ablation.

Cerebral cortex – effects of stimulation & ablation in different regions.

Speech – aphasias.

Nice to know

Experimental studies – effects of stimulation & ablation.

Sleep, wakefulness – effects of sleep deprivation, disorders.

Books recommended:

1) Textbooks of Physiology :

Guyton - Textbook of Physiology

Ganong - Review of Medical Physiology

S. Wright - Applied Physiology

2) Reference Books :

Best and Taylor - Physiological basis of medical practice

Berne & levy. - Principles of Physiology

Dr. V.G. Ranade - Laboratory Manual and Journal of Physiology

Practicals (A)Haematology

Hb% R. B. C. W. B. C. Differential, B.T.C.T. Blood group,

ABO system Rh typing, Blood Indices

(B)Clinical examination and Human experiments

Stethography, Spirometry, Ergography, Perimetry, Tests for

physical fitness, Clinical examination of all systems.

(C)Demonstrations

Reticulocyte count. Platelet count, P. C. V., E. S. R, fragility, peripheral

blood smear, bone marrow slides,

E.M.G. S.D. curve, conduction velocity of nerve (Human), E.C.G.,

E.E.G., Audiometry, H.R.T. (Human reaction time)

Visit to blood bank, wards to show common disorders or video tapes (list

given in appendix I), X-rays (list given in appendix II)

Animal experiments on frogs,

a) Skeletal muscle:

effect of graded stimuli,

simple muscle twitch

genesis of tetanus,

effect of load on skeletal muscle

fatigue.

“Velocity of Nerve Impulse & Effect of Two Successive Stimuli in

Skeletal Muscle” (his two expt. Is added in new syllabus vide academic council

resolution No. 64/2009 dated 28/04/2009)

Introduction of “ Velocity of Nerve Impulse &Effect of Two Successive

Stimuli in Skeletal Muscle Topic in 1st MBBS Practical Syllabus

b) Cardiac muscle.

normal cardiogram, effect of temperature,

properties of cardiac muscle,

effect of vagal stimulation and phenomenon of vagal escape.

effect of drugs (Acetyl choline, Adrenaline, Nicotine) on frog’s heart.perfusion of isolated frogs heart with effects of Na

+

, K

+

and Ca

++

,

- and demonstration of Starling’s law

Museum to be developed

Historical land marks, Nobel laureates

VII) EVALUATION :

a) Theory – systems to be included are

Paper I

Cardiovascular, Respiratory, Gastrointestinal, Endocrines, Reproduction, Acclimatization to hypoxia, Temperature regulation, Exercise physiology

Paper II

Cell membrane and transport systems across the cell membrane, Homeostasis Nerve and Muscle Physiology, Blood, Excretory, C.N.S. and special senses.

Duration of each paper : 2 Hours & 30 minutes

(30 minutes – Section A – M.C.Q.

2 hours – Section B & C)

MCQ Section A will be given to the candidate at the beginning of the examination. After 30 minutes, Section A will be collected. Paper containing Section B and Section C will then be handed over to the candidate. Section B and Section C are to be written in separate answer sheets.

Marks : Total marks for each paper : 50NATURE OF QUESTION PAPER

Faculty with Year : FIRST MBBS

Subject : PHYSIOLOGY

Paper : I

Total Marks : 50 Time : 2 ½ Hours

Section "A" (10 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..

2) Use blue/black ball point pen only.

3) Each question carries one / half mark.

4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (10 marks)

Question No. Question Description Division of Marks Total Marks

1. Total MCQs : 20 20 X ½ 10

Section "B" & "C" (40 Marks)

Instructions:-

1) All questions are compulsory.

2) The number to the right indicates full marks.

3) Draw diagrams wherever necessary.

4) Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : SAQ (24 Marks)

Question No. Question Description Division of Marks Total Marks

2. Brief answer questions (any six out of seven)

(two should be based on Applied Aspects)

a) b) c) d) e) f) g)

6 X 4 24

Section "C" : LAQ (16 Marks)

Question No. Question Description Division of Marks Total Marks

3. Solve any two out of three:

(Long answer question only)

a) b) c)

2 X 8 16Faculty with Year : FIRST MBBS

Subject : PHYSIOLOGY

Paper : II

Total Marks : 50 Time : 2 ½ Hours

Section "A" (10 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..

2) Use blue/black ball point pen only.

3) Each question carries one / half mark.

4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross

once marked.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of

act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (10 marks)

Question No. Question Description Division of Marks Total Marks

1. Total MCQs : 20 20 X ½ 10

Section "B" & "C" (40 Marks)

Instructions:-

1) All questions are compulsory.

2) The number to the right indicates full marks.

3) Draw diagrams wherever necessary.

4) Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : SAQ (24 Marks)

Question No. Question Description Division of Marks Total Marks

2. Brief answer questions (any six out of seven)

(two should be based on Applied Aspects)

a) b) c) d) e) f) g)

6 X 4 24

Section "C" : LAQ (16 Marks)

Question No. Question Description Division of Marks Total Marks

3. Solve any two out of three:

(Long answer question only)

a) b) c)

2 X 8 16C) PATTERN OF VIVA VOCE AND PRACTICAL EXAMINATION

There shall be separate batches of students for viva and Practicals.

(i) Viva examination (orals) Total marks 20 Duration – 20 minutes.

Four Examiners (5 minutes with each examiner)

(ii)Two Examiners for topics of paper I systems to be distributed,

Two Examiners for topics of paper II systems to be distributed,

(B) Practical examinationTotal marks 40

3 Exercises:

Exercise (1) Clinical examination … 20 marks,

4 sub questions each of 5 marks,

(i) C.V.S. …5

(ii) R.S. …5

(iii) C.N.S. & Special senses …5

(iv) Abdomen …5

Exercise (2) Haematology …10 marks,

Exercise (3) Short exercise …10 marks,

Sub questions each having 2 marks,

Calculations,

Interpretation of graphs,

Charts,

Data analysis and interpretation

Photographs on-endocrine disorders,

Neurological disorder,APPENDIX I

List of common disorders to be shown during word visits or using video

tapes.

1. Generalised Oedema

2. Anaemia

3. Jaundice

4. Hepatomegaly

5. Splenomegaly

6. Ascites

7. Myxoedema

8. Cretinism

9. Hyperthyroidism

10. Dwarfism

11. Acromegaly

12. Facial nerve paralysis

13. Hemiplegia

14. Paraplegia

15. Parkinsonism

16. Cerebellar dysfunction.

APPENDIX II

List of X-rays to be shown along with clinical examinations to improve understanding.

1. Normal X-ray chest

2. Consolidation of lung

3. Pleural effusion showing mediastinal shift

4. Collapse of lung / cavity in lung

5. Hyper inflated lungs in emphysema

6. Left ventricular hypertrophy showing shift of apex beat

7. Barium meal follow through – oesophagus, stomach, small and large intestine.APPENDIX III

Topics to be asked as applied questions in theory .

A brief history and diagnosis to be provided.

1. Erythroblastosis foetalis

2. Haemophilia, purpura

3. Myasthenia gravis

4. Peptic ulcer

5. Oedema

6. Jaundice and anaemia – due to mismatched transfusion

7. Myxoedema

8. Cretinism

9. Hyperthyroidism

10. Tetany

11. Acromegaly, Gigantism

12. Respiratory distress syndrome

13. Parkinsonism

14. Asthma

15. Hemiplegia

16. Spinal cord injury

17.Deafness

18 Hemorrhagic shock

19 Cushing's syndrome

20 DwarfismHUMAN BIOCHEMISTRY

Human Biochemistry – Phase I M.B.B.S.

i) Goal :-

The broad goal of the teaching of undergraduate students in

biochemistry is to make them understand the scientific basis of the life

processes at the molecular level and to orient them towards the

application of the knowledge acquired in solving clinical problems.

ii) Objectives :-

a) Knowledge

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

1) describe the molecular and functional organization of a cell and list its subcellular components;

2) delineate structure, function and inter-relationships of biomolecules and consequences of deviation from normal;

3) summarize the fundamental aspects of enzymology and clinical application wherein regulation of enzymatic activity is altered;

4) describe digestion and assimilation of nutrients and consequences of malnutrition;

5) integrate the various aspects of metabolism and their regulatory pathways;

6) explain the biochemical basis of inherited disorders with their associated sequelae;

7) describe mechanisms involved in maintenance of body fluid and pH homeostasis;

8) outline the molecular mechanisms of gene expression and regulation, the principles of genetic engineering and their application in medicine.

9) Summarize the molecular concept of body defences and their application in medicine;

10) Outline the biochemical basis of environmental health hazards, biochemical basis of cancer and carcinogenesis;

11) familiarize with the principles of various conventional and specialized laboratory investigations and instrumentation analysis and interpretation of given data;

12) suggest experiments to support theoretical concepts and clinical

diagnosis;

b) SKILLS

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

1) make use of conventional techniques / instruments to perform biochemical analysis relevant to clinical screening and diagnosis;

2) analyze and interpret investigative data;

3) demonstrate the skills of solving scientific and clinical problems and decision making.

c) INTEGRATION

The knowledge acquired in biochemistry shall help the students to integrate molecular events with structure and function of the human body in health and disease.

1. Total no. of teaching hours allotted to Human Biochemistry – 240 hrs.

2. Theory examination:

There will be TWO papers, each of two and half hours duration. Each paper will be of 50 marks with one compulsory question on applied biochemistry.

Each paper will consist of FIVE questions.

3. Paper wise distribution of theory topics :

Structural formulae are not obligatory.

Paper- I (50 marks) 2 ½ hours duration.

1 Molecular and functional organization of a cell and its sub-cellular components.

2. Chemistry of enzymes and their clinical applications.

3. Chemistry and metabolism of proteins and related disorders.

4. Chemistry and metabolism of purines and pyrimidines and related disorders.

5. Chemistry and functions of DNA and RNA , Genetic code ; Protein biosynthesis &.regulation (Lac-operon)

6. The principles of genetic engineering and their applications in medicine.

7. Chemistry and Metabolism of haemoglobin.

8. Biological oxidation.

9. Molecular concept of body defence and their applications in medicine.

10.Vitamins and Nutrition.PAPER - II (50 marks) 2 ½ hours duration.

1. Chemistry and metabolism of carbohydrates and related disorders.

2. Chemistry and metabolism of lipids and related disorders.

3. Mineral metabolism: Water and electrolyte balance & imbalance.

4. Acid base balance and imbalance.

5. Integration of various aspects of metabolism and their regulatory pathways. Starvation metabolism.

6 Mechanism of hormone action.

7 Environmental biochemistry.

8 Liver function tests, Kidney function tests, Thyroid function tests.

9 Detoxification mechanisms.

10 Biochemical basis of cancer and carcinogenesis.

11 Radioisotopes.

12 Investigation techniques : (LCD-Topics) Colorimeter, Electrophoresis, Chromatography & Flame photometer. PH measurement5 NATURE OF QUESTION PAPER - Theory

Faculty with Year : FIRST MBBS

Subject : BIOCHEMISTRY

Paper : I

Total Marks : 50 Time : 2 ½ Hours

Section "A" (10 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..

2) Use blue/black ball point pen only.

3) Each question carries one / half mark.

4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (10 marks)

Question No. Question Description Division of Marks Total Marks

1. Total MCQs : 20 20 X ½ 10

Section "B" & "C" (40 Marks)

Instructions:-

1) All questions are compulsory.

2) The number to the right indicates full marks.

3) Draw diagrams wherever necessary.

4) Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : SAQ (24 Marks)

Question No. Question Description Division of

Marks

Total Marks

2. Brief answer questions (any six out of seven)

(two should be based on Applied Aspects)

a) b) c) d) e) f) g)

6 X 4 24

Section "C" : LAQ (16 Marks)

Question No. Question Description Division of Marks Total Marks

3. Solve any two out of three:

(Long answer question only)

a) b) c)

2 X 8 16Faculty with Year : FIRST MBBS

Subject : BIOCHEMISTRY

Paper : II

Total Marks : 50 Time : 2 ½ Hours

Section "A" (10 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..

2) Use blue/black ball point pen only.

3) Each question carries one / half mark.

4) Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross

once marked.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of

act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (10 marks)

Question No. Question Description Division of Marks Total Marks

1. Total MCQs : 20 20 X ½ 10

Section "B" & "C" (40 Marks)

Instructions:-

1) All questions are compulsory.

2) The number to the right indicates full marks.

3) Draw diagrams wherever necessary.

4) Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.

5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : SAQ (24 Marks)

Question No. Question Description Division of Marks Total Marks

2. Brief answer questions (any six out of seven)

(two should be based on Applied Aspects)

a) b) c) d) e) f) g)

6 X 4 24

Section "C" : LAQ (16 Marks)

Question No. Question Description Division of Marks Total Marks

3. Solve any two out of three:

(Long answer question only)

a) b) c)

2 X 8 166. PRACTICAL :

Practical examination in Biochemistry will be of

TWO hours duration 40 marks

B) Exercise

Q.1. : One quantitative experiment from group A 20 marks

(15 marks for expt. & 5 marks for table viva)

Q.2. : One qualitative/ quantitative experiment from 15 marks

group B.(10 marks for expt. & 5 marks for table viva

Q.3. Spot identification from group C. 5 marks.

Group A :

Blood sugar, Blood urea; Serum total protein, Albumin and A/G ratio, Alanine amino transaminase(SGPT), Aspartate amino transaminase(SGOT) , Alkaline phosphatase, Serum amylase, Serum total bilirubin, Serum uric acid, Serum calcium, CSF sugar.

Group B :

Creatinine in urine, Serum cholesterol, Serum phosphorus, CSF protein, Tests for monosaccharides (Ben edict, Barfoed,Selivanoff, Nylander, rapid furfural) , Tests for disaccharides, Colour reactions of proteins, Precipitation reactions of proteins, Normal Organic constituents of urine, Abnormal constituents of urine, S. Creatinine.

Group C :

Identification of slide under microscope,

Use of reagent.

Significance of test.

Use of Instrument /Appliances.

Identification of Hb - derivative.

Identification of GTT , Electrophoretogram and chromatogram.

Candidate will be allowed to use flow chart for quantitative exercise

only.

There will be table viva on Q.1 & Q.2 exercise. (7). SYLLABUS FOR PRACTICAL

1. Tests for monosaccharides.

2. Tests for disaccharides.

3. Colour reactions of proteins.

4. Precipitation reactions of proteins.

5. Spectroscopic examination of Hb -derivatives (Oxy Hb; deoxy Hb; methHb).

6. Estimation of blood sugar.

7. Estimation of blood urea.

8. Estimation of i) Serum creatinine, ii) Creatinine in urine..

9. Determination of serum total protein ,albumin and A/G ratio.

10.Estimation of total serum bilirubin.

11.Estimation of serum cholesterol.

12.Estimation of serum calcium.

13.Estimation of serum phosphorus (Inorganic)

14.Estimation of S.G.P.T(ALT).

15.Estimation of S.G.O.T (AST).

16.Estimation of serum alkaline phosphatase.

17.Estimation of serum amylase.

18.Urine ; Physical characteristics and normal constituents (organic)

19.Urine report; Physical characteristics and Abnormal constituents.

20.C.S.F.- Sugar & Protein.

21.Serum uric acid.

Lecture –cum- Demonstrations :

1. pH- measurement,

2. Colorimetry.

3. Electrophoresis.

4. Chromatography.

5. Flame photometry.

APPOINTMENT OF EXAMINERS:

There shall be at least four examiners. Out of whom not less than 50% must be an external examiners. Of the four examiners, the senior most internal examiner will act as Chairman/Convenor. The Chairman will make distribution of . Practical & viva-voce, so that all examiners will examine each candidate.Theory.

Paper I. 50 marks.

Paper II. 50 marks.

_____

TOTAL 100 marks.

Theory – viva. 20 marks

(paper I & II – 10 marks each.)

Practical :

Q.1. Quantitative. 20 marks.

Q.2. Qualitative/Quantitative. 15 marks.

Q.3. Spotting. 5 marks.

Total 40 marks.

Internal assessment

Theory	20 marks.
Practical	20 marks.

Total	40 marks.

Standard of passing : A candidate must obtain 50% in aggregate with

Minimum of 50% in theory & 35% in internal assessment is considered

eligible to appear for theory examination. However for passing total 50% in

aggregate .

DETAILS OF SYLLABUS FOR HUMAN BIOCHEMISTRY.

Structural formulae are not obligatory.

Must know:

1. Chemistry of carbohydrates: classification and biochemical

importance, chemistry and functions of monosaccharides(excluding

isomerism), disaccharides and polysaccharides including

Glycosaminoglycans (mucopolysaccharides).

2. Chemistry of Lipids: classification and biological importance of triacyl

glycerol, phospholipids, glycolipids, fatty acids (PUFA), prostaglandin,

steroids and lipoproteins.

3. Chemistry of proteins: general nature of amino acids, various ways of

classification of amino acids, biologically important peptides,

classification, properties and biological importance of proteins. Structuralorganization of proteins, Plasma proteins-functions, clinical significance

of various fractions, methods of separation (only principle).

4. Enzymes : General nature, classification of enzymes, specificity

and mode of action of enzymes, factors affecting enzyme activity.

Enzyme inhibitions (Kinetic not required).Clinical importance

(Diagnostic, therapeutic and as a Laboratory reagent) of enzymes and isoenzymes.

5. Biological oxidation: General concept of oxidation and reduction. Role of enzymes and co-enzymes. Electron transport chain. Substrate level and Oxidative phosphorylation, Role of uncouplers and inhibitors.

6. Haemoglobin: Chemistry and functions of haemoglobin . Types of normal and abnormal hemoglobins.(HbS, M,Thalassemia). Haemoglobin derivatives.

7. Vitamins: General nature, classification, sources,active forms and metabolic role, deficiency manifestations, daily requirement and hypervitaminosis.

8. Nutrition: Balance diet for normal adult, Quality of dietary protein, SDA, protein energy malnutrition (Kwashiorkor and Marasmus).

9. Carbohydrate Metabolism: Biochemical aspects of digestion and absorption of carbohydrates. Synthesis and break down of glycogen, Glycolysis, Rapoport Lumbering cycle, Citric acid cycle, Gluconeogenesis, HMP shunt pathway and its biological significance,Uric acid pathway (significance only). Metabolism of Galactose and Galactosemia. Blood sugar level and its regulation, oral GTT and glycosuria, Biochemistry of diabetes mellitus.

10. Protein Metabolism: Biochemical aspects of digestion and absorption of proteins. Fate of amino acid in the body (Deamination, Transmination, Transdeamination,Decarboxylation), Fates of ammonia (Urea cycle, glutamine formation), Metabolism

of aromatic and sulphur containing amino acids and their inborn

errors. Metabolism of Glycine.

11. Lipid Metabolism: Biochemical aspects of digestion and absorption of

Lipids. Beta oxidation, biosynthesis of saturated fatty acids only,

cholesterol biosynthesis, transport (role of HDL & LDL) Excretion,

Ketogenesis, Ketolysis and Ketosis. Adipose tissue metabolism,

Lipolysis and re-esterification, fatty liver and atherosclerosis.12. Chemistry and Metabolism of purines:, nucleosides, nucleotides.

Biologically important free nucleotides, Biosynthesis of purines(sources

of ring & regulatory steps only, conversion of IMP to GMP & AMP)

and salvage pathway, Biosynthesis of pyrimidines, Breakdown of

purines and pyrimidines, Gout, Lesch- Nyhan Syndrome

13. Metabolic interrelationship of carbohydrates, lipids and proteins

metabolism.

14. Hormones : General characteristics and Mechanism of hormone action.

cAMP the second messenger, phosphotidyl inositol /calcium system as

second messenger.

15. Chemistry of nucleic acids: structure and function of DNA and RNA,

Genetic code, DNA Replication, Transcription, Translation, chain

initiation, chain elongation , chain termination, Inhibitors of protein

biosynthesis.

16. Molecular Mechanism of gene expression and regulation 1) Lacoperon model, Mutations.

17. Mineral Metabolism : Study of (i) Calcium and phosphorous (ii)

sodium, potassium & chloride; (iii) magnesium, copper & iodine;

(iv) Iron, (v) manganese, selenium, zinc & fluoride. Their importance

in body in brief.

18 Water and electrolyte balance and imbalance.

19. Acid base balance and imbalance.

20 Haemoglobin Metabolism : Synthesis and break down of haemoglobin, porphyria (in brief), Fate of bilirubin, different types of Jaundice.

21 Function tests: (i) Liver function tests, (ii) Kidney function tests & (iii) Thyroid function tests.

22 Detoxication mechanisms: (Bio- transformation) oxidation, reduction, conjugation, hydrolysis.

Desirable to know :

1. Introduction of Biochemistry as a basic science for the study of medicine, It's importance in clinical practice.

2. Molecular and functional organization of a cell and its sub cellular components. 3. Genetic engineering : Recombinant DNA , Restriction endonuclease, Chimeric molecule, and Gene library. Applications of recombinant DNA technology in relation to medicine.

4. Molecular concept of body defence and their applications: i) Immunoglobulins- structure & functions, ii) Free radicals, enzymatic and non-enzymatic antioxidants .

5. Radioisotopes : Uses of radioisotopes (therapeutic, diagnostic) and hazards.

6. Metabolic changes during starvation.

Nice to know:

1. Environmental Biochemistry: Definition, chemical stress, air & water

pollution.

2. Biochemistry of cancer : carcinogens, and outline mechanism of carcinogenesis.

TOPICS OF THE LECTURES AND APPROXIMATE NUMBER OF LECTURES, HUMAN BIOCHEMISTRY - FIRST PHASE- M.B.B.S.

Lectures.

1. Introduction to Biochemistry, Cell structure and function. 1

2. Chemistry of Carbohydrates. 4

3. Chemistry of Proteins. 4

4. Chemistry of Lipids. 4

5. Chemistry of Nucleo proteins. 2

6. Enzymes. 6

7. Biological oxidation. 2

8. Chemistry and functions of Haemoglobin; abnormal haemoglobin.

2

9. Carbohydrate Metabolism. 6

10. Protein Metabolism. 6

11. Lipid Metabolism. 6

12. Integration of metabolism and metabolic changes during starvation.

2

13. Mechanism of hormones action. 1

14. Vitamins (Fat & Water soluble) 6

15. Nutrition. 2

16. Purines and Pyrimidine metabolism. 217. Chemistry and functions of Nucleic acids.;

Protein biosynthesis, Gene expression,mutations.

5

18. Genetic engineering and it applications. 2

19. Biochemistry of cancer. 1

20. Radioisotopes. 1

21. Haemoglobin metabolism, liver function tests,Detoxification

mechanisms.

3

22. Kidney function tests,Thyroid function tests 2

23. Mineral Metabolism. 4

24. Water and Electrolyte Balance. 2

25. Acid base balance, 2

26. Environmental Biochemistry.

1

27. Molecular concept of body defence. 2

BOOKS RECOMMENDED:

TEXT BOOKS ;

1. Medical Biochemistry - U.Satyanarayan.

2. Biochemistry for Medical students by D.M.Vasudevan & Shree Kumari.

3. Medical Biochemistry by M.N. Chatterjea and Rana Shinde.

4. Text Book of Medical Biochemistry by Ramakrishnan, Prasannan &

Rajan.

5. Medical Biochemistry by Debajyoti Das.

6. Biochemistry by A.C.Deb.

REFERENCE BOOKS:

1. Biochemistry by Pankaja Naik
2. Harper's Biochemistry.
3. Medical Biochemistry by N.V.Bhagwan.
4. Biochemistry by L.Stryer.
5. Biochemistry by Orten & Neuhans.

Introduction of "Communication Skills, Professionalism & Ethics in Medical Education Modules" TOPIC in 2nd &3rd MBBS Syllabus

Curricula for II M.B.B.S.

Pathology

1. Goal

The goal of teaching pathology is to provide undergraduate students comprehensive knowledge of the causes and mechanisms of disease, in order to enable them to achieve complete understanding of the natural history and clinical manifestations of the disease.

2. Educational objectives

(a) Knowledge

At the end of one and half years, the student shall be able to -

i. describe the structure and ultrastructure of a sick cell, the mechanisms of the cell degradation, cell death and repair.
ii. Correlate structural and functional alterations in the sick cell.
iii. Explain the Patho physiological processes which governs the maintenance of homeostasis, mechanism of their disturbances and the morphological and clinical manifestation associated with it.
iv. describe the mechanisms and patterns of tissue response to injury to appreciate the Pathophysiology of disease processes and their clinical manifestations.
v. Correlate the gross and microscopic alterations of different organ systems in common diseases to the extent needed to understand disease processes and their clinical significance.
vi. Develop an understanding of neoplastic change in the body in order to appreciate need for early diagnosis and further management of neoplasia.
vii. Understand mechanisms of common haematological disorders and develop a logical approach in their diagnosis and management.

(b) Skills

At the end of one and half years, the student shall be able to -

i. Describe the rationale and principles of technical procedures of diagnostic laboratory tests.
ii. Interpret diagnostic laboratory tests and correlate with clinical and morphological features of diseases.
iii. Perform simple bedside tests on blood, urine and other biological fluid samples.
iv. Draw a rational scheme of investigations aimed at diagnosing and managing common disorders.

v. Recognise morbid anatomical and histopathological changes for the diagnosis of common disorders.

(c) Integration

At the end of one and half years, the student shall be able to integrate the causes and mechanisms of disease most prevalent in India with their natural history for the understanding of their clinical course and management.

3. Total duration of teaching 3 Semesters (III, IV and V) **Minimum 315 working days.**

Total number of teaching hours allotted to the discipline 300 hrs

Distribution of teaching hours

A) Theory (lectures & tutorials) …..101
….. 58
Total …..159

B) Practicals …..110

C) Revision & Evaluation (Internal) ……31

4. Syllabus

a. ***Learning methods***

Distribution of teaching hours

DIVISIONS	**A) LECTURES** (1 hr)	**B) TUTORIALS** (2 hrs)	**C) PRACTICALS** (2 1/2 hrs)
1. General Pathology	35	07	12
2. Haematology	15	04	07
3. Systemic Pathology	47	13	18
4. Clinical Pathology	03	04	05
5. Autopsy	01	01	02
TOTAL	101	29x2	44x2.5

b. & c. Sequential organization of course contents

The Broad area of study shall be:-

General Pathology (including general neoplasia)
Systemic Pathology (including systemic neoplasia)
Haematology
Clinical Pathology

A) GENERAL PATHOLOGY : (n=35)

1. Definitions and causes of diseases:-

Must know**:-** Able to recall common definitions in Pathology and causes of cell injury.

2. Modes of cell injury:-

Must know**:-** Able to appreciate mechanisms of cell injury & relate them to the morphological changes.

3. Necrosis & gangrene:-

Must know**:-** Able to recognize types of necrosis and gangrene at gross and microscopic levels.

Desirable to know**:-** Apoptosis and its relevance.

4. Intracellular accumulations and alterations:-

Must know**:-** Able to list the types of intracellular accumulations & alterations in reversible cell injury along with alterations in cell organelles and cytoskeleton.

5. Cellular Adaptations/ Growth disturbances:-

Must know**:-** Define the various growth disturbances and appreciate the clinical significance of each.

6. Acute inflammation:-

Must know**:-** Define and describe changes occurring in acute inflammation and integrate the changes with morphological patterns of injury.

7. Chemical mediators of Inflammation:-

Must know**:-** Definition, Classification, description of each type, role of acute chronic inflammation.

8. Chronic inflammation (including granulomatous):-

Must know**:-** differentiate it from acute inflammation, describe aetiology, patterns and systemic effects of granulomas.

9. Regeneration and repair (general):-

Must know**:-** Define & describe regeneration and repair and understand the mechanisms and list factors modifying repair.

10. Repair in specialized tissues:-

Must know**:-** Describe repair in fractures and parenchymal organs and list modifying factors and complications.

11. Oedema:-

Must know**:-** Define oedema, classify and describe pathogenesis & correlate morphology with clinical significance with emphasis on transudate and exudate.

12. Shock:-

Must know**:-** Define, classify and understand pathogenesis, recognize the of mediators and stages of shock.

13. Thrombosis:-

Must know**:-** Describe etio-pathogenesis, fate, morphology and effects of thrombosis.

14. Embolism and Infarction:-

Must know**:-** Enumerate types of embolism and infarction, recognize morphological changes and correlate clinical significance.

15. Hyperaemia and Haemorrhage:-

Must know**:-** Definitions, morphology of acute and chronic congestions, clinical significance of haemorrhage.

16. Disturbances of pigment metabolism:-

Must know**:-** State the type of pigment disturbances and describe the changes associated with common disturbances like lipofuscin, melanin, Hemosiderin and Bilirubin.

17. Disturbances of Mineral metabolism:-

Must know**:-** Describe the types and morphological changes of calcification.
Desirable to know**:-** Disturbances of other minerals like zinc etc.

18. Genetic disorders:-

Must know**:-** Normal karyotype, classification of genetic disorders, types of genetic change, Down's syndrome, Klinefelter's syndrome, Turner's syndrome
Desirable to know**:-** Lysosomal storage disorders, glycogen storage diseases, methods of disease diagnosis.

19. Hypersensitivity reactions:-

Must know**:-** Classify, differentiate between different types of Hypersensitivity reactions.
Desirable to know**:-** Be conversant with transplant rejections.

20. Autoimmune diseases:-

Must know**:-** Understand mechanisms of autoimmunity and diagnose common autoimmune diseases; overview of SLE.

21. Amyloidosis:-

Must know**:-** Definition, physical characters, chemical characters, classification, pathogenesis morphology, clinical correlation and lab diagnosis.

22. AIDS:-

Must know**:-** Understand the natural history of the disease and recommend relevant investigations in the management.

23. Typhoid fever:-

Must know**:-** Correlate Pathogenesis with morphology and clinical features of the disease.

24. Syphilis:-

Must know**:-** Classify and describe lesions in various stages of syphilis

25,26,27 (3 lectures) Tuberculosis:-

Must know**:-** Appreciate the importance of tuberculosis in the present day Context, its Pathogenesis & basic histopathology. List and describe the various pulmonary lesions of tuberculosis. Describe changes in various organs in TB and understand their functional correlation, sequelae, lab diagnosis and TB in AIDS.

28. Leprosy:-

Must know**:-** Classify, differentiate between different types of leprosy and describe the diagnostic histologic features and sequelae.

29. Fungal diseases:-

Desirable to know**:-** Classification and be conversant with relevance of fungal diseases in the world with emphasis on opportunistic fungal infections.

30. Malaria:-

Must know**:-** Identify, morphological features in vivax and falciparum malaria and recommend lab investigations in the management.

31 & 32. Neoplasia - Nomenclature and classification:-

Must know**:-** Define important terms, classify and differentiate benign from malignant neoplasms.

Desirable to know**:** Precancerous conditions

33. Neoplasia - Carcinogenesis:-

Must know**:-** Understand carcinogenesis and analyse the mechanism of genetic changes in carcinogenesis.

34. Neoplasia - Biology and Lab diagnosis:-

Must know**:-** Understand the tumour host interactions in neoplasia and recommend the diagnostic workup for detection of cancer.

35. Neoplasia - Spread, grading and staging:-

Must know**:-** Biology of tumour growth, metastases, types, mechanisms, clinical correlations, grading of cancer and staging of cancer.

B) HAEMATOLOGY : (n=15)

1. Introduction to haematology and hemopoiesis:-

Must know**:-** Understand the importance of haematology in clinical practice and enumerate the stages of hemopoiesis.

2. Anaemias (general):-

Must know**:-** Definition, classify anaemia by various methods, clinical features and lab approach to anaemias.

3. Iron deficiency anaemia:-

Must know**:-** Definition, causes, haematological features, morbid anatomical features, laboratory diagnosis and differential diagnosis.

4. Megaloblastic anaemia:-

Must know**:-** Definition, causes, haematological features, morbid anatomical features, laboratory diagnosis and differential diagnosis.

5. Haemolytic anaemia:-

Must know**:-** Definition, classification, Pathogenesis and haematological features.

6. Haemoglobinopathies:-

Must know**:-** Definition, classification, Lab diagnosis of Thalassaemia and Sickle cell anaemia.

7&8. Haemorrhagic disorders:-

Must know**:-** Classify haemorrhagic disorders, describe clinical distinction between Purpuras and Coagulation disorders and laboratory screening tests for haemorrhagic disorders. Normal coagulation and fibrinolytic mechanism. Describe etio-pathogenesis, clinical significance and lab diagnosis of haemophilia and DIC.Describe etio-pathogenesis, morphological features (haematological and morbid anatomical) clinical significance and lab diagnosis of ITP.

9. Leukocytic disorders:-

Must know**:-** Leukocytosis, Leukopenia and Leukemoid reactions.

10. Acute Leukaemias:-

Must know**:-** Classify and differentiate different types of acute Leukaemias.

11. Chronic Leukaemias:-

Must know**:-** Definition, general features, classification, aetiology, haematological change, morbid anatomy, clinical course and lab. investigations.

12. Paraproteinemia:-

Desirable to know**:-** Understand the relevance of paraproteinemia's and integrate the various diagnostic modalities with the diagnosis.

13. Aplastic Anaemias:-

Desirable to know**:-** Aplastic anaemias and Agranulocytosis.

14. Blood groups:-

Must know**:-** Appreciate the relevance of blood groups in haematology and transfusion medicine. Erythroblastosis foetalis

15. Blood Transfusion:-

Must know**:-** Indications, selection of blood donors, autologous transfusions, complications of blood transfusions, investigation of suspected transfusion reactions.

C) SYSTEMIC PATHOLOGY : (n=46)

1. Atherosclerosis:-

Must know**:-** Definition, etiopathogenesis, gross and microscopic description, complications and clinical correlation.

2. Hypertension:-

Must know**:-** Relate the mechanisms of the disease to the clinical course and sequelae.

3. Other diseases of blood vessels:-

Must know**:-** Develop an index of suspicion for vasculitides and aneurysms.

4. Ischaemic heart disease:-

Must know**:-** Incidence, risk factors, Pathogenesis, morphological changes, clinical course, complications and investigations.

5. Congenital heart disease:-

Desirable to know**:-** Correlate the anatomical malformations of disorders to the clinical consequences of the disease.

6. Rheumatic heart disease:-

Must know**:-** Incidence, etiopathogenesis, morbid anatomy, histopathology, lesions in the organs, clinical course and sequelae.

7. Endocardial and pericardial diseases:-

Must know**:-** Infective endocarditis - Pathogenesis, morphology, differential diagnosis of cardiac vegetations, aetiology and basic morphology of different forms of pericarditis.

8. Cardiomyopathies:-

Desirable to know**:-** Recognize the disorders as part of differential diagnosis in primary myocardial diseases.

9. Pneumonias:-

Must know**:-** Aetiology, classification, gross, histopathological description in different forms and complications.

10. Lung Abscess and Bronchiectasis:-

Must know**:-** Etiopathogenesis, morphological appearances and complications.

11. Chronic Bronchitis and Emphysema:-

Must know**:-** Pathogenesis, types of emphysema, definition of chronic bronchitis, morbid anatomy and cardiac sequelae.

12. Occupational lung diseases:-

Must know**:-** Types, etiopathogenesis, gross anatomical differences between different forms and sequelae.

13. Tumours of lung and pleura:-

Must know**:-** Classification, aetiology, gross appearances, histological description of important forms, natural history, pattern of spread, Para neoplastic syndromes and secondary Pathology.

14. Lesions of oral cavity and salivary glands:-

Must know**:-** Differential diagnosis of swelling of salivary glands, oral cancer - etiopathogenesis, gross and histopathological descriptions.

15. Gastritis and Peptic Ulcer:-

Must know**:-** Definition of peptic ulcer, etiological factors, gross and microscopic appearances and sequelae.

Desirable to know**:-** Overview of aetiology and types of gastritis.

16. Ulcers of Intestines:-

Must know**:-** Etiological classifications, Morphological appearances of typhoid, tubercular, amoebic ulcers and bacillary dysentery. Differential diagnosis of different forms of ulcers.

17. Idiopathic Inflammatory Bowel disease:-

Must know**:-** Enumerate similarities and differences between the two component disorders viz., Crohn's disease and ulcerative colitis.

18. Tumours of upper GIT:-

Must know**:-** Etiopathogenesis, morphological features of carcinoma oesophagus, classification and morbid anatomy and histopathology of gastric carcinomas.

Desirable to know**:-** Overview of carcinoid tumours of GIT.

19. Tumours of lower GIT:-

Must know**:-** Pathology of carcinoma colon.

Desirable to know**:-** Intestinal polyps & GI stromal tumours.

20. Viral Hepatitis:-

Must know**:-** Aetiology, clinical source and enzymology, salient histological features and sequelae.

21. Alcoholic liver disease:-

Must know**:-** Pathogenesis, morphological manifestations and correlation with clinical features.

22. Cirrhosis:-

Must know**:-** Etiopathogenesis, classification, important histological features and differential diagnosis.

23. Tumours of liver, Pancreas and gall bladder:-

Must know**:-** Pathology of Hepatocellular carcinoma.

Desirable to know**:-** Pathology of tumours of Pancreas and gall bladder.

24. Diabetes mellitus:-

Must know**:-** Classification, pathogenesis of system involvement, sequelae and complications.

25. Acute nephritis and rapidly progressive GN:-

Must know**:-** Understand and integrate clinical and pathologic features of these syndromes.

26. Nephrotic syndrome:-

Must know**:-** Integrate clinical and pathological features of this disorder.

27. Renal failure:-

Must know**:-** Definitions, criteria, aetiology, systemic manifestations and investigations.

28. Pyelonephritis and interstitial Nephritis:-

Must know**:-** Aetiology, Pathogenesis of Pyelonephritis acute and chronic morphological features and clinical correlation.

29. Tumours of kidney and Pelvis:-

Must know**:-** Classification, Morphological features, clinical course including Para neoplastic syndromes of common tumours.

30. Tumours of testis and Prostate:-

Must know**:-** Classification, salient morphological features of most common tumours and clinical course.

31. Tumours of Cervix and Uterus:-

Must know**:-** Etiopathogenesis, salient morphological features, dysplasia and role of cytological screening.

32. Tumours of Ovary and trophoblastic tissue:-

Desirable to know**:-** Classification and morphological description of important types.

33. Non-neoplastic and Neoplastic lesions of the breast:-

Must know**:-** Classification, morphological features and grading of carcinoma breast and differential diagnosis of breast swellings.

34. Non-neoplastic lesions of lymph nodes and Spleen:-

Must know**:-** Aetiology, differential diagnosis, morphological features of common causes of lymphadenopathy, common causes and appearances of splenomegaly.

35. Hodgkin's Lymphoma:-

Must know**:-** Definition, classification, salient diagnostic features and clinical course.

36. Non-Hodgkin's Lymphoma:-

Must know**:-** Definition, classification, salient diagnostic features and clinical Correlation.

Desirable to know**:-** Extra nodal lymphomas.

37. Tumours of skin - Non-pigmented:-

Must know**:-** Classification, morphological features of most common types and natural history.

38. Tumours of skin - Pigmented:-

Must know**:-** Classification, morphological features of common naevi, natural history of malignant melanoma.

39 &40. Soft tissue tumours :-

Must know**:-** Classification, morphological features of lipomatous, fibrous and blood vessel tumours. Morphological features of neural, muscle and fibro histiocytic tumours.

41. Non-neoplastic lesions of bone and joints:-

Must know**:-** Etiopathogenesis and morphological changes of common arthritis and osteomyelitis.

42 & 43. Tumours of bone, cartilage and joints:-

Must know**:-** Classification, radiological and pathological features of important bone tumours (Osteosarcoma, Osteochondroma, GCT and Ewing's sarcoma).

44. Inflammatory and neoplastic conditions of CNS:-

Must know**:-** Morphological features and differential diagnosis of meningitis.

Desirable to know**:-** Classification, morphological features of important CNS tumours, clinical course and sequelae (Meningioma and Gliomas).

45. Lesions of Thyroid:-

Must know**:-** Differential diagnosis of thyroid nodule.

46. Myopathies:-

Desirable to know**:-** Differential diagnosis of common muscle disorders.

D) CLINICAL PATHOLOGY : (n=3)

1. Differential diagnosis of Jaundice:-

Must know**:-** The differential diagnosis and laboratory investigations in jaundice

2. Renal function tests:-

Must know**:-** Laboratory approach to a case of renal dysfunction

1. Diabetes mellitus:-

Must know:- Laboratory diagnosis of Diabetes mellitus

E) AUTOPSY : (n=1)

Must know:- Indications and techniques of medical autopsies

Tutorials

GENERAL PATHOLOGY:

1. Cell injury and cell death
2. Cellular accumulations
3. Inflammation and repair
4. Circulatory disturbances
5. Immunological disorders
6. Infections
7. Neoplasia

HAEMATOLOGY:

1. Anaemias
2. Leukaemias
3. Interpretation of haematological case charts and identification of instruments
4. Haemorrhagic disorders

SYSTEMIC PATHOLOGY:

1. Atherosclerosis and IHD
2. Rheumatic heart disease
3. Pneumonias
4. Tumours of lung
5. Oral cancer
6. Peptic Ulcer
7. Cirrhosis
8. Glomerulonephritis
9. Carcinoma Breast
10. Carcinoma Cervix
11. Bone Tumours
12. Museum specimens
13. Museum specimens

CLINICAL PATHOLOGY:
1. Glucose Tolerance Test
2. Renal Function Tests
3. Differential Diagnosis of Meningitis
4. Identification of needles and instruments used in clinical pathology

AUTOPSY:
CPC of common diseases like 1. Tuberculosis 2. Myocardial infarction 3. Carcinoma/sarcoma 4. Hypertension by students (2 or 3)

d. Term-wise distribution

1st term: 1. General Pathology 2. General Neoplasia 3. Haematology & Transfusion Medicine
2nd term: 1. Systemic Pathology 2. Systemic Neoplasia 3. Clinical Pathology
3rd term: Tutorials & Revision.

e. Practicals: Total hours, number & contents

Total hours : 110 Number : 44

Contents :

A) GENERAL PATHOLOGY: (n=12)

1. Microscopy and tissue processing
2. Identify the common types of cells by light microscopy
3. Intracellular accumulation
4. Acute inflammation
5. Chronic inflammation and Repair
6. Thrombosis, embolism, infarction and gangrene
7. Oedema and congestion
8. Disturbances of pigment metabolism
9. Tuberculosis
10. Leprosy
11. Amyloidosis
12. Disturbances of growth (Atrophy, hypertrophy, hyperplasia, metaplasia, Dysplasia, hypoplasia)

B) HAEMATOLOGY: (n=7)
1. Collection of specimen, anticoagulants and common haematological tests (Hb)
2. Common Haematological Counts (TLC, DLC) & Interpretation of ESR
3. Haemopoiesis
4. Investigations in Anaemia
5. Investigations in Leukaemia
6. Investigations in haemorrhagic disorders
7. Blood Banking

C) SYSTEMIC PATHOLOGY: (n=18)

1. Diseases of blood vessels (Atherosclerosis, syphilitic aortitis)
2. Diseases of Heart (IHD & RHD)
3. Pneumonias
4. Tumours of lung
5. Diseases of kidney
6. Gross and Microscopic features of peptic ulcer and duodenal ulcer
7. Gross and Microscopic features of other intestinal ulcers
8. Tumours of GIT
9. Diseases of Liver
10. Lymphomas
11. Diseases of male and female genital system

12 &13. Tumours of breast

14. Tumours of skin (Pigmented)
15. Tumours of skin (non-pigmented)
16. Soft tissue tumours
17. Tumours of bone
18. Diseases of thyroid

D) CLINICAL PATHOLOGY: (n=5)

1. Urine RE - Carryout a bedside routine urine examination and interpret the results.
2. Pregnancy test and Semen Analysis - (Practical demonstration).
3. Common cytological preparations (lecture demonstration).
4. CSF examination.
5. Serous effusion examination.

E) AUTOPSY: (n=2)

1 & 2) To study and describe five autopsy reports.

For the batches joining in June 2001 and later

List of Slides and Specimens that should be shown during the Pathology Practical Classes

These are grouped under two headings: The students

1) must see (M)
2) desirable to see (D)

Please note that this will be applicable for the batch which will be joining Pathology term in June / July 2001 and later.

DRAWING SLIDES:

HISTOPATHOLOGY:

1. Kidney cloudy change (M)
2. Fatty change liver (M)
3. Uterus - leiomyoma with hyaline change (M)
4. Kidney - amyloid (M)
5. Lymph node - caseous necrosis (M)
6. Kidney - infarct (Coagulation necrosis) (M)
7. Acute ulcerative appendicitis (M)
8. Pyogenic meningitis (M)
9. Lepromatous leprosy - skin (M)
10. Tuberculoid leprosy - skin (M)
11. Actinomycosis (M)
12. Granulation tissue (M)
13. Ileum - typhoid ulcer (M)
14. Tuberculous lymphadenitis (M)
15. Amoebic colitis (M)
16. Lung - haemosiderin pigment or CPC (M)
17. Liver - CPC (M)
18. Artery - recent / organised thrombus (M)
19. Hashimoto's thyroiditis (D)
20. Skin - papilloma (M)
21. Squamous cell carcinoma (M)
22. Adenocarcinoma - Colon (M)
23. Lymph node - metastasis (M)
24. Skin - capillary haemangioma (M)
25. Cavernous haemangioma (M)
26. Benign cystic teratoma (Dermoid cyst) (M)
27. Stomach - chronic peptic ulcer (M)
28. Liver - Viral hepatitis (Massive/ sub-massive necrosis) (D)
29. Liver- portal and biliary cirrhosis (M)
30. Lung - lobar and broncho pneumonia (M)
31. Lung - fibrocaseous tuberculosis (M)
32. Heart - rheumatic myocarditis (D)
33. Heart - healed infarct (M)
34. Aorta - atherosclerosis (M)
35. Kidney - crescentic glomerulonephritis (M)
36. Kidney - chronic glomerulonephritis (M)
37. Kidney - chronic pyelonephritis (M)
38. Kidney - RCC (D)
39. Benign prostatic hyperplasia (M)
40. Testis - seminoma (M)
41. Uterus - leiomyoma (M)
42. Products of conception (M)
43. Hodgkin's lymphoma (M)
44. Brain - tuberculous meningitis (M)
45. Brain - meningioma (D)
46. Bone - osteogenic sarcoma (M)
47. Bone - chondroma (M)
48. Bone - osteoclastoma (M)

49. Skin - melanoma and nevus (M)
50. Breast - fibroadenoma (M)
51. Breast - carcinoma (M)
52. Thyroid - colloid goitre (D)
53. Thyroid - papillary carcinoma (D)
54. Skin - basal cell carcinoma (M)

HAEMATOLOGY:

1. Acute blast cell leukaemia (M)
2. Chronic myeloid leukaemia (M)
3. Eosinophilia (M)
4. Iron deficiency anaemia (M)
5. Haemolytic anaemia (M)
6. Macrocytic anaemia (M)
7. Leucocytosis (M)
8. Various biochemical charts - LFT , GTT , CSF, etc (M)

LIST OF SPECIMEN:

1. Cell injury and adaptation (Degeneration)

a) Liver - fatty change (M)
b) Kidney - cloudy change (M)
c) Aorta - atheroma (M)
d) Atheroma with calcification (D)
e) Kidney stones (M)

2. Amyloidosis

a) Kidney - amyloidosis (M)
b) Spleen - amyloidosis (M)

3. Necrosis and Gangrene

a) Kidney - infarct (M)
b) Spleen - infarct (M)
c) Intestine - gangrene (M)
d) Foot - gangrene (M)
e) Lymph node - caseation (M)

4. Acute inflammation

a). Lobar pneumonia (M)
b) Kidney - abscess (D)
c) Liver - abscess (D)
d) Mycetoma - foot (D)
e) Acute appendicitis (M)
f) Purulent meningitis (M)
g) Fibrinous pericarditis (M)

5. Chronic inflammation

a) Syphilitic aortitis (D)

6. Repair

a) Heart - healed infarct (M)

7. Specific inflammation

a) Ileum - typhoid (M)
b) Amoebic colitis (M)
c) Amoebic liver abscess (M)

8. Chronic specific granulomatous inflammation

a) Intestine - TB ulcer (M)
b) Brain - TB meningitis (M)
c) Lymph node - TB (M)
d) Lung - miliary TB (M)
e) Fibrocaseous TB (M)

9. Pigment disorders

a). Liver and spleen - Prussian blue reaction (D)
b). Liver and spleen - malaria (M)
c). Skin - melanoma (any site) (M)

10. Disorders of vascular flow and shock

a). Liver - CPC (M)
b). Lung - CPC (M)

11. Thrombosis embolism and infarction

a) Thrombus - artery / vein (M)
b) Infarction - kidney / spleen / brain (M)
c) Intestine gangrene (M)

12. Immunopathology

a) Heart - Rheumatic carditis (M)
b) Kidney - acute glomerulo nephritis (M)
c) Thyroid - Hashimoto's thyroiditis (D)

13. Growth disorders

a) Heart - LVH (M)
b) Kidney - atrophy and compensatory hypertrophy (M)

c) Kidney - Hydronephrosis (M)

14. Neoplasm

a) Papilloma skin (M)
b) Adenomatous polyp (M)
c) Fibroadenoma - breast (M)
d) Squamous cell carcinoma - skin (M)
e) Adenocarcinoma - colon (M)
f) Metastasis - lung (M)
g) Leiomyoma - uterus (M)
h) Soft tissue - lipoma (M)
j) Haemangioma - any site / type (M)
k) Melanoma (M)
l) Dermoid cyst (M)
m) Teratoma (M)

15. Alimentary System

a) Oesophagus carcinoma (M)
b) Stomach - chronic peptic ulcer (M)
c) Perforated peptic ulcer (M)
d) Stomach - carcinoma (linitis plastica) (M)
e) Intestine - TB ulcer (M)
f) Colon - Amoebic colitis / bacillary colitis / carcinoma ulcerative / carcinoma
polypoidal growth (M)

16. Liver

a) Acute diffuse necrosis (D)
b) Amoebic abscess (M)
c) Micronodular / macronodular / mixed cirrhosis (M)
d) Hepatoma (M)
e) Metastasis (M)

17. Respiratory system

a) Lung - lobar / bronchopneumonia (M)
b) Bronchogenic carcinoma (M)
c) Lung - abscess (D)
d) Fibrocaseous TB (M)

18. Cardiovascular System

a). Rheumatic endocarditis (D)
b) Fibrinous pericarditis (M)
c) Mitral stenosis (M)
d) Aortic stenosis (M)
e) Bacterial endocarditis (M)
f) Recent myocardial infarct (D)
g) Healed myocardial infarct (M)
h) Atheroma aorta (M)
j) Atheroma with complications (M)

19. Urinary System

a) Flea bitten kidney (M)
b) Large white kidney (M)
c) Shrunken granular kidney (M)
d) Acute pyelonephritis (M)
e) RCC (D)
f) Wilm's tumour (D)
g) Papillary carcinoma - Urinary bladder (D)

20. Male Reproductive System

a) SCC - penis (M)
b) Seminoma - testis (M)
c) Teratoma - testis (M)
d) Benign prostatic hyperplasia (M)

21. Female Reproductive System

a) Uterus - leiomyoma (M)
b) Carcinoma cervix (D)
c) Ovary - cyst adenocarcinoma (D)
d) Ovary - dermoid cyst (D)

21. Lymphoreticular System

a) Lymph node - TB Lymphadenitis (M)
b) Lymph node - lymphoma (M)
c) Spleen - infarct (M)

22. Central Nervous System

a) Brain - purulent meningitis (M)
b) Brain - tuberculous meningitis (M)
c) Tuberculoma (D)
d) Meningioma (D)
e) Glioma (D)
f) Haemorrhage - CVA (D)

23. Bone lesions

a) Chronic osteomyelitis (D)
b) Osteoclastoma (M)
c) Osteogenic sarcoma (M)
d) Multiple myeloma (D)

24. Skin lesions

a) Squamous cell carcinoma (M)
b) Basal cell carcinoma (D)
c) Melanoma - skin (any site) (M)

25. Diseases of Endocrine organs

a) Breast - fibroadenoma (M)
b) Breast - carcinoma (M)
c) Thyroid - multinodular goitre (M)
d) Thyroid - solitary nodule / adenoma (M)

f. Books recommended:
a) Text book of Pathology by Robbins
b) Text book of General Pathology Part I & II by Bhende and Deodhare
c) Clinical Pathology by Talib
d) Text book of Pathology by Harsh Mohan
e) Text book of Pathology by Muir
f) Haematology De Gruchi
g) IAPM text book of Pathology

Reference books:
a) Anderson's text book of Pathology Vol I & II
b) Oxford text book of Pathology Vol. I, II & III
c) Pathology by Rubin and Farber
d) Pathologic basis of Disease Robbins

5. Evaluation

Methods
Theory, Practicals and Viva

Pattern of Theory Examination including Distribution of Marks, Questions, Time.

Nature of Question Paper

Faculty with Year : ***SECOND MBBS***

Subject : **PATHOLOGY**

Paper : ***I***

Total Marks : ***40*** ***Time*** : ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

Faculty with Year **:** ***SECOND MBBS***

Subject **:** **PATHOLOGY**

Paper **:** ***II***

Total Marks **:** ***40*** ***Time*** **:** ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

Direction:- Only short answer questions may be permitted from the portions marked as "Desirable to know"

c. Paper wise distribution of theory topics and number of questions:-

A)
Paper I:- General Pathology inclusive of general neoplasia
Haematology inclusive of transfusion medicine.

Out of 3 LAQs in Section C, 2 questions should be from General Pathology and General Neoplasia and one question should be from Haematology inclusive of transfusion medicine.

B)

Paper II:- Systemic Pathology inclusive of systemic Neoplasia and Clinical Pathology.

Out of 3 LAQs in Section C, 2 questions should be from Systemic Pathology and Systemic Neoplasia and one question should be from Clinical Pathology.

d. Marking scheme

Each paper of 40 marks as shown in the above table.

e. Nature of practicals and duration

Practicals	**Marks 26**
a. 10 Spots 2 minutes each (4 specimen, 1 instrument, 3 histopathology slides, 1 haematology slide and 1 chart) Identification - 1/2 mark Specific short question - 1/2 mark } together 1 mark for each spot	10
b. Urine Examination - Physical and two abnormal constituents	05
c. Histopathology slides : Diagnosis and discussion	03
d. Haematology examination	
i) Peripheral blood smear stain and report	03
ii) Hb/TLC/Blood group	05
Total	26

f. Viva : duration and topic distribution

Viva consists of two tables; on each table the student will face 2 examiners for 5 minutes each :

Table - I General and Systemic Pathology - 7 marks

Table - II Clinical Pathology and Haematology - 7 marks

Total 14 marks

Number of Students for Practical Examination should not exceed more than 30 / day

(4 for general Pathology, 4 for Systemic Pathology, 7 for Clinical Pathology including hematology)

g. Plan for internal assessment

The time table for internal assessment will be as follows :

Theory	15
Practical	15

Scheme of internal assessment

From the batches which have joined before June 2001

Examination Head	**Semester/term wise distribution**	**Total No of marks**
Theory	III Semester	
	a). Mid-term test (MCQ) single best response	30
	b). III Semester examination	80
	IV Semester	
	a). Mid-term (MCQ) single best response	30
	b). IV Semester examination	80
	V Semester	
	a). Prelims examination	80
	Total theory	300 (reduced to out of 15)

Practicals	III Semester examination	40
	IV Semester examination	40
	Prelims examination	40

	Total Practicals	120
		(reduced to out of 12)

Journal	Year ending	03
	Total internal assessment	30

From the batches joining in June 2001 and later

Examination Head	**Semester/term wise distribution**	**Total No of marks**
Theory	III Semester Term ending examination	50
	IV Semester Term ending examination	50
	V Semester a). Prelims examination	80
	Total theory	180 (reduced to out of 15)
Practicals	III Semester examination	40
	IV Semester examination	40
	Prelims examination	40
	Total Practicals	120 (reduced to out of 12)
Journal	Year ending	03
	Total internal assessment	30

Vth semester

Prelims examination on the basis of University pattern (Theory, practical and viva) : Minimum 4 weeks gap between Prelims and University examination.

For the terminal theory examination 28 MCQs (1/2 mark each), 10 SAQs (option of 10 of any 12; 2 marks each) and 2 LAQs (option of 2 of any 3; 8 marks each) will be administered. The total time will be 2 hours 30 mins. This will be followed by practicals (total time 1 ½ hours). To familiarize the students with the `viva' methodology, the marks for the practical may be kept 20 while 20 marks may be given for the viva on theory topics (total 40 marks).

Prelim pattern will be as per the University exam with 2 papers in theory, each of 2 hours duration.

2. MICROBIOLOGY

1. Goal

The goal of teaching Microbiology is to provide understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, pathogenicity, laboratory diagnosis, treatment, control and prevention of these infections and infectious diseases.

2. Educational objectives

(a) Knowledge

The student at the end of one and half years should be able to: -

i. *state the etiology, pathogenesis and methods of laboratory diagnosis and apply that knowledge in the diagnosis, treatment, prevention and control of communicable diseases caused by microorganisms.*
ii. understand commensal, opportunistic and pathogenic organisms of human body and describe host parasite relationship.
iii. know and describe the pathogenesis of diseases caused by microorganisms.
iv. state the sources and modes of transmission of pathogenic and opportunistic micro-organisms including knowledge of insect vectors & their role in transmission of infectious diseases.
v. choose appropriate laboratory investigations required for clinical diagnosis.

(b) Skills

i. plan and interpret laboratory investigations for diagnosis of infectious diseases and correlate the clinical manifestations with the etiological agent.
ii. identify common infectious agents with the help of laboratory procedure, acquire knowledge of antimicrobial agents, use of antimicrobial sensitivity tests to select suitable antimicrobial agents for treatment.
iii. perform simple laboratory tests, which help to arrive at rapid diagnosis.
iv. be conversant with proper methods of collection, storage & transport of clinical material for microbiological investigations.
v. understand the principles of immunology and its application in the diagnosis and prevention of infectious diseases including immunization schedule, acquire knowledge of the scope of immunotherapy and different vaccines available for the prevention of communicable diseases.
vi. understand methods of disinfection and sterilization and their application to control and prevent hospital and community acquired infections including universal biosafety precautions and waste disposal.
vii. recommend laboratory investigations regarding bacteriological examination of food, water, milk and air.
viii. the student should be well equipped with the knowledge of prevalent communicable diseases of national importance and of the newer emerging pathogens.

(c) Attitude

i. the student will be regular, sincere, punctual and courteous and regular in studies.
ii. the student will follow all the rules laid down by the department and participate in all activities.
iii. the student will understand the importance of, and practice asepsis, waste segregation and appropriate disposal.
iv. the student will understand the importance of, and practice the best methods to prevent the development of infection in self and patient. (E.g. hand washing, using aprons for hospitals in hospitals only, regularly washing the aprons, wearing gloves (as and when required / handling specimens etc.).
v. the student will understand the use of the different antimicrobial agents including antibiotics to use judiciously and prevent misuse, (prescribing attitude).
vi. the student will understand the significance of vaccinations and will receive appropriate vaccines (e.g. TT, Hepatitis B and any other as per needs).
vii. the student will wash his/her hands with soap after each practical class.
viii. the student will leave the area allotted for his practical neat and tidy.
ix. the student will discard the slides in the appropriate container provided for the same.
x. the student will report any injury sustained in class, immediately.
xi. the student will report any breakage occurring during class times immediately.
xii. the student may give suggestions to improve teacher student association.

3. Total duration of para-clinical teaching 3 semesters
Total 360 teaching days

Total number of teaching hours allotted for Microbiology (As per MCI guidelines 1997). **250 hrs**

4. Syllabus

a. Learning methods

Lectures, practicals

Distribution of teaching hours

A) Theory (lectures &	…..	71
(tutorials	…..	26
Total	…..	**97**
B) Practicals and Revision	…..	120
C) Assessments	…..	33
Total	…..	250

b. & c. Sequential organisation of contents and their division

The areas of study in Microbiology will include General Microbiology, Systemic Microbiology including Bacteriology, Immunology, Mycology, Virology, Rickettsia, Chlamydia, Parasitology and Applied microbiology in relation to infections and diseases of various systems of the body.

A) GENERAL MICROBIOLOGY: (n=10)

No	***Topic of lecture***	***Must know (MK)***	**Desirable to know (DK)**	***Hrs***
1.	Introduction and Historical background	Definitions: Medical Microbiology, pathogen, commensal, symbiont etc. To cover Anton van Leewenhoek, Pasteur, Lister, Koch, Flemming etc. In History: Scope to cover the importance of Med. Microbiology on diagnosis and prevention of infectious diseases.	Micro-organisms as models in Molecular Biology and Genetic engineering.	1
2.	Morphology of bacteria and Classification	Bacterial cell and its organelles, morphological classification, methods of studying bacteria, staining methods & their principles Grams & Zeil Nelson staining, their importance in presumptive diagnosis, negative staining, dark ground illumination, phase contrast and fluorescent microscopy, briefly about electron microscopy. Principles and applications of all microscopes.		1
3.	Physiology of bacteria including growth requirements & metabolism	Nutrition, respiration (anaerobic & aerobic) and growth of bacteria, growth curve, physical factors influencing growth. Culture media: Definition, classification and application.	Important constituents of culture media.	1
4.	Sterilization	Definition of sterilization, disinfection, asepsis, antiseptics. Ubiquity of bacteria, modes of killing microbes and preventing them, factors determining selection of the mode, factors adversely affecting sterilization. Enumeration of physical methods of sterilization including principle & their application.	Working and efficacy testing of autoclave, inspissator and hot air oven. Central Sterile Supply Department (CSSD) – concept only.	1
5.	Disinfectants	Asepsis and antisepsis, modes of Action of chemical agents on microbes. Phenols, Halogens, Aldehydes, Acids, Alcohol, heavy metals, oxidizing agents etc. Universal biosafety precautions.	Dyes, soaps and detergents. Concentration and contact time.	1
6.	Waste disposal	Definition of waste, classification, segregation, transport and disposal.		1

7.	Bacterial genetics and drug resistance to antimicrobial agents.	Introduction – codon, lac operon, mutation, transformation, transduction & conjugation, R factor, mode of action of antimicrobials on bacteria, mechanism of drug resistance and antimicrobial susceptibility tests, steps taken to minimize emergence of resistant strains (Antibiotic policy, formulation),		1
8.	Host parasite relationship and bacterial infections	Commensal, pathogenic and opportunistic organisms, their pathogenic factors and modes of transmission. Microbial factors: spores, capsule, toxins, enzymes, intracellular parasitism, antigenic variation & extrinsic factors etc. leading to establishment of infection. Types of infection: primary, secondary, general, local, natural, nosocomial, iatrogenic, zoonotic.		1
9.	Normal flora	Introduction – various sites, types and role		1
10.	Methods of identification of bacteria. Diagnosis of infectious diseases (direct and indirect)	Principles of laboratory diagnosis of infectious diseases. General procedures for collection transport, processing of specimens for microbiological diagnosis.	PCR, RIA, DNA probes.	1

B) IMMUNOLOGY: (n=12)

No.	Topic	Must know	Desirable to know	Hrs
1	Introduction	Definition of immunity, types of immunity, factors responsible, mechanism of innate immunity, active and passive immunity, local immunity.	Herd immunity	1
2	Antigens, HLA	Definition, types, antigen determinants, properties of antigen. MHC- concept, class- I, II & III functions, indication of typing, MHC restriction.	Nature of determinants, e.g. of haptens, e.g. of cross- reactive antigen.	1
3	Antibodies	Definition, nature, structure of immuno-Globulins, papain digestion, understand isotypic, allotypic and idiotypic markers, immunoglobulin classes, physical and biological properties of immunoglobins.,	Pepsin digestion, amino acid sequence, immunoglobin domain, abnormal immunoglobins.	1
4	Serological reactions	Definition, characteristics, titre, sensitivity & specificity, antigen- antibody interaction-primary, secondary & tertiary, prozone phenomenon, principle, types and application of precipitation, agglutination, complement fixation, enzyme immunoassay, radioimmunoassay, immunofluoroscence test, neutralization and opsonisation.	Techniques of precipitation and their uses, blocking antibodies, antiglobulin reactions, co-agglutination, in vitro test, techniques of EIA, IF & electron microscopy.	2

5	Immune response	Types, development, role of --thymus, bone marrow, lymph nodes & spleen, cells of lymphoreticular system, morphology and role of T subsets, NK cells, B cells , plasma cells and macrophages, B & T cell activation, antigen processing and presentation, primary and secondary immune response, principle and uses of monoclonal antibodies, factors affecting antibody production, CMI-definition, types, role of T cell and macrophages, definition of immune tolerance and mechanism of tolerance.	Lymphokines and their role, clonal selection, mechanism of immunoregulation, theories of antibodies formation, techniques of monoclonal antibody formation, detection of CMI, types of immunotolerance.	2
6	Complement	Definition, synthesis, pathways, activation, role & biological functions, components, measurement.	Regulation of complement activation, complement deficiency	1
7	Hypersensitivity	Definition, classification, , difference between immediate and delayed reaction, mechanism of anaphylaxis, manifestations of anaphylaxis, types of anaphylaxis, atopy, e.g. of anaphylactic reaction, tests for anaphylaxis, mechanism and e.g. of type-II & type-III reactions, mechanism & types of delayed hypersensitivity.	Desensitization in anaphylaxis, type V reaction, ADCC, Shwartzman phenomenon.	1
8	Autoimmunity	Definition, mechanism, classification, pathogenesis.		1
9	Transplantation & tumour immunology	Types of transplants, mechanism of transplant rejection, prevention of graft rejection, GVH reaction, IR to tumours, tumour antigens, mechanism of IR to tumours.	Type of tumour antigens, immune surveillance.	1
10.	Immuno-Deficiency	Classification, examples, laboratory tests for detection, manifestations.		1

C) SYSTEMIC BACTERIOLOGY: (n=21)

Pathogenesis includes:

- Infectious agent - MK
- Habitat - MK
- Source / reservoir - MK
- Mode - MK
- Infective dose - MK
- Multiplication, spread - MK
- Clinical features, pathology - MK
- Complications - MK
- Virulence factors - MK
- Immunological response - DK

*MK- *Must know*
*DK- *Desirable to know*

Laboratory diagnosis: -MK___

- Specimen selection -MK
- Collection -MK
- Transport -MK
- Primary smear, hanging drop -MK
- Selection of media -MK
- Pathogenicity testing -MK
- Anti microbial drug susceptibility testing-MK
- Serological interpretation -MK

Key to the abbreviations used in the table below:

✌ **A**- Classification, **B**- Morphology, **C**- Culture and isolation, **D**- Biochemical reactions,

E- Viability, **F** -Virulence, **G**- Diseases, **H**- Antigens, **I**- Pathogenesis, **J**- Laboratory diagnosis, **K**- Prevention and control, **L**- Immune response

No	**Topic/ hours**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**
1	Staphylococci (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	MK	MK	MK	-
2	Streptococci Pneumococci (1 hour)	MK	MK	BA-MK, DK	DK	MK	MK	MK	MK	MK	MK	MK	DK
3	Neisseria (1 hour)	DK	MK	DK	DK	MK	MK	MK	DK	MK	MK	MK	-
4	C.diptheriae (1 hour)	DK	MK	DK	-	MK	MK	MK	-	MK	MK	MK	DK
5	M.Tuberculosis (1 hour)	MK	MK	LJ,Growth Time MK	DK	MK	MK	MK	MK	MK	MK	MK	DK
6	Atypical mycobacteria (1hour)	MK	MK	DK	DK	MK	MK	MK	-	MK	MK	MK	-
7	M.leprae (1 hour)	MK	MK	Isolation-MK	-	MK	MK	MK	MK	MK	MK	MK	MK

8	Bacillus Methods of anaerobiosis & classification. Non sporing anaerobes (1 hour)	MK	MK	MK	DK	MK	MK	MK	-	MK	MK	MK	-
9	Clostridium welchii, tetani, botulinum (1 hour)	MK	DK	MK	-	-	-	MK	-	-	MK	-	-
10	Enterobacteriaceae (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	-	MK	-	-
11	Salmonella typhi (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	-	MK	-	MK
12	Shigella (1 hour)	MK	MK	DK	DK	MK	MK	MK	DK	-	MK	-	-
13	Vibrio & Campylobacter (1 hour)	MK	MK	DK	DK	MK	MK	MK	-	-	MK	-	-
14	Pseudomonas (1 hour)	-	MK	DK	DK	MK	MK	MK	-	-	MK	-	-
15	Other GNB (1 hour)	List only	MK	DK	-	-	MK	-	-	-	MK	-	-
16	Newer bacteria (1 hour)	List only	MK	DK	-	-	-	-	-	-	MK	-	-
17	Spirochete (1 hour)	MK	MK	DK	-	MK	-	MK	-	-	MK	-	DK
18	Actinomycosis & Nocardia (1 hour)	DK	MK	DK	-	-	-	-	-	-	MK	-	-
19	Rickettsia (1 hour)	MK	MK	-	-	-	-	-	-	-	MK	-	-
20	Chlamydia & Mycoplasma (1 hour)	MK	MK	-	-	-	-	-	-	-	MK	-	-
21	Bacteriology of air, water, milk and food (1 hour)	-	-	MK	DK	MK	MK	MK	-	MK	MK	MK	-

D) MYCOLOGY: (n=4)

No	Topic	Must know	Desirable to know	Hrs
1	Introduction to Mycology	Nature of fungus (definition, differences with bacteria), characteristics of fungi, common terminologies, brief account of types of sporulation and morphological classification of fungi. Methods of identification , Infections produced, Lab Diagnosis, processing of skin, hair and nail,	Growth requirements, ecological, medical and industrial importance of fungi (brief account).	1
2	Agents of Superficial mycosis	Enumerate, predisposing factors, morphological features, Lab. Diagnosis	Colony characteristics of dermatophytes	1
3	Subcutaneous mycosis	Enumerate, predisposing factors, Mycetoma, Rhinosporidiosis, Pathogenesis, Lab. Diagnosis	-	1
4	Systemic mycosis Opportunistic fungal infections	Classification, predisposing factors, Candida, Cryptococcus, Histoplasma morphology, pathogenesis, lab. Diagnosis Classification, predisposing factors, Mucor, Aspergillus, Pneumocystis carinii	Cultural characteristics	1

E) VIROLOGY: (n=12)

Morphology, pathogenesis, laboratory diagnosis, prevention and control for all viruses (Must know).

No	Topic of lecture	*Must know*	Desirable to know	Hrs
1	General Virology	Size, shape, symmetry, structure, resistance, multiplication, properties and classification of viruses, pathogenesis, bacteriophages, concept of virons	-	1
2	Laboratory diagnosis of viral infections	Collection of samples, transport, cultivation and methods of diagnosis	-	1
3	Viral immunity	Viral immunity, interferon, viral vaccines	-	1
4	Pox viruses	Small pox and Molluscum	-	1
5	DNA viruses	Papova, Adeno, Herpes viruses (Herpes simplex, Varicella zoster, CMV, EBV)	-	1
6	Respiratory viruses	Orthomyxo and Paramyxoviruses, Ag shift and drift	Rhinoviruses	1
7	Picornaviruses	Polio, Coxsackie, Enteroviruses, Viruses causing diarrhoea – Rota viruses, Immunity (polio)	-	1
8	Hepatitis viruses	Hepatitis viruses , immunity and laboratory diagnosis	-	1
9	Arboviruses	Dengue, KFD, Japanese encephalitis – definition, classification, enumeration in India, Pathogenesis, laboratory diagnosis and control	-	1

10	Rhabdoviruses	Rabies	-	1
11	Slow and Oncogenic viruses	Characteristics of slow virus infections, pathogenesis and laboratory diagnosis and viruses associated with it	-	1
12	Retroviruses	HIV/AIDS, Immunity, USP	-	1

F) PARASITOLOGY: (n=11)

Must know –

- Geographical distribution
- Habitat
- Morphology (different stages) found in human beings
- Life cycle
- Pathogenesis
- Laboratory diagnosis
- Treatment
- Control
- Immunoprophylaxis

No	Topic of lecture	Must know	Desirable to know	Hrs
1	Introduction to medical Parasitology	Parasites: their nature, classification, and explanation of terminologies, epidemiology, emerging parasitic infections, (pathogenicity and laboratory diagnosis)		1
2	E. histolytica	Amoebic infections		1
3	Free living amoebae and flagellates	Free living amoebae, PAME, Giardia & Trichomonas		1
4	Hemoflagellates	L. donovani: life cycle, morphology, pathogenicity, and lab. Diagnosis etc.	Brief account of Trypanosomes	1
5	Malaria	Malarial parasites: life cycle, morphology, pathogenicity, laboratory diagnosis etc.		1
6	Misc. Pathogenic protozoa	Toxoplasma,	Cryptosporidium, Isospora, B.coli	1
7	Cestodes	Taenia saginata & solium, Echinococcus granulosus, life cycle, morphology, pathogenicity and laboratory diagnosis.	Brief mention of other cestodes	1
8	Trematodes	Schistosomiasis: life cycle, morphology, pathogenicity & lab diagnosis.	Brief account of Fasciola hepatica	1
9	Intestinal Nematodes	A.duodenale, A. lumbricoides, E. vermicularis, T. tritura	brief mention of S. stercoralis, life cycle,morphology laboratory diagnosis	2
10	Tissue Nematodes	W. bancrofti, D. medinensis, in brief T. spiralis		1

TUTORIALS (APPLIED MICROBIOLOGY) : (n=26)

Regular tutorials, student seminars & symposia shall be conducted in addition to lectures.

Students must know:

- Micro-organisms causing diseases & pathological lesions
- Methods of collection & transportation of specimens
- Methods of laboratory diagnosis
- Serological response produced by organisms
- Interpretation of laboratory report

No	Topic of Tutorial	Hrs
1	Gastrointestinal infections (diarrhoea and dysentery) and their laboratory diagnosis	2
2	Upper respiratory tract infection (patch and sore throat) and their laboratory diagnosis	2
3	Lower respiratory tract infection (pneumonia, bronchitis, bronchiolitis etc.) and their laboratory diagnosis	2
4	Urinary tract infection and their laboratory diagnosis	2
5	Infections of the central nervous system (meningitis, encephalitis, brain abscess) and their laboratory diagnosis	2
6	Wound infections and pyogenic infections	2
7	Septicemia and laboratory diagnosis and PUO	2
8	Eye infections and their laboratory diagnosis	2
9	Sexually transmitted disease (STD) and their laboratory diagnosis (genital ulcerative disease)	2
10	Role of laboratory in cross infection, Nosocomial infections / outbreak / epidemic	2
11	Vehicles and vectors of communicable disease & zoonosis	2
12	Preventive inoculations, immunomodulation and immunotherapy	2

Suggested topics for integrated teaching:

- ♦ Tuberculosis and Leprosy
- ♦ Pyrexia of Unknown Origin (PUO)
- ♦ Sexually Transmitted Diseases
- ♦ Hepatitis
- ♦ HIV / AIDS
- ♦ Malaria
- ♦ Diarrhoea and Dysentery

Note: Each topic may be allotted 3 hours. These topics may be covered in 2nd and 3rd term of 2nd MBBS.

d. Term-wise distribution

First term (4 months)	Theory- 32 hours	Practical- 32 hours
Second term (5 ½ months)	Theory- 66 hours	Practical- 44 hours
Third term (4 months)	Theory- 48 hours	Practical- 32 hours
Total teaching hours	**254 hours**	

System-wise distribution

TERM	BROAD TOPICS	NO. OF CLASSES		TUTORIALS (2 hours)
		Lectures (1 hour)	Practicals (2 hours)	
First term	General Microbiology	10	28	-
	Systemic Bacteriology	18	24	-
Second term	Systemic bacteriology	3	19	-
	Immunology	12	4	-
	Virology	12	4	-
	Mycology	5	4	-
	Parasitology	11	24	-
Third term	Applied microbiology	-	-	26

e. Practicals : Total hours, number & contents : (n=100)

No	Topic	Hrs
1.	Introduction to Microbiology, Microscopy and Micrometry.	4
2.	Morphology and physiology of bacteria and methods staining.	4
3.	Growth requirements of bacteria (media) and identification of bacteria (biochemical reactions).	4
4.	Scheme for laboratory diagnosis of infectious diseases and collection, storage and transport of microbiological specimens and laboratory animals.	4
5.	Sterilization- the physical agents. Sterilization- the chemical agents and method of waste disposal.	4
6.	Serological tests for diagnosis of microbial infections.	4
7.	Staphylococci and other gram-positive cocci.	4
8.	Streptococci and Pneumococci.	4
9.	Gram negative cocci	4
10.	C. diphtheriae and other gram positive non sporing bacilli	4
11.	Mycobacteria	4
12.	Spore bearing aerobic and anaerobic bacilli.	4
13.	Enteric gram-negative bacilli – lactose fermenters - E.coli etc	4
14.	Non lactose fermenters – Salmonella and Shigella	4
15.	V. cholerae and other Vibrio like organisms	4
16.	Other gram-negative bacilli including Pseudomonas, Proteus and hospital acquired infection.	4
17.	Spirochetes	4
18.	Actinomycetes, Nocardia and Fungi.	4
19.	Rickettsia, Chlamydia, Mycoplasma and Viruses	4
20.	Introduction to Parasitology and Protozoal infections (including Isospora & Cryptosporidium)	4
21.	Haemoflagellates	4
22.	Plasmodia and toxoplasma.	4
23.	Cystodes and trematodes	4
24.	Intestinal nematodes	4
25.	Extra-intestinal nematodes.	4

The number of practicals and lectures can be changed as per the needs.

Introduction Of "Bio-Medical Waste" topic in subject of Microbiology & Preventive & Social Medicine

f. Books recommended:

1. Textbook of Microbiology - *R. Ananthanarayan C. K. Jayaram Panikar*
2. A Textbook of Microbiology - *P. Chakraborty*
3. Textbook of Medical Microbiology - *Rajesh Bhatia & Itchpujani*
4. Textbook of Medical Microbiology - *Arora and Arora*
5. Textbook of Medical Parasitology - *C. K. Jayaram Panikar*
6. Textbook of Medical Parasitology - *Arora and Arora*
7. Textbook of Medical Parasitology - *S.C.Parija*
8. Microbiology in clinical practice - *D. C. Shanson*

A Textbook of Parasitology - *Dr. R.P. Karyakarte and Dr. A.S. Damle*

Reference books:

1. Mackie McCartney practical Medical Microbiology- *Colle JG , Fraser AG*

2. Principles of Bacteriology, Virology & Immunology vol. 1,2,3,4,5- *Topley Wilsons*
3. Medical Mycology (Emmons)- *Kwon – Chung*
4. Review of Medical Microbiology (Lange)- *Jawetz*
5. Immunology- *Weir DM*
6. Medical Microbiology- *David Greenwood, Richard Stack, John Pentherer*

7. Parasitology- *KD Chatterjee*
8. Medical virology- *Timbury MC*
9. Mackie McCartney Medical, Microbiology vol.1- *Duguid JP*
10. Microbial infections- *Marmion BP, Swain RHA*

5. Evaluation

a. Methods

Theory, Practical & Viva

No		Total marks
1	Theory (2 papers – 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (theory –15, practicals –15)	30
	TOTAL	**150**

Passing : A candidate must obtain 50% in aggregate with a minimum of 50% in Theory including oral and minimum of 50% in practicals and 50% in internal assessment (combined theory and practical).

b. Pattern of Theory Examination including Distribution of Marks, Questions, Time.

Nature of Question Paper

Faculty with Year : ***SECOND MBBS***

Subject : **MICROBIOLOGY**

Paper : ***I***

Total Marks : ***40*** ***Time*** : ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

Faculty with Year **:** ***SECOND MBBS***

Subject **:** **MICROBIOLOGY**

Paper **:** ***II***

Total Marks **:** ***40*** ***Time*** **:** ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

A) MICROBIOLOGY PAPER I

- General Microbiology
- Systematic bacteriology including Rickettsia, Chlamydia and Mycoplasma
- Related applied microbiology.

B) MICROBIOLOGY PAPER II

- Parasitology
- Mycology
- Virology
- Immunology
- Related applied Microbiology.

d. Marking scheme

Each paper of 40 marks as shown in the above table.

e. Nature of practicals and duration

Practical examination in MICROBIOLOGY will be of 26 marks and oral (viva) of 14 marks of THREE hours duration.

Q.1:	Gram staining	5
Q.2:	Zeil – Nelson's staining	5
Q.3:	Stool examination for Ova/cyst	6
Q.4:	Spot identification (Ten spots)*	10
	Total-	**26**

(*Spots- Microscopic slides, Mounted specimen, Instruments used in laboratory, Serological tests, Inoculated culture medium, Sterile culture medium, Vaccines / serum).

f. Viva (Two tables)

		Marks
A:	General & Systemic Microbiology	7
B:	Mycology, Parasitology, Virology, Immunology	7

g. Plan for internal assessment

Marks for Internal Assessment:

Theory:	15
Practical:	15

From the batches which have joined before June 2001

Theory examination

Internal assessment for theory shall be calculated on the basis of two term ending examinations (I^{st} & II^{nd}), two mid term examinations in I^{st} & II^{nd} term & one preliminary examination at the end of the course (total 5 examinations) till the batch of Nov.2000 admission appears for University examination.

Marks Distribution for theory examination: (Internal assessment)

Examination	MCQ		SAQ		LAQ		Total	Time
	Marks	No.	Marks	No.	Marks	No.		
Ist & IInd midterm	10	20	20	10/12	-	-	30	1 hr
Ist & IInd term	28	56	24	12/14	28	4/5	80	3 hr

MCQ = Multiple choice questions, SAQ = Short answer questions, LAQ = Long answer questions

Preliminary examination (as per the University pattern – 2 papers, 3 h each) 80 marks
Internal assessment marks for theory will be computed to 15 out of total 300 marks.

Practicals (Internal assessment):
Three term ending practicals only.

Marks Distribution of Practicals:

Ist term ending examination	40
IInd term ending examination	40
Preliminary Practical examination	40
	Total- 120

Internal assessment marks for Practicals have to be computed out of 12 marks at the end of the curriculum and add marks for journals out of 3. Thus, total marks for practical assessment will be 15.

From the batches joining in June 2001 and later

Pattern for computation of ' Internal Assessment ' in the subject of Microbiology. (Applicable to the batch joining in June 2001)

THEORY:
Internal assessment shall be computed on the basis of three term ending examinations (two terminals & one preliminary examination before the university examination).

EXAMINATION	No.of Papers	Pattern	Duration of each paper	Total Marks
1ST TERMINAL	One -50 Marks	MCQs- 28(14 Marks) SAQs- 10/12 (20 Marks) LAQs- 2/3 (16 Marks)	2 Hours 30 Minutes	50
2ND TERMINAL	One - 50 marks	MCQs- 28(14 Marks) SAQs- 10/12(20Marks) LAQs- 2/3 (16 Marks)	2 Hours 30 Minutes	50

PRELIMINARY (As per final University pattern)	Two - 40 marks each	Each paper- MCQs- 28(14 Marks) SAQs- 6/7(12Marks) LAQs- 2/3 (14 Marks) (Total- 40 Marks, each paper)	2 Hours each paper	80
			TOTAL	180

Final internal assessment in THEORY shall be computed on the basis of actual marks obtained out of 180, reduced to marks out of 15.

PRACTICAL:

Internal assessment in PRACTICALS shall be computed on the basis of three term ending examinations and the marks allotted to practical record book.

EXAMINATION	PATTERN	MARKS	TOTAL
1ST TERMINAL	Exercise(eg.Gram's Stain)	10	40
	Spotting	10	
	Viva	20	
2ND	Exercise/Exercises(eg .Gram's & Z.N. Stain)	10	40
	Spotting	10	
	Viva	20	
PRILIMINARY EXAM As per University pattern	Gram's Stain	5	40
	Ziehl-Neelson Stain	5	
	Stool Exam.	5	
	Spotting	10	
	Viva	15	
		TOTAL	120

Actual marks obtained out of 120 shall be reduced to out of 12. Add marks obtained out of 3 for Practical Record Book. Total internal assessment marks for Practical shall be out of (12+3) 15.

Total Internal Assessment : Theory --- 15
Practical -- 15

Total: 30

Pharmacology and Pharmacotherapeutics

1. Goal

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

2. Educational objectives

(a) Knowledge

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

i. describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs
ii. list the indications, contraindications, interactions and adverse reactions of commonly used drugs
iii. indicate the use of appropriate drug in a particular disease with consideration of its cost, efficacy and safety for -
   - individual needs, and
   - mass therapy under national health programmes

iv describe the pharmacokinetic basis, clinical presentation, diagnosis and management of common poisonings
v Integrate the list the drugs of addiction and recommend the management
vi. Classify environmental and occupational pollutants and state the management issues
vii. Explain pharmacological basis of prescribing drugs in special medical situations such as pregnancy, lactation, infancy and old age
vii explain the concept of rational drug therapy in clinical pharmacology
viii state the principles underlying the concept of `Essential Drugs'
ix evaluate the ethics and modalities involved in the development and introduction of new drugs

(b) Skills

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

i. prescribe drugs for common ailments
ii. identify adverse reactions and interactions of commonly used drugs
iii. interpret the data of experiments designed for the study of effects of drugs and bioassays which are observed during the study
iv. scan information on common pharmaceutical preparations and critically evaluate drug formulations
v. be well-conversant with the principles of pharmacy and dispense the medications giving proper instructions

(c) Integration

Practical knowledge of rational use of drugs in clinical practice will be acquired through integrated teaching vertically with pre-clinical & clinical subjects and horizontally with other para-clinical subjects.

3. Total duration of para-clinical teaching 3 Semesters (III,IV,V)

Total 360 teaching days

Total number of teaching hours allotted to Pharmacology 300 hours

4. Syllabus

a. Learning methods

Lectures, tutorials, Practicals

Distribution of teaching hours

Theory

- ***lectures*** ***……...109 ± 5***
- ***tutorials*** ***…….17 ± 5***

Total 126 ± 10

B) Practicals ……...120 ± 5

C) Revision & Evaluation (Internal Assessment) ……..60

b. & c. Sequential organisation of contents & their division

A) INTRODUCTION: ***Pharmacology - a foundation to clinical practice***
(N=1)
Development of the branch of pharmacology; Scope of the subject; role of drugs as one of the modalities to treat diseases,
definition of drug;
nature and sources of drugs;
subdivisions of pharmacology
rational pharmacotherapy

B) GENERAL PHARMACOLOGY: (N=7 ± 2)

Pharmacokinetics: Absorption, Distribution, Biotransformation, Elimination
(n=3) Pharmacodynamics: Principles of Drug Action, Mechanisms of drug action,

Receptors (Nature, Types, Theories, Principles, Regulation) (n=1)

Application to pharmacotherapeutics: Relevance of Pharmacokinetics and dynamics

in clinical practice, Sequale of repeated administration of drug (n=2)

Adverse Drug Reactions (n=1)

C) AUTONOMIC PHARMACOLOGY: (N= 8 ± 2)

General Considerations (n=1)

Adrenergic agonists (n=1)

Adrenergic antagonists I: □-blockers (n=1)

Adrenergic antagonists II: □-blockers (n=1)

Cholinergic agonists (n=1)

Anticholinesterases (n=1)

Antimuscarinic drugs (n=1)
Skeletal muscle relaxants (n=1)

A) CARDIOVASCULAR SYSEM INCLUDING DRUGS AFFECTING COAGULATION AND THOSE ACTING ON KIDNEYS: (N=14 ± 2)

General Considerations and Overview of antihypertensive therapy;
Diuretics (n=2)
Angiotensin Converting Enzyme (ACE) inhibitors (n=1)
Sympatholytics & vasodilators (n=1)

Management of hypertension

Antianginal: Nitrates & others (n=1)
Calcium channel blockers (n=1)

Pharmacotherapy of chest pain

Anticoagulants & Coagulants
Thrombolytics & Antiplatelet Agents (n=2)

Drugs for CCF: Digitalis glycosides, Others agents (n=2)

Management of CCF

Antiarrhythmic Agents (n=1)

Agents used for the management of shock (n=1)

Hypolipidaemic drugs (n=1)

Role of Nitric oxide and endothelin to be covered in CVS
…….DK

E) HAEMATINICS AND HAEMATOPOIETIC FACTORS: (N=1)

Agents used in therapy of iron deficiency anaemia and megaloblastic anaemia; Erythropoietin,
GM-CSF (n=1)

Management of anaemia

F) NEUROPSYCHIATRIC PHARMACOLOGY INCLUDING INFLAMMATON, PAIN & SUBSTANCE ABUSE (N=15 ± 2)

General Considerations (n=1)
Sedative-Hypnotics (n=2)
Psychopharmacology: Antianxiety; Antipsychotics; Antidepressants (n=3)
Antiepileptics (n=2)

Therapy of neurodegenerative disorders:
Anti-Parkinsonian agents; cerebral vasodilators/nootropics (n=1)
Local anaesthetics (n=1)

Analgesics: Opioids; NSAIDs (n=3)

Pharmacotherapy of pain including migraine
Pharmacotherapy of rheumatoid arthritis and gout

Substance abuse: Management of opioid, alcohol and tobacco addictions (n=1)

G) MISCELLANEOUS TOPICS - I: (N=6 ± 2)

Autocoids *(to be covered before pain lectures)* (n=1)
Antiallergics: Antihistaminics (n=1)

Drugs used for bronchial asthma (n=1)

Pharmacotherapy of cough

Drugs acting on immune system:

Immunostimulants, immunosuppressants; pharmacology of vaccines & sera (n=1)

Drugs acting on the uterus (n=1)

H)CHEMOTHERAPY INCLUDING CANCER CHEMOTHERAPY:(N=22 ± 2)

General considerations (n=1)

Antimicrobial agents: (n=7)

- Sulphonamides & Cotrimoxazole
- Quinoline derivatives
- Penicillins, Cephalosporins & Other Lactams
- Aminoglycosides
- Macrolides
- Tetracyclines & Chloramphenicol

Pharmacotherapy of UTI

General principles of Antimicrobial use (n=1)
Antimycobacterial therapy: Anti-Kochs agents; Anti-leprotic agents (n=3)

Pharmacotherapy of tuberculosis

Antiprotozoal agents:

Antiamoebic, Antimalarials and Anti Kala azar (n=3)

Pharmacotherapy of malaria

Antihelminthics (n=1)

(against intestinal Nematodes and Cestodes; extra intestinal Nematodes and Trematodes)

Antifungal agents (n=1)

Antiviral agents including antiretroviral agents (n=2)

Pharmacotherapy of STDs (n=1)

Principles of cancer chemotherapy and their adverse drug reactions (n=1)
(individual agents and regimes need not be taught)

I) ENDOCRINOLOGY: (N=12 ± 2)

Introduction to endocrinology

(including Hypothalamic and Anterior Pituitary hormones) (n=1)
Steroids (n=2)
Glucocorticoids: Use and Misuse
Oestrogens & antagonists (n=1)
Progestins & antagonists (n=1)
Oral contraceptives & profertility agents (n=1)

Testosterone & anabolic steroids (n=1)
Fertility control
Thyroxine and antithyroid agents (n=2)
Agents affecting calcification (n=1)
Antidiabetic agents: Insulin; Oral antidiabetic drugs (n=2)

Pharmacotherapy of Diabetes Mellitus

J) AGENTS USED IN GASTROINTESTINAL DISORDERS: (N=2)

Pharmacotherapy of nausea & vomiting (n=1)
Pharmacotherapy of peptic ulcer (n=1)

Management of dyspepsia
Management of diarrhoea and constipation

K) PERIOPERATIVE MANAGEMENT: *to be covered as a **case study***
Preanaesthetic medication
Preparation of surgical site: antiseptics etc.
Local Anaesthetics
Skeletal muscle relaxants
Drugs used in post-operative period: analgesics, antiemetics etc.

L) MISCELLANEOUS TOPICS – II (N=5-7)

Drug-Drug Interactions (n=1)
Drug use at extremes of age, in pregnancy & in organ dysfunction (n=2)
Use of chelating agents in heavy metal poisonings; Environmental & occupational toxicants and principles of management (particularly cyanide and CO) (n=1)
Ocular pharmacology (n=1)
Dermatopharmacology (n=1)

General Anaesthetics…DK

Pharmacotherapy of glaucoma and conjunctivitis

M) RATIONAL PHARMACOTHERAPY: (N=4)

Prescription writing and P-drug concept
Rational Drug Use; Essential Drug List (EDL)

Criticism with reference to Fixed Drug Combinations (FDCs)

Use and misuse of commonly used preparations: vitamins, antioxidants, enzymes etc.

d. Term-wise distribution

I term

Introduction
General pharmacology
Autonomic pharmacology
Drugs acting on cardiovascular system including drugs affecting coagulation and those acting on the kidneys

II term

Prescription writing and P-drug concept
Rational use of drugs; Essential drug list
Neuro-psychiatric pharmacology including inflammation, pain and substance abuse
Miscellaneous topics - I
Chemotherapy
Endocrinology

III term

Agents used in gastro-intestinal disorders

Peri operative management

Miscellaneous topics

Criticism with reference to FDCs

Use and misuse of commonly used preparations: vitamins, antioxidants, enzymes etc.

e. Practicals: Total hours, number & contents

Total hours: 120

Number: 18

Contents:

I term practicals **(N=7)**

Introduction to Practical Pharmacology, Prescription Writing, Pharmacokinetics I, Routes of Administration: Oral, Routes of Administration: Topical, Routes of Administration: Parenteral, Pharmacokinetics II: Applied Pharmacokinetics

II term practicals **(N=7)**

Pharmacodynamics I (Isolated Tissue, Cat NM junction), Pharmacodynamics II (Dog: BP and Respiration), Screening Techniques for New Drugs, Adverse Drug Reactions, Rational Pharmacotherapy I, Rational Pharmacotherapy II, Sources of Drug Information including scrutiny of Promotional Literature

III term practicals **(N=4)**

Case Study 1, Case Study 2
Revision Practicals (n=2)

***f. Books recommended* :**

1. Basic & Clinical Pharmacology. Katzung BG (Ed), Publisher: Prentice Hall International Ltd., London.
2. Pharmacology & Pharmacotherapeutics. Satoskar RS, Bhandarkar SD (Ed), Publisher: Popular Prakashan, Bombay.
3. Essentials of Medical Pharmacology. Tripathi KD (Ed), Jaypee Brothers, publisher:Medical Publishers (P) Ltd.
4. Clinical Pharmacology. Laurence DR, Bennet PN, Brown MJ (Ed). Publisher: Churchill Livingstone

***Reference books* :**

2. Goodman & Gilman's The Pharmacological Basis of Therapeutics. Hardman JG & Limbird LE (Ed), Publisher: McGraw-Hill, New York.
3. A Textbook of Clinical Pharmacology. Roger HJ, Spector RG, Trounce JR (Ed), Publisher: Hodder and Stoughton Publishers.

5. Evaluation

Methods

Theory, Practical & viva

b. Pattern of Theory Examination including Distribution of Marks, Questions & Time

Nature of Question Paper

Faculty with Year **:** ***SECOND MBBS***

Subject **:** **PHARMACOLOGY & THERAPEUTICS**

Paper **:** ***I***

Total Marks **:** ***40*** ***Time*** **:** ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

Faculty with Year **:** ***SECOND MBBS***

Subject **:** **PHARMACOLOGY & THERAPEUTICS**

Paper **:** ***II***

Total Marks **:** ***40*** ***Time*** **:** ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

c. Topic distribution

A) **PHARMACOLOGY PAPER I** includes General Pharmacology including drug-drug interactions; Autonomic Nervous System, Cardiovascular System including drugs affecting Coagulation and those acting on the Kidneys; Haematinics; Agents used in Gastro-Intestinal Disorders; Ocular pharmacology; Drug use at extremes of age, in pregnancy & in organ dysfunction; Diagnostic & Chelating agents; Environmental & Occupational Pollutants; Vitamins

B) **PHARMACOLOGY PAPER II** includes Neuro-Psychiatric Pharmacology including Antiinflammatory-Analgesics and Addiction & its management; Pharmacology in Surgery (particularly peri-operative management); Chemotherapy including Cancer Chemotherapy; Endocrinology; Dermatology; Miscellaneous Topics I (Lipid-derived autacoids; Nitric Oxide; Allergy - Histaminics & Antihistaminics including anti-vertigo; Anti Asthmatics; Anti-tussive agents; Immunomodulators; Vaccines & sera; Drugs acting on the uterus)

d. Marking scheme

Each paper of 40 marks as shown in the above table.

e. Nature of practicals and duration

Practical Heads	**Marks 26**
Prescription writing	**5**
• Long	(3)
• Short	(2)
Criticism	**8**
• Prescription & rewriting	(4)
• Fixed dose formulation	(4)

Clinical Pharmacy

(dosage forms, routes of administration, label information and instructions)

i. Spots **8**

a Experimental Pharmacology – Graphs, Models for evaluation, Identification of a drug, Interpretation of data (2)

b Human Pharmacodynamics - Drug Identification – urine analysis, eye chart, - Subjective / objective effects of a drug (2)

c Therapeutic problems based on pharmaceutical factors - Outdated tablet, Bioavailability, Dosage form, Ethics and Sources of drug information (2)

d Recognition of ADRs & interaction of commonly used drugs (2)

For each of the 4 groups (a, b, c & d) 2 spot questions each of 1mark to be asked.

Time distribution:
For prescription and criticism the time given will be ½ hour.
For clinical pharmacy practical viva will be taken on pre-formed preparations and/or marketed formulations. The students may be asked to write labels and instructions to be given to the patients or demonstrate how specific dosage forms are administered and state the precautions to be taken/ explained to the patients while using them. The time for this will be 5 min.
For spots 20 min will be given (2 min per spot).
Thus the total time for the practical examination will be 1 hour.

f. Viva: duration and topic distribution

Viva	14 marks
Duration	10 mins
Four examiners	5 mins with each candidate
Two examiners	for topics of paper I - systems to be distributed
Two examiners	for topics of paper II - systems to be distributed

At each table marks will be given out of 7.

g. Plan for internal assessment
The time-table for internal assessment will be as follows:

For the batches which have joined before June 2001

I term
1st midterm: After 60 teaching days (MCQs, and SAQs)
1st term ending: After 120 teaching days (Theory and Pharmacy Practicals)

II term
2nd midterm: After 60 days of 2nd term (MCQs and SAQs)
2nd term ending: At the end of 2nd term (Theory and Practicals: Exptal/Clinical Pharmacy)

IIIrd term
Prelims examination on the basis of University pattern -Theory, Practicals and Viva
(Minimum 4 weeks gap mandatory between Preliminary and University examinations)

For each mid-term examination 40 MCQs (each worth 1/2 mark) will be administered to the students along with 5 SAQs (each of 2 marks with an option of 5 out of 6). The total time will be 1 hour and the total marks will be 30.

The term ending examination will be of 80 marks and the nature of questions will be as per University exam.
This will be followed by practical (total time 1½ hours).
To familiarize the students with the 'viva-vocé', the marks for the practical may be kept at only 20, while 20 marks be reserved for viva on theory topics (total 40 marks).

For the batches joining in June 2001 and later

I term
1st term ending: After 120 teaching days (Theory and Pharmacy Practicals)

II term
2nd term ending: At the end of the 2nd term (Theory and Practicals: Exptal/Clinical Pharmacy)

IIIrd term
Prelims examination on the basis of University pattern -Theory, Practicals and Viva
(Minimum 4 weeks gap mandatory between Preliminary and University examinations)

For the terminal theory examination students will be evaluated by a combination of 28 MCQs (each worth 1/2 mark), 10 SAQs (each of 2 marks with an option of 10 out of 12) and 2 LAQs (option of 2 out of 3 each worth 8 marks). The total time allotted for this 50 marks paper will be 2hours 30minutes.

This will be followed by practicals (total time 1½ hours).
To familiarize the students with the 'viva-vocé', the marks for the practical may be kept at only 20, while 20 marks be reserved for viva on theory topics (total 40 marks).

Prelim pattern will be as per the University exam with 2 papers in theory, each of 2 hours duration.

FORENSIC MEDICINE AND MEDICAL JURISPRUDENCE INCLUDING TOXICOLOGY

1. Goal

The broad goal of teaching undergraduate students Forensic Medicine is to produce a physician who is well informed about Medico-legal responsibility during his/her practice of Medicine. He/She will also be capable of making observations and inferring conclusions by logical deductions to set enquiries on the right track in criminal matters and associated medico-legal problems. He/She acquires knowledge of law in relation to Medical practice, Medical negligence and respect for codes of Medical ethics.

2. Educational objectives

(a) Knowledge

At the end of the course, the student shall be able to

i. identify the basic Medico-legal aspects of hospital and general practice
ii. define the Medico-legal responsibilities of a general physician while rendering community service either in 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 aspect of common acute and chronic poisonings
v. describe the Medico-legal aspects and findings of post-mortem examination in cases of death due to common unnatural conditions and poisonings
vi. detect occupational and environmental poisoning, prevention and epidemiology of common poisoning and their legal aspects particularly pertaining to Workmen's Compensation Act
vii. describe the general principles of analytical toxicology

(b) Skills

A comprehensive list of skills and attitude recommended by Medical Council of India Regulation, 1997 desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) Graduate for Forensic Medicine and

Toxicology

At the end of the course, the student shall be able to

i. make observations and logical inferences in order to initiate enquiries in criminal matters and Medico-legal problems

a. to be able to carry on proper Medico-legal examination and documentation/Reporting of Injury and Age

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

ii. diagnose and treat common emergencies in poisoning and chronic toxicity
iii. make observations and interpret findings at post-mortem examination
iv. observe the principles of medical ethics in the practice of his profession

(c) Integration

Department shall provide an integrated approach towards allied disciplines like Pathology, Radiology, Forensic Sciences, Hospital Administration etc. to impart training regarding Medico-legal responsibilities of physicians at all levels of health care. Integration with relevant disciplines will provide scientific basis of clinical toxicology e.g. Medicine, Pharmacology etc.

3. Total duration of Para-clinical teaching 3 Semesters
Total 360 teaching days

Total number of teaching hours allotted for Forensic Medicine & Toxicology 100 hours

4. Syllabus

a. Learning methods
Lectures, tutorials, practical demonstrations

Distribution of teaching hours

Didactic lectures should not exceed one third of the time schedule, two third schedule should **include Practicals, Demonstrations, Group discussions, Seminars and Tutorials.**

Learning process should include living experiences and other case studies to initiate enquiries in criminal matters and Medico-legal problems.

A) Theory (lectures &		….. 40
Tutorials, seminar & allied)		….. 20
	Total	….. 60

B) Practicals (including demonstrations)		….. 25
		….. 15
	Total	….. 40

This period of training is minimum suggested. Adjustments whenever required, depending on availability of time, be made.

b. & c. Sequential organisation of contents & their division

Topic wise distribution

The course is designed to meet the needs of a General Practitioner and includes the following topics:

1.	Forensic Medicine	40 Hrs
2.	Toxicology	20 Hrs
3.	Medical Jurisprudence	12 Hrs
4.	Legal Procedures in Medico-Legal cases	08 Hrs
5.	Court attendance when medical evidence is being recorded	04 Hrs
6.	Integrated approach towards allied disciplines	06 Hrs
7.	Tutorial and Seminars	10 Hrs

Total: 100 Hrs

<u>Part – 1 Forensic Medicine</u>: (N=40)

Contents & division
Note: Must Know (MK), **Desirable to Know (DK) and `*' is Nice to Know (NK)**

A) DEFINITION, SCOPE RELEVANT TO SUBJECT

1. History of Forensic Medicine
2. **Need, Scope, Importance and probative value of Medical evidence in Crime Investigation**

B) PERSONAL IDENTITY NEED AND ITS IMPORTANCE.

1. **Data useful for Identification of Living and Dead**
2. **Age estimation and its medico-legal Importance**
3. Sex determination and it's medico-legal importance
4. Other methods of establishing identity: Corpus Delicti, **Dactylography, Tattoo marks**, Deformities, Scars and other relevant factors
5. Identification of decomposed, Mutilated bodies and skeletal remains
6. Medico legal aspect of *DNA fingerprinting - a brief introduction
7. **Medico - legal aspect of blood and blood stains**

Collection, Preservation and Dispatch of Specimen for Blood and other ancillary material for identification and Medico-legal examination

C) **MECHANICAL INJURIES AND BURNS**

1. **Definition and classification of injuries: Abrasions, Contusions, Lacerations, Incised and Stab injury, Firearm and Explosion injury, Fabricated and Defence injury**
2. **Medico-legal aspect of injury/hurt, simple and grievous hurts, murder, Ante - mortem, Postmortem Wounds, Age of the injury, cause of death and relevant sections of I.P.C., Cr.P.C.**
3. **Causative Weapon and appearance of Suicidal, Accidental and Homicidal injuries**
4. Physical methods of Torture and their identification
5. **Reporting on Medico-legal cases of Hurts**
6. **Regional injuries**: Head injury, cut throat injuries and Road traffic accident injuries
7. **Thermal injuries**: Injuries due to heat and cold, Frostbite, Burns, Scalds and Bride burning
8. Injuries due to Electricity, Lightening

Collection, Preservation and Dispatch of Specimen for Blood and other ancillary material for Medico-legal examination

D) MEDICO-LEGAL ASPECTS OF SEX, MARRIAGE AND INFANT DEATH

1. **Sexual Offences and perversions**: Natural (**Rape**, Adultery, and Incest), Unnatural (**Sodomy, Bestiality** and Buccal coitus) Lesbianism, perversions and **relevant sections of I.P.C. and Cr.P.C.**
2. Fertility, **Impotence**, Sterility, **Virginity**, and Nullity of marriage and divorce on Medical ground
3. **Pregnancy, Delivery**, Paternity, Legitimacy, Artificial Insemination, *Fertilisation in Vitro, *Sterilization (Family Planning Measures)
4. **Abortions, Medical Termination of pregnancy, criminal abortions**, Battered Baby Syndrome, Cot deaths and relevant sections of I.P.C. and Cr.P.C., **M.T.P. Act of 1971 and foetal sex determination Act**
5. **Infant death (Infanticide)**
   i. Definition Causes, Manners and Autopsy features
   ii. Determination of age of Foetus and Infant
   iii. Signs of live-born, stillborn and dead born child

Collection, Preservation and Dispatch of Specimen: Hair, seminal fluid/ stains and other ancillary material for medico-legal examination, examination of seminal stains and vaginal swabs

E) MEDICO-LEGAL ASPECTS OF DEATH

1. **Definition and concept of death, stages, modes, Signs of death and its importance**
2. **Changes after death**, Cooling, Hypostasis, Changes in eye, Muscle changes, Putrefaction, Saponification, Mummification, **Estimation of time since death**
3. **Death Certification**, Proximate causes of death, causes of sudden deaths, Natural deaths. Presumption of death and survivorship, disposal and preservation of dead
4. Introduction to *The Anatomy Act, *The Human organ transplantation Act. 1994
5. Medico-legal aspects and findings of post-mortem examination in cases of **death due to common unnatural conditions**
6. **Sudden unexpected death**, deaths from starvation, cold and heat and their medico-legal importance
7. **Medico-legal aspects of death from Asphyxia, Hanging, Strangulation,** Suffocation and **Drowning**

F) MEDICO-LEGAL AUTOPSY

1. **Autopsy: Objectives, Facilities, Rules and Basic techniques, Proforma for reporting medico-legal autopsy**
2. **Exhumation**, examination of mutilated remains, Obscure autopsy and **post-mortem artifacts**

Collection, preservation and despatch of material for various investigations to Forensic Science Laboratory

G) *FORENSIC PSYCHIATRY

1. **Definition, General terminology** and * Basic concept of normality and abnormality of human behaviour, Civil and Criminal responsibility
2. Examination, Certification, restraint and admission to Mental Hospital
3. Mental Health Act – Principles and Objectives

Part – 2 Toxicology: (N=20)

A) POISONS AND THEIR MEDICO-LEGAL ASPECTS

1. **Definition of poison, General consideration and Laws in relation to poisons**\Narcotic drugs and psychotropic substances Act, *Schedules H and L drugs, *Pharmacy Act, **Duties and responsibilities of attending physician**
2. **Common poisons and their classification, Identification of common poisons**, Routes of administration, Actions of poisons and factors modifying them, **Diagnosis of poisoning (Clinical and Confirmatory) , Treatment/ Management of cases of acute and chronic poisonings**
3. Addiction and Habit forming drugs, drug dependence

4. **Occupational and environmental poisoning, prevention and Epidemiology of common poisoning and their legal aspects particularly pertaining to Workmen's Compensation Act**
5. **Medico-Legal aspects and findings of postmortem examination in cases of death due to poisonings**

B) POISONS TO BE STUDIED

1. **Corrosive: Euphoric Acid**, Nitric Acid, Hydrochloric Acid, **Carbolic Acid** and Oxalic Acid, **Sodium and Potassium and Ammonium Hydro-Oxide**
2. **Non-metallic, Metallic Poisons and Industrial hazards: Phosphorus** and compounds of Lead, Arsenic, Mercury, **Copper**, and Glass powder
3. **Plant Poisons: Castor, Croton**, Capsicum, Semicarpus Anacardium (Bhilawa), Calatropis Gigantea, **Abrus Precatorius (Ratti), Dhatura, Cannabis Indica, Cocaine, Opium**, Aconite, Yellow Oleander, **Strychnine**
4. **Animal and Bacterial Poisons: Snakes**, Scorpion and Food poisoning
5. **Alcohol (Drunkenness) Ethyl Alcohol, Methyl Alcohol**, Kerosene, Barbiturates
6. **Asphyxiant & Gaseous Poisons: Carbon Monoxide**, War gases, Hydrocyanic acid, and Cyanides
7. **Insecticides, pesticides and Miscellaneous poisons: Organo-Phosphorus Compounds, Organo-Chloro Compounds, Carbamates (Carbaryl) and Rodenticides (Phosphides)**

Collection, Preservation and forwarding of evidence, remains of poison, body discharges and viscera etc. to Forensic Science Laboratory in cases of poisoning

C) FORENSIC SCIENCE LABORATORY: (BRIEF)

1. **Aims, objects, general knowledge about Forensic Science Laboratory**
2. **General principles of analytical toxicology**

<u>Part – 3 Medical Jurisprudence</u>: (N=12)

A) LEGAL AND ETHICAL ASPECTS OF PRACTICE OF MEDICINE

1. The **Indian Medical Council**, the Act, Formation and Functions;
   State Medical Council: Formation, Functions, and Registration
2. **Rights and obligations of Registered Medical Practitioners and patient, Duties of physicians and patients**, Euthanasia
3. **Infamous conduct, Professional secrecy and privileged communications**
4. **Codes of Medical Ethics, medical etiquette, Medical Negligence** and contributory negligence, **Precautionary measures and defences for Medical Practitioners against legal actions, Medical/Doctors indemnity insurance, Consumer Protection Act relevant to medical practice**
5. Medical Ethics and prohibition of Torture & care of Torture Victims

B) DEFINITION OF HEALTH AND ITEMS TO CERTIFY ABOUT HEALTH

1. **Common medico-legal problems in Hospital practice, Consent in Medical Examination and treatment, under treatment/ Sickness and Fitness certificate, maintenance of medical records**
2. Social, Medical, Legal and Ethical problems in relation to AIDS

C) ACTS AND SCHEMES RELATED TO MEDICAL PROFESSION IN BRIEF:

Workmen's compensation Act, * Mental Health Act, **Medical Practitioner Act,** Protection of human rights Act, 1993, * National Human Rights Commission, * Human Organ Transplantation Act and other relevant sections of I.P.C., Cr.P.C. and I.E. Act. Maharashtra civil medical code, Hospital administration manual

Part – 4 Legal procedures in medico-legal cases: (N=8)

A. **Medico-Legal Investigations of death** in suspicious circumstances, different **Inquest**, type of offences
B. **Types of Criminal courts and their powers**, punishments prescribed by law, **kinds of witnesses, Evidence, Documentary Medical evidence**, Dying declaration and Dying deposition
C. The Trial of criminal cases, **Rules and Conventions to be followed by Medical Witness at Medical evidence**, **subpoena, conduct money**
D. Relevant Sections from the Indian Evidence Act, Indian Penal code and Criminal Procedure code

NOTE : Must know, desirable to know and ' * ' is nice to know

d. Term-wise distribution

Terms	Lectures	Non – Lectures	Pracs.	Demos. Tuts/Sem/Allied
I Term	15	08	06	06
II Term	15	10	05	06
III Term	10	07	04	08
Total	40	25	15	20

This period of training is the minimum suggested. Adjustments whenever required, depending on availability of time, be made

e. Practicals (including demonstrations) : Total no.of hours & contents

Practicals will be conducted in the laboratories.
Objective will be to assess proficiency in skills, conduct of experiment, interpretation of data and logical conclusion.
Emphasis should be on candidate's capacity in making observations and logical inferences in order to initiate enquiries in criminal matters and medico-legal problems.

Total Marks: 25 + 15 = 40

Contents:

Part 1 Forensic Medicine

Report on:

1. **Estimation/Certification of Age**
2. **Recording of fingerprints**
3. **Examination/Certification of the Injured [Prescribed Forms]**
4. **Examination of the Causative Agents in cases of Injuries (e.g. Weapons, Instruments)**
   a. Hard and blunt weapons
   b. Sharp cutting, sharp pointed and Sharp Heavy cutting weapons
   c. Firearm weapons
5. **Sexual offences :**
   a. Examination/Certification of Victim
   b. Examination/Certification of Accused
6. **Examination of Foetus to opine about age**
7. **Examination of Bones and teeth for Medico-legal purpose to determine age, sex, stature, cause of death, time since death**
   a. Skull and Mandible
   b. Scapula, Sternum and Upper limb bones
   c. Sacrum and hip bone/ Pelvic bone
   d. Lower limb bones

Study of:

8. **Medical certification of cause of Death as per Birth and Death registration Act [Prescribed Forms]**
9. **Studies of Skiagrams** for estimation of age, bony injury, foreign body, and pregnancy
10. **Photograph of different events of Medico-legal importance** and post-mortem changes
11. **Study of Various museum specimens** of medico-legal significance
12. **Study of Various slides** of medico-legal significance
13. **Demonstration of Instruments:**
    a. Used in treatment of acute poisoning cases
    b. Used for causing abortions
    c. Used for carrying out autopsy

[Standard human autopsy dissection Box/set]

Part 2 Forensic Toxicology

1. **Examination/Certification of Alcoholic [Prescribed Forms 'A' &'B']**
2. **Study of Common poisons:**

[Sulphuric Acid, Nitric Acid, Hydrochloric Acid**, Carbolic Acid and Oxalic Acid,** Sodium and Potassium Hydro-Oxide, **Phosphorous,** Lead, Arsenic, Mercury**, Copper, Glass powder, Castor, Croton,** Capsicum, Semicarpus Anacardium (Bhilawa), Calatropis Gigantea, **Abrus Precatorius (Ratti), Dhatura, Cannabis Indica, Opium,** Aconite, Yellow Oleander, Strychnine, **Snakes, Scorpion, Alcohol, Methyl Alcohol, Kerosene,** Barbiturates**, Organo-phosphorus compounds, Organo Chloro compounds, Carbamates (Carbaryl)] and other commonly used poisons, antidotes and preservatives**

Part 3 Medical Jurisprudence

Study of Medical Certificates [Prescribed Forms]

a. Sickness Certificate
b. Fitness Certificate
c. Certificate of Physical fitness
d. * Medical certificate prescribed under Mental Health Act : 1987
e. * Medical Certificate of Sound/ Unsoundness of mind.

Part – 4 Legal procedures in medico-legal cases

Study of the various prescribed Forms:

Consent to surgery Anaesthesia and other Medical services, Request for sterilization, Consent to access to hospital records, Authorization for Autopsy, **Dead body Challan used for sending a dead body for post-mortem examination,** Request for the second inquest by Magistrate on the dead body**, Provisional post-mortem certificate, Post-mortem form, Pictorial Post-mortem form, Form for the Final cause of death,** Forms for despatch of exhibits other than the viscera to chemical analyser, Forms for despatch of Viscera for Histopathological Examination, **Form for dispatch of viscera to chemical analyser,** Forensic Science Laboratory report form, Summons to witness.

Each student shall attend and record as a clerk

a. As many as possible cases / items of medico-legal importance
b. 10 cases of medico-legal autopsies

Both above 'a' and 'b' should be recorded in the approved Proforma in the single Journal. The Journal should be scrutinised by the teacher concerned and presented for the inspection and evaluation during the university examination.

Each student shall attend the court at least 2 cases when Medical Evidence is being recorded.

f. Books recommended

1. **Modi's Textbook of Medical Jurisprudence and Toxicology Ed. 22, 1999, by B.V. Subramanyam, Butterworth**
2. The Essentials of Forensic Medicine & Toxicology by K.S. Narayan Reddy
3. Parikh's Textbook of Medical Jurisprudence and Toxicology.
4. **Text Book of Forensic Medicine – J.B. Mukherjii VOL 1 & 2**
5. **Principles of Forensic Medicine - A. Nandy**
6. Toxicology at a Glance by Dr S.K. Singhal
7. Bernard Knight et. All: Cox's Medical Jurisprudence & Toxicology

Reference books

1. Russell S. Fisher & Charles S.Petty: Forensic Pathology
2. Keith Simpson: Forensic Medicine
3. Jurgen Ludwig: Current Methods of autopsy practice.
4. Gradwohl – Legal Medicine
5. A Doctors Guide to Court – Simpson
6. Polson C.J. : The essentials of Forensic Medicine
7. Adelson, L.: The Pathology of Homicide.
8. Atlas of Legal Medicine (Tomro Watonbe)
9. Sptiz, W.U. & Fisher, R.S.: Medico-legal Investigation of Death.
10. A Hand Book of Legal Pathology (Director of Publicity)
11. Taylor's Principles & Practice of Medical Jurisprudence. Edited by A.Keith Mant, Churchill Livingstone.
12. Ratanlal & Dhirajlal, The Indian Penal Code; Justice Hidayatullah & V.R. Manohar
13. Ratanlal & Dhirajlal, The Code of Criminal procedure; Justice Hidayatullah & S.P. Sathe
14. Ratanlal & Dhirajlal, The Law of Evidence; Justice Hidayatullah & V.R. Manohar
15. Medical Law & Ethic in India – H.S. Mehta
16. Bernard Knight : Forensic Pathology
17. Code of medical ethics : Medical Council of India, approved by Central Government, U/S 33 (m) of IMC Act, 1956 (Oct 1970)
18. Krogman, W.M.: The human skeleton in legal medicine.
19. FE Camps, JM Cameren, David Lanham : Practical Forensic Medicine
20. V.V. Pillay : Modern Medical Toxicology.

5. Evaluation

a. Methods

Theory, Practical & viva

b. Pattern of Theory Examination including Distribution of Marks, Questions, Time

Nature of Question Paper

Faculty with Year **:** ***SECOND MBBS***

Subject **:** **FORENSIC MEDICINE & TOXICOLOGY**

Paper **:** ***--***

Total Marks **:** ***40*** ***Time*** **:** ***2 Hours***

Section "A" (8 Marks)

Instructions:-

1) Fill (dark) the appropriate empty circle below the question number once only..
2) Use **blue/black** ball point pen only.
3) Each question carries **one / half mark.**
4) **Students will not be allotted mark if he/she overwrites strikes or put white ink on the cross once marked.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "A" : MCQ (8 marks)

Question No.	Question Description	Division of Marks	Total Marks
1.	Total MCQs : 16	16 X ½	08

Section "B" & "C" (32 Marks)

Instructions:-

1) All questions are compulsory.
2) The number to the right indicates full marks.
3) Draw diagrams wherever necessary.
4) **Answer each section in the respective answerbook only. Answers written in the inappropriate sectional answer books will not be assessed in any case.**
5) Do not write anything on the blank portion of the question paper. If written anything, such type of act will be considered as an attempt to resort to unfair means.

Section "B" : BAQ (20 Marks)

Question No.	Question Description	Division of Marks	Total Marks
2.	**Brief answer questions** **(Attempt any five out of six)** a) b) c) d) e) f)	5 X 4	20

Section "C" : LAQ (12 Marks)

Question No.	Question Description	Division of Marks	Total Marks
3.	**Attempt any two out of three:** ***Long answer question only*** a) b) c)	2 X 6	12

c. Topic distribution in the theory paper

Section A & C: Forensic Medicine, Toxicology, Medical Jurisprudence, Legal Procedure
Section B: Forensic Medicine, Toxicology and/or Medical Jurisprudence

d. Marking scheme

As shown above

e. Nature of practicals and duration

Practicals ***Marks 30***
Report on: Six Exercises [With available resources] Time: About 2 hrs.

1. An Injured **OR** Age of the child
   OR An Alcoholic **OR** Sexual offence 07 Marks
2. Bone **OR** Determination of age of Foetus 05 Marks
3. Weapon 05 Marks
4. Certificate of Sickness, fitness **OR** Death. 05 Marks
5. Report on TWO Poison 04 Marks
6. Report on any TWO articles: [Skiagram **OR** Photographs **OR** Slides **OR** Museum Specimens **OR** Instruments] 04 Marks

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TOTAL **30 Marks**

In respect of items 1 to 6, students will be expected to prepare their Reports as if they would be required to submit it to the investigating authority concerned within the time allotted, and the examiners will be assessing proficiency in skills, conduct of experiment, interpretation of data and logical conclusion. Emphasis should be on candidate's capacity in making observations and logical inferences in order to initiate enquiries in criminal matters and medico-legal problems.

f. Viva : duration and topic distribution

Viva-vocé: Time: About 20 Min

There will be TWO tables examining each student separately on the topics 'a' and 'b'.

Viva	10 marks
Duration	20 mins
Four examiners	10 mins with each candidate
Two examiners	for topics a. Toxicology and Medical Jurisprudence
Two examiners	for topics b. Forensic Medicine and Legal Procedures

At each table marks given will be out of 5 and then added together (total out of 10)

g. Plan for internal assessment

The time-table for internal assessment will be as follows:

SCHEME OF INTERNAL ASSESSMENT WITH FREQUENCY OF EXAMINATIONS FOR THE BATCHES WHICH HAVE JOINED BEFORE JUNE 2001

Marks for internal assessment 'A' shall be calculated on the basis of two mid terminals & three terminal college examinations conducted. During mid terminal (periodical examination) assessment should be done by MCQs of Single Best Response type.

Marks for internal assessment 'B' shall be calculated on the basis of three terminal college examinations (7 marks) & day-to-day class practical work and Record (3 marks).

Department will maintain a register for periodic evaluation of their students. The internal assessment will be done separately for theory and practical examinations.

A total of 5 (five) examinations will be conducted as under:

FREQUENCY AND MARKING OF EXAMINATION FOR INTERNAL ASSESSMENT

Termwise distribution	**Theory/Practical (Total Marks)**
I Term	
One Midterm	15 / no practicals
1st Terminal	40 / 25
II Term	
One Midterm	15 / no practicals
2nd Terminal	40 / 40
III Term	
One term ending Preliminary	40 / 40

SCHEME OF INTERNAL ASSESSMENT WITH FREQUENCY OF EXAMINATION FOR THE BATCHES JOINING IN JUNE 2001 AND LATER

I term

1st term ending: After 120 teaching days (Theory and Practicals)

II term

2nd term ending: At the end of the 2nd term (Theory and Practicals)

III term

Prelims examination on the basis of University pattern -Theory, Practicals and Viva
(Minimum 4 weeks gap mandatory between Preliminary and University examinations)

For the terminal theory examination students will be evaluated by a combination of 28 MCQs (each worth 1/2 mark), 6 SAQs (each of 2 marks with an option of 6 out of 7) and 2 LAQs (option of 2 out of 3 each worth 7 marks). The total time allotted for this 40 marks paper will be 2 hours.

This will be followed by practicals (total time 1½ hours). The marks for the I term practicals will be 25 and for the II term will be 40.

To familiarize the students with the 'viva-vocé', for the I term the marks for the practicals may be kept as 15, while 10 marks be reserved for viva on theory topics (total 25 marks); for the II term the marks for the practicals may be kept as 30, while 10 marks be reserved for viva on theory topics (total 40 marks).

Prelim pattern will be as per the University exam.

REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR :- Second MBBS

SN	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Pharmacology	III	50	40	IV	50	40	V	80	40
2.	Pathology	III	50	40	IV	50	40	V	80	40
3.	Microbiology	III	50	40	IV	50	40	V	80	40
4.	FMT	III	20	20	IV	20	20	V	40	40

(B) Calculation Method:-

I) Theory Marks to be send to the University out of 15 Except FMT $= \frac{(A)+(C)+(E)}{12} = \frac{50+50+80}{12} = \frac{180}{12} = 15$

II) Practical Marks to be send to the University out of 15 Except FMT $= \frac{(B)+(D)+(F)}{8} = \frac{40+40+40}{8} = \frac{120}{8} = 15$

III) For FMT Theory Marks to be send to the University out of 10 $= \frac{(A)+(C)+(E)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$

IV) For FMT Practical Marks to be send to the University out of 10 $= \frac{(B)+(D)+(F)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$

Introduction of "Communication Skills, Professionalism & Ethics in Medical Education Modules" TOPIC in 2nd &3rd MBBS Syllabus

MAHARASTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

III M.B.B.S.

MEDICINE

(i) **GOAL** :

The broad goal of the teaching of undergraduate students in Medicine is to have the knowledge, skills and behavioral attributes to function effectively as the first contact physician.

(ii) **OBJECTIVES** :

(a) KNOWLEDGE :

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

(1) Diagnose common clinical disorders with special reference to infectious diseases, nutritional disorders, tropical and environmental diseases;
(2) Outline various modes of management including drug therapeutics especially dosage, side effects, toxicity, interactions, indications and contra-indications;
(3) Propose diagnostic and investigative procedures and ability to interpret them;
(4) Provide first level management of acute emergencies promptly and efficiently and decide the timing and level of referral, if required;
(5) Recognize geriatric disorders and their management.

(iii) **SKILLS** :

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

(1) develop clinical skills (history taking, clinical examination and other instruments of examination to diagnose various common medical disorders and emergencies;
(2) refer a patient to secondary and/or tertiary level of health care after having instituted primary care;
(3) perform simple routine investigations like hemogram, stool, urine, sputum and biological fluid examinations;
(4) assist the common bedside investigative procedures like pleural tap, lumber puncture, bone marrow aspiration/ biopsy and liver biopsy.

A course of systematic instruction in the principles and practice of medicine, including medical disease of infancy;

a. Lecture - demonstrations, seminars and conferences in clinical medicine during the 3 years shall run concurrently with other clinical subjects.;
b. Instructions in comprehensive medical care;
c. Instructions in applied anatomy and physiology and pathology throughout the period of clinical studies;
d. Instructions in dietetics, nutrition and principles of nursing Medical and in simple ward procedure e.g. should be imparted during clinical concurrently.

iv) **Attitude :**

a. The teaching and training in clinical medicine must aim at developing the attitude in students to apply the knowledge & skills he/she acquires for benefit and welfare of the patients.

b. It is necessary to develop in students a sense of responsibility towards holistic patient care & prognostic outcomes.

c. Students should develop behavioural skills and humanitarian approach while communicating with patients, as individuals, relatives, society at large & the co- professionals.

Curriculum for Theory Lecture series & Tutorials and LCD for General Medicine including Psychiatry, Tb. & Dermatology

TERM	DAY	TIME	LECTURES	TOPIC
4th	MON	8-9	20	Introduction to Medicine
5th	MON	8-9	15	Infectious Diseases/Tropical diseases
	FRI	8-9	15	Cardiovascular System
6th	TUE	12-1	20	GIT, Liver, Pan.
	THU	8-9	20	Chest + Miscellaneous
	MON	8-9	20	TB
	TUE	8-9	20	Psychiatry
	SAT	8-9	15	Skin
7th	FRI	8-9	15	Neurology
	THU	12-1	15	Haematology/Haemato-oncology
	FRI	2-4	30	Tutorials
	MON	2-3	20	Skin / STD
8th	TUE	8-9	20	Endo + Misc + Genetics (3 Lectures.)
	THU	8-9	20	Nephro. +Clinical Nutrition
	TUE	2-4	40	Tutorial Medicine, Skin, Tb, Psychiatry,
	WED	2-4	40	Tutorial
9th	TUE	12-1	15	LCD Medicine (10) Skin 1 Psychiatry (1) Tb(1)
	MON	2-4	30	LCD Medicine (7)

The above timetable is general outline to guide the planning of curriculum at college level. However, flexibility may be exercised to the extend that there may be

minor re-scheduling of course contents day-wise or term-wise. It must be ascertained that the course contents are covered fully and total hours allotted for the subjects are effectively implemented.

Note :- These are suggested time tables. Adjustments where required, depending upon the availability of time and facility, be made.

SYLLABUS

(General Instruction: 1) **The Lectures** Stated below shall cover knowledge about applied aspects of basic & allied sciences, practical approaches in the management of patients in the outdoor & indoor settings as well as their management in the community. Special emphasis shall be placed on preventive aspects, National Health Programs & dietetics & nutrition.)

2) **During practical teaching & training in wards**, OPD & field works proper emphasis should be given to common health problems in addition to other diseases. Emphasis should be given to learning of tacit knowledge & skills in diagnosis & interpretation of finding & Lab. data.

INTRODUCTION TO MEDICINE : 4 TH SEMESER

Lect.01. : History of Medicine.

Lect.2/3. : Concept & objectives of history taking. Diagnosis, Provisional Diagnosis, Differential diagnosis.

Lect.04. : Symptomatology of Cardiovascular Diseases.

Lect.05. : Symptomatology of Respiratory diseases.

Lect.06. : Symptomatology in Nervous system.

Lect.07. : Symptomatology in Gastrointestinal and Hepatobiliary diseases.

Lect.08. : Approach towards a patient with Fever / Oedema.

Lect.09. : Approach towards a patient with anaemia / jaundice.

Lect.10. : Approach towards a patient with Lymphadenopathy.

Lect.11. : Investigations (Non- Invasive)
X-rays, USG
C.T. ./ M.R.I. Scan
Secretions examinations
Peripheral smear

Lect.12.: Investigations (Invasive)
Bone marrow
F.N.A.C.
Liver biopsy
Lymph node biopsy
Endoscopies
Lumber puncture.

Lect.13/14.: Review of common diseases in India.

Lect.15/16,: Revision.

Lect.17.: Examination.

Lect.18/20: Buffer.

INFECTIOUS DISEASES : 5 TH SEMESTER

Lect.01:Introduction.
Infections – types, Modes of Infection transmission, Incubation period
Host defenses, Immunity & Immunization & Management including Prevention

Lect.02 : Viral hepatitis.

Lect.3/4/5: Tetanus/ Diphtheria

Lect.6/7: Malaria

Lect.08: Rabies

Lect.09: Typhoid fever

Lect.10/11: Gastroenteritis

Lect.12: Plague / Dengue

Lect.13/14: (HIV) Infection & AIDs.

Lect.15.: Examination.

Note :- The course contents in above topics should also cover applied aspects in basic sciences like Anatomy, Physiology, Bio-Chemistry, Micro- Biology, Pharmacology, Pathology, FMT while giving training on Clinical features, investigations, Diagnosis, D/D treatment & prevention.

CARDIOVASCULAR SYSTEM : 5 TH SEMESTER

Lect.01 : Introduction
Functions / anatomy / physiology and its applications
Various terminologies used

Lect.2/3: Methods of evaluation
Non - invasive
Invasive

Lect.04 : Arrhythmias
Concept & Classification
Presentation
Diagnosis
Pharmacotherapy in short

Lect.05: Cardiac arrest.

Lect.06: C.C.F.
Types
Presentations
Pathophysiology
Management

Lect.07: C.H.D.
Aetiology and classification
CHD in adults & its importance

Lect.08: Rheumatic fever

Lect.09: Presentation and haemodynamics of various Valvular lesions including investigations, Diagnosis, D/D treatment & Prevention.

Lect.10: Infective endocarditis

Lect.11/12: C.A.D, (Coronary artery disease)

Lect.13: Pericardial diseases and cardiomyopathy

Lect.14: Hypertension

Lect.15: Examination.

GASTROENTEROLOGY, HEPATOBILIARY SYSTEM & PANCREAS :
6 TH SEMESTER

Lect.01: Introduction to GIT
- Oral Cavity
- Ulcers
- Bleeding
- Pigmentation
- Oral manifestation of systemic diseases

Lect.2/3: Oesophagus
- Inflammation, Dysphagia

Lect.4/5: Stomach
- Peptic ulcers
- Aetiopathogenesis
- Clinical features
- Investigations
- D/D and management
- Acute and Chronic gastritis

Lect.6/7. Small and large intestine diseases
- Secretions & functions
- MAS Mal –absorption-syndrome
- Tuberculosis of Abdomen

Lect.08: Ulcerative colitis & Crohn's disease

Lect.09: Liver.
- Introduction
- LFT & their interpretation

Lect.10/11: Hepatitis - Acute & Chronic

Lect.12/13: Cirrhosis of liver

Lect.14: Gall bladder diseases

Lect. 15/16: Pancreas
- Functions
- Investigations
- Acute and Chronic pancreatitis
- Manifestation and D/D & treatment.

Lect.17/18: Misc. & Revision.

Lect.19: Examination.

RESPIRATORY SYSTEM : 6 TH SEMESTER

Lect.01: Applied Anatomy and physiology of R.S.

Lect.02: P.F.T. (Pulmonary Function Testing)

Lect.03: Resp. Infection- Pneumonias.

Lect.04: Chronic bronchitis and emphysema

Lect.5/6: Bronchiectasis and lung abscess.

Lect.07: Bronchial asthma

Lect.08: Malignancies

Lect.09: Mediastinum and its disorders.

Lect.10: Pleural disease - Emphasis on pneumothorax

Lect.11: Pleural effusion.

Lect.12: Occupational lung disease. Its concept and short review

Lect.13: Revision - Fungal & Parasitic diseases

Lect. 14:Respiratory emergencies & Introduction to mechanical ventilators

Collagen Vascular Disorders

Lect.1: Allergy - Concept & hypersensitity, Autoimmunity

Lect.2: Collagen disease.

Lect.3: Rheumatoid arthritis

Lect.4: Sero negative arthritis

Lect.5: Revision HIV , Alcohol related disease

Lect.6: Examination

TUBERCULOSIS : 6 TH SEMESTER

Lect.01: History and introduction

Lect.2/3: Pathogenesis and pathology

Lect.04: Role of host related factors

Lect.05: Microbiology of AFB

Lect.06: Clinical features of pulmonary tuberculosis and its investigations

Lect.07: Anti – Tubercular drugs
Pharmacology & Schedules of treatment.

Lect.8/9: Resistant tuberculosis
DOTS
Prophylaxis - Drugs /BCG/ Tuberculin test.
HIV & TB.

Lect.10: Extra - pulmonary tuberculosis
Plural effusion
Empyema
Others

Lect.11/12: Revision

Lect.13: Examination

NEUROLOGY: 7 TH SEMESTERS

Lect.01: Introduction
Applied anatomy & physiology
History taking in neurology

Lect.02: Investigations

Lect.3/4: CVD (Cerebro Vasular Disease)
Types & its differential diagnosis
Predisposing factors
Diagnosis and management

Lect.05: S.O.L. (Space Occupying Lesions)

Lect.06: Encephalitis and meningitis

Lect.07: Epilepsy

Lect.08: Cerebellar syndrome

Lect.09: Parkinsonism

Lect.10: Paripheral neuropathy

Lect.11: Muscle disorders in brief

Lect.12/13: Spinal cord disorders

Lect.14: CSF
Formation and absorption
Status in various disorders

Lect.15: Examination.

HEMATOLOGY: 7 TH SEMESTER

Lect.01: Introduction
Cell line of hemopoisis
Stimulating factors
Physiology and Anatomy of RBCs.

Lect.02: Anemias
Introduction
Classification
Symptoms & signs in general
Basic investigations & its interpretation

Lect.03: Microcytic hypochromic anaemias
Fe Kinetics
C/F, investigations of Fe deficiency.
Treatment of Fe deficiency.
D/D - Sideroblastic / thallasemic.

Lect. 04: Macrocytic anaemias
Kinetics of B-12 and Folic acid
C/F, investigations and management of B-12 / FA deficiency.

Lect.05: Anaemias (continued)
Brief of Chronic infections and inflammation
Hemolytic anaemias

Lect.06: Hemoglobinopathies

Lect.07: Hypoplastic / Aplastic anemia
Definition
Classification
Diagnosis and management

Lect.08: Introduction to WBCs.
Agranulocytosis - Aetiology & its significance
Leukemias (AML, ALL, CML, CLL)

Lect.09: Management of leukemia

Lect.10: Lymphomas
Hodgkin's disease / NHL (Non-Hodgkin's lymphoma)

Lect.11: Approach to a patient with bleeding disorders
Recognition
Investigations
Physiology ofPlatelets
Therapy

Lect.12: Blood groups & Blood Transfusion & Component Therapy

Lect.13-14: Revision

Lect. 15: Examination.

ENDOCRINOLOGY : 8 TH SEMESTER

Lect. 01: Introduction - Hormones
Concept
Types
Action
Endocrine system
General
Control

Lect.2/3: Pituitary
Anatomy
Regulation
Disorders of Ant. Pituitary
Acromegaly
A.G. Syndrome
Disorders of Post. Pituitary
Hypopituitarism

Lect.4/5: Thyroid
Anatomy

Regulation
Goiter
Hypothyroid state & hyperthyroid state
Classifications
Management

Lect.6/7: Adrenal gland
Anatomy
Regulation
Addison's & Cushing syndrome
Recognition
Investigations
Management
Pheocromocytoma

Lect.08: Vit. D. Metabolism.
Ca. Metabolism and its relations to parathyroid
Diagnosis & management of related disorders.

Lect.9/10: Diabetes Mellitus

Lect.11: FSH < H. Oestrogens Progesterone's
Significance
Disorders
Its recognition and diagnosis
Management

Lect.12: Multiple endocrine-syndrome and paraneoplastic syndrome Overview.
Diabetes incipidus.

Miscellaneous

Lect.13/14 : Poisoning
Suicidal / Homicidal / Accidental
Chemical / Biological / Corrosives / Drugs
Concepts of management
Optimum Barbiturate
DDT
Organophosphorus

Lect.15: Hyperpyrexia and Heat exhaustion
Aetiology
Pathophysiology
C / F. Types
Management
Preventive measures

Lect.16 : Electrical injury
Types
Manifestations
Management
Lightening

Lect.17: Shock
Types
Pathophysiology / Complications
Management

Lect.18/19: Revision

Lect.20: Examination

NEPHROLOGY, NUITRITION : 8 TH SEMESTER

NEPHROLOGY :

Lect.01: Anatomy & Physiology of Urinary system

Lect.02: R.F.T. (Renal Function Tests)

Lect.03: Acute Glomerulonephropathy

Lect.04: Chronic Glomerulonephropathy

Lect.05: Infections of urinary system.

Lect.06: Nephrotic syndrome

Lect.07: Approach towards common problem

i. Proteinuria
ii. Hematuria
iii. Renal colics

Lect.08: Acute & Chronic renal failure

Lect.09: Dialysis - Diet - Drugs. In renal failure

Lect.10:Revision

Lect.11: Examination

Genetics (3 lectures)

Lect.1 : Introduction

Lect.2 : Common genetic disorders

Lect.3 : Application of Genetic Engineering in Medicine

NUTRITION :

Lect.11: Concepts of carbohydrate, proteins, fats, vitamins and minerals. Balanced diet.

Lect.12: Protein energy malnutrition.

Lect.13/14: Vitamin deficiency state
Scurvy / Beribery / Pellegra / Vit.A

Lect.15: Obesity / Asthenia
Diagnosis
"Complications and management

Lect.16: Revision

Lect.17: Examination.

Introduction of " Brain Death and Organ Donation" topic in subjects of Physiology , Preventive & Social Medicine, Psychiatry, Medicine & Surgery

Recommended Books:

1. Hutchinson's Clinical Methods by Hunter and Bomford,
2. The Principles and practise of Medicine - Sir Stanley Davidson
3. Text book of Medical Treatment - Dunlop and Alstead.
4. Savill's system of Clinical Medicine - E. C. Warner.
5. Principles of internal Medicine - Harrison.
6. API Text Book of Medicine.
7. **Reference Book (Clinical Medicine) : "Clinical Examination in Medicine": Author: Dr. A. P. Jain**
8. **"Manual of Clinical Practical Medicine" : 1) Dr. G.S.Sainani**
   2) Dr. V.R. Joshi
   3) Dr. Rajesh G. Sainani

SKIN

DERMATOLOGY / STD/ LEPROSY

Goals :

The aim of teaching the Under graduate students in Dermatology, S.T.D. and Leprosy is to impart such knowledge and skills that may enable him to diagnose and treat common ailments and to refer rare diseases or complications and unusual manifestations of common diseases to the specialist.

OBJECTIVES :

Knowledge :

At the end of the course of Dermatology, Sexually Transmitted Diseases & Leprosy the student shall be able to :

1. Demonstrate sound knowledge of common diseases, their clinical manifestations including emergent situations and of investigative procedures to confirm their diagnosis.
2. Demonstrate comparative knowledge of various modes of topical therapy.
3. Demonstrate the mode of action of commonly used drugs, their doses, side effects / toxicity, indications and contraindication & interactions.
4. Describe commonly used modes of management including the medical & Surgical procedures available for the treatment of various diseases and to offer a comparative plan of management for a given disorder.

Skills :

The student shall be able to

1. Interview the patient, elicit relevant and correct information and describe the history in a chronological order :
2. conduct clinical examination, elicit and interpret physical findings and diagnose common disorders and emergencies :
3. perform simple, routine investigative and laboratory procedures required for making the bed-side diagnosis, especially the examination of scrapings for fungus, preparation of slit smears and staining for AFB for leprosy patients and for STD cases :
4. take a skin biopsy for diagnostic purposes ;
5. Manage common diseases recognizing the need for referral for specialized care, in case of inappropriateness of therapeutic response.

Structures and functions of Skin and its appendages

Pruritus

Infections (Bacterial , Chlamidia, Mycoplasma, Fungal & Viral)

Infestations (Ecto and Endoparasites)

Nutritional disorders

Allergic Disorders

Leprosy

STD

HIV & Skin

Papulesquamous disorders

Collagen Vascular Disorders

Pigmentory disorder

Drug reactions.

Chest

TUBERCULOSIS AND RESPIRATORY DISEASES:

(i) GOAL :

The aim of teaching the undergraduate student in Tuberculosis and Chest Diseases is to impart such knowledge and skills that may enable him/her to diagnose and manage common ailments affecting the chest with the special emphasis on management and prevention of Tuberculosis and especially National Tuberculosis control programme.

(ii) **OBJECTIVES :**

(a) **KNOWLEDGE :**

At the end of the course of Tuberculosis and Chest diseases, the student shall be able to:

1) demonstrate sound knowledge of common chest diseases, their clinical manifestations, including emergent situations and of investigative procedures to confirm their diagnosis'
2) demonstrate comprehensive knowledge of various modes of therapy used in treatment of respiratory diseases;

3) describe the mode of action of commonly used drugs, their doses, side-effects/toxicity, indications and contra-indications and interactions.;
4) describe commonly used modes of management including medical and surgical procedures available for treatment of various diseases and to offer a comprehensive plan of management inclusive of National Tuberculosis Control Programme.

(b) **SKILLS** :

The student shall be able to :

1) interview the patient, elicit relevant and correct information and describe the history in chronological order;
2) conduct clinical exami9nation, elicit and interpret clinical findings and diagnose common respiratory disorders and emergencies;
3) perform simple, routine investigative and office procedures required for making the bed side diagnosis, especially sputum collection and examination for etiologic organisms especially Acid Fast Bacilli (AFB), interpretation of the chest x-rays and respiratory function tests;
4) interpret and manage various blood gase4s and PH abnormalities in various respiratory diseases.
5) Manage common diseases recognizing need for referral for specialized care, in case of inappropriateness of therapeutic response;
6) Assist in the performance of common procedures, like laryngoscopic examination, pleural aspiration, respiratory physiotherapy, laryngeal intubation and pneumo-thoracic drainage/aspiration

(c) **INTEGRATION:**

The broad goal of effective teaching can be obtained through integration with departments of Medicine, Surgery, Microbiology, Pathology, Pharmacology and Preventive and Social Medicine

Lect. 01 : History and introduction.

Lect. 2/3: Pathogenesis and pathology

Lect. 04: Role of host related factors.

Lect. 05: Microbiology of AFB

Lect. 06: Clinical features of pulmonary tuberculosis

Lect. 07: Anti-tuberculous drugs
-Pharmacology & schedules of drug therapy

Lect. 8/9: Resistant tuberculosis
DOTS
Prophylaxis - Drugs / BCG / Tuberculin test.
HIV & TB

Lect 10 Extra - Pulmonary tuberculosis
Pleural Effusion
Others.

Lect 11/ 12: Revision

Lect. 13: Examination.

Respiratory System :

1. Applied anatomy & Physiology of R.S.
2. Lung function tests
3. Respiratory infections, pneumonias, fungus,
4. Bronchiectasis & lung Abscess.
5. Bronchial Asthma.
6. Lung & Pleural Malignancies.
7. Mediastinum & its disorders.
8. Pleural Diseases
9. Occupational Lung Disease
10. Respiratory emergencies.

Lecture cum Demos (Resp system)

1. Lung function test and blood gas Analysis and Resp. alkalosis & Acidosis.
2. Chest bronchios emphysema
3. Suppurative lung diseases
4. Bronchogenic carcinoma & other malignancies with Mediastinal obstruction
5. Pleural disease - pneumothorax, pyopneumothorax, Pleural

L.C.D. In T.B.

1. Haemoptysis
2. Drug resistance
3. TB & HIV

Psychiatry

(i) **GOAL** :

The aim of teaching of the undergraduate student in Psychiatry is to impart such knowledge and skills that may enable him to diagnose and treat common Psychiatric disorders, handle Psychiatric emergencies and to refer complications/unusual manifestation of common disorders and rare Psychiatric disorders to the specialist.

(ii) **OBJECTIVES** :

(a) **KNOWLEDGE** :

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

1. comprehensive nature and development of different aspects of normal human behaviour like learning, memory, motivation, personality and intelligence;
2. recognize differences between normal and abnormal behaviour;
3. classify psychiatric disorders;
4. recognize clinical manifestations of the following common syndromes and plan their appropriate management of organic psychosis, functional psychosis, schizophrenia, affective disorders, neurotic disorders, personality disorders, psychophysiological disorders, drug and alcohol dependence, psychiatric disorders of childhood and adolescence;
5. describe rational use of different modes of therapy in psychiatric disorders.

(b) **SKILLS :**

The Student shall be able to :

1) interview the patient and understand different methods of communications in patient-doctor relationship;
2) Elicit detailed psychiatric case history and conduct clinical examination for assessment of mental status;
3) Define, elicit and interpret psycho-pathological symptoms and signs;
4) Diagnose and manage common psychiatric disorders;
5) Identify and manage psychological reactions and psychiatric disorders in medical and surgical patients in clinical practice and in community setting.

(c) **INTEGRATION :**

Training in Psychiatry shall prepare the students to deliver preventive, promotive, curative and re-habilitative services for the care of patients both in the family and community and to refer advanced cases for a specialized Psychiatry / Mental Hospital. Training should be integrated with the departments of Medicine, Neuro-Anatomy, Behavioral and Forensic Medicine.

4th or 5th semester 5 lectures

2. Motivation (including) frustration, conflicts etc.) Emotion (including mind-body relationship)

3. Learning (different types) memory (Types of memory, cause of forgetting etc.)
4. Intelligence, emotional Quotient including M.R. and sifted child.
5. Personality-Different types with mental mechanisms
6. Difference between normal and abnormal behaviour. Doctor-Patient relationship and communication skills

In 8th & 9th Semester remaining 15 lectures.

1. Psychiatric classification. Difference between functional and organic psychosis. Difference between psychosis and neurosis.
2. Schizophrenia including drugs and rehabilitation.
3. Affective disorders including pharmacotherapy
4. Affective disorders including non-pharmocotherapy treatment.
5. Anxiety disorders-Generalised anxiety, disorders, panic disorders.
6. O.K.D. and Phobias.
7. Somatoform disorders.
8. Alcohol dependence
9. Psycho-Physiological disorders.
10. Scholastic problems.
11. Behavioural disorders.
12. Sexual disorders.
13. Psychiatric emergencies including suicide and organic brain disorders.
14. Psychotherapies including behaviour therapy.

Introduction of " Brain Death and Organ Donation" topic in subjects of Physiology , Preventive & Social Medicine, Psychiatry, Medicine & Surgery

Paediatrics

Paediatric including Neonatology

The course includes 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 counseling.

(i) **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.

(ii) **OBJECTIVES** :

(a) **KNOWLEDGE** :

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

(1) Describe the normal growth and development during foetal life, neonatal period, childhood and adolescence and outline deviations thereof;

(2) Describe the common paediatric disorders and emergencies in terms of Epidemiology, aetiopathogenesis, clinical manifestations, diagnosis, rational therapy and rehabilitation;

(3) Age related requirements of calories, nutrients, fluids, drugs etc, in health and disease;

(4) Describe preventive strategies for common infectious disorders, malnutrition, genetic and metabolic disorders, poisonings, accidents and child abuse;

(5) Outline national Programmes relating to child health including immunization Programmes.

(b) **SKILLS** :

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

(2) take a detailed paediatric history, conduct an appropriate physical examination of children including neonates, make clinical diagnosis, conduct common

bedside investigative procedures, interpret common laboratory investigation results and plan and institute therapy.

(3) Take anthropometric measurements, resuscitate newborn infants at birth, prepare oral rehydration solution, perform tuberculin test, administer vaccines available under current national programmes, perform venesection, start an intravenous saline and provide nasogastric feeding :

(4) Conduct diagnostic procedures such as a lumbar puncture, liver and kidney biopsy, bone marrow aspiration, pleural tap and ascitic tap;

(5) Distinguish between normal newborn babies and those requiring special care and institute early care o all new born babies including care of preterm and low birth weight babies, provide correct guidance and counseling in breast feeding ;

(6) 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 Medici9ne, Community Medicine and Physical Medicine and Rehabilitation.

LIST OF LECTURE/ SEMINARS

Lectures : 3rd / 4th Semester :

1. Introduction of Paediatrics.
2. History taking in children.
3. Examination of Children.
4. Normal Growth
5. Normal Development.
6. Introduction to newborn and normal newborn baby.
7. Temperature regulation in newborn.
8. Breast feeding and lactation management.
9. Infant and child feeding (include complimentary feeding)
10. Normal fluid and electrolyte balance in children.
11. Immunization.

Lecturers : 7th / 8th / 9th Semester :

1. Birth Asphyxia
2. Low Birth Weight Babies.
3. Neonatal Respiratory Distress.
4. Jaundice in newborn.
5. Neonatal Infections.
6. Neonatal convulsions.
7. PEM and its management.
8. Vitamin and micronutrient deficiencies.
9. Nutritional anaemia in infancy and childhood.
10. Acute diarrhoea.
11. Hypothyroidism in children.
12. Congestive heart failure - diagnosis and management.
13. Congenital heart disease.
14. Rheumatic heart disease.
15. Hypertension in children.
16. Acute respiratory infections.
17. Bronchial asthma.
18. Nephrotic syndrome
19. Acute glomerulonephritis and hematuria
20. Abdominal pain in children.
21. Chronic liver disease including ICC.
22. Haemolytic anaemia including thalassemia.
23. Leukaemias.
24. Bleeding and coagulation disorders.
25. Seizure disorders.
26. Cerebral Palsy.
27. Common exanthematous illness.
28. Childhood tuberculosis

Other Lectures to be covered :

1. Fluid and electrolyte balance -pathophysiology and principles of Management.
2. Acid-base disturbances - pathophysiology and principles of management.
3. Adolescent growth and disorders of puberty.
4. Congenital heart disease.
5. Acute respiratory infections, Measles, Mumps, Chicken pox
6. Other childhood malignancies.
7. Coagulation disorders - Haemophilia
8. Mental retardation.
9. Approach to a handicapped child.
10. Acute flaccid paralysis.
11. Behaviour disorders.
12. Meningitis.
13. Diphtheria, Pertussis and Tetanus.
14. Childhood tuberculosis.
15. HIV infection.
16. Malaria.
17. Neurocysticercosis.
18. Enteric fever.

19. Immunization.
20. Paediatric prescribing.
21. Common childhood poisonings.

Integrated Seminar Topics :

Convulsions

Coma

PUO

Jaundice

Portal hypertension

Respiratory failure

Shock

Rheumatic Heart Disease

Hypertension

Diabetes mellitus

Hypothyroidism

Anemia

Bleeding

Renal failure

Tuberculosis

Malaria

HIV infection

Neurocysticercosis

Perinatal asphyxia (with obstetrics)

Intrauterine growth retardation (with obstetrics)

Introduction of " Intigrated Management of Neonatal And Childhood Illness" Topic in MBBS Syllabus

Preventive and Social Medicine / Community Medicine

(PSM)

A. The teaching of Social & Preventive Medicine shall place throughout the teaching period.

B. Field experience in rural health is included in pre-clinical as well as during clinical period

C. During the students attendance at various departments which is now required under medicine and surgery, such as infectious diseases. T.B. Leprosy, V.D. etc. emphasis shall be laid as much on the preventive as on the clinical and Therapeutic aspects of these diseases.

D. In addition to the teaching undertaken by the department of Social & Preventive Medicine, a joint programme with other departments is essential in order to give the students a comprehensive picture of man, his health and illness.

E. Stress shall be laid on national programmes, including those of control of communicable diseases and family planning and health education.

F. An epidemiological units as an integrate part of every hospital in order to achieve a comprehensive study disease by the students should be established.

G. The objective of the internship shall be clearly defined and that a proper training programme is oriented for this period. Objectives, and the methods by which the internship could be made into a satisfying and fruitful experience. Sharpening and for planning in this phase of education shall be done.

H. As regards the qualifications of the teachers it is highly important that All teachers in Social and A preventive Medicine should have as far as possible had adequate administrative experience in addition to the teaching experience. They should also be encouraged to acquire skills in clinical subject specially related to community medicine.

I. Practical Skills : Due stress shall be laid on the students acquiring practical skill in the following procedures.

Community Medicine including Humanities
(Preventive and Social Medicine)

(Phase I,II and Part 1st of Phase III M.B.B.S.)

GOALS :

The broad goal of the teaching of undergraduate students in community medicine is to prepare them to function as community and first level physicians in accordance with the institutional goals.

OBJECTIVES :

Knowledge :

At the end of the course the student shall be able

- Explain the principles of sociology including demographic population dynamics.
- Identify social factors related to health, disease and disability in the context of urban and rural societies.
- Appreciate the impact of urbanization on health and disease.
- Observe and interpret the dynamic of community behaviours.
- Describe the elements of normal psychology and social psychology.
- Observe the principles of practice of medicine in hospital and community settings.
- Describe the health care delivery systems including rehabilitation of the disabled in the country.
- Describe the National Health Programmes with particular emphasis on maternal and child health programmes, family welfare planning and population control.
- List the epidemiological methods and techniques.
- Outline the demographic pattern of the country and appreciate the roles of the individuals, family, community and socio-cultural milieu in health and disease.
- Describe the health information systems.
- Enunciate the principles and components of primary health care and the national health policies to achieve the goal of "Health for all".
- Identify the environmental and occupational hazards and their control.
- Describe the importance of water and sanitation in human health.
- To understand the principles of health economies, health administration, health education in relation to community.

Skills :-

At the end of the course, the student shall be able to make use of

- The principles and practice of medicine in hospital and community settings and familiarization with elementary practices.
- Use the Art of communication with patients including history taking and medico social work.
- Use epidemiology as a scientific tool to make rational decisions relevant to community and individual patient intervention.
- Collect, analyse, interpret and present simple community and hospital base data.
- Diagnose and manage common health problems and emergencies at the individual, family and community levels keeping in mind the existing health care resources and in the context of the prevailing socio-culture beliefs.
- Diagnose and manage common nutritional problems at the individual and community level.
- Plan, implement and evaluate a health education programme with skill to use simple audio-visual aids.
- Interact with other members of the health care team and participate in the organization of health care services and implementation of national health programmes.

Integration:

Develop capabilities of synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedial measures for this.

Course Content :

Total hours of teaching in community medicine and Humanities are 376. The distribution of them shall be as follows.

Phase	Semester	Theory	Practical Hours
I	I & II	30	30
II	III & IV	68	132
III Part1st	VI & VII	50	66

Community Medicine (P.S.M.)

List of theory lectures

Phase I (1st and 2nd semester) 30 Hours

1. Introduction – Evolution of Community Medicine.
2. Health – Definition, spectrum of health and factors affecting – indicators of health.
3. Health Problem of World – Urban and Rural – Indian Health.
4. Health Care Delivery system in India – Urban and Rural.
5. Demography, Demographic cycle, Population trends – World and India.
6. Fertility and factors affecting it.
7. Family welfare and Population control.
8. Medical ethics and Doctor – patient relationship – Consumer Protection Act.
9. Sociology and Social factors effecting health.
10. Social Psychology – introduction, Group Behaviour, Motivation Personality.
11. Economics and health.
12. Health Education and Communication.
13. Hospital Management.
14. Nutrition and Health.
    - Constituents of food.
    - Food and food groups.
    - Diet planning and recommended dietary allowances.
    - Nutritional diseases.
    - Iodine deficiency disorders.
    - Diseases due to vitamin and mineral imbalance
    - Toxins in the food.
    - Assessment of Nutritional status.
    - Examination

Phase II – (3rd and 4th Semester) 68 Hours

General Epidemiology

- The concepts of disease.
- Natural history of disease.
- Epidemiological triad.
- Dynamics of diseases transmission.

- Concept of disease control.

Epidemiology

- **Definition, types, measurements in epidemiology, epidemiological studies, and clinical trial, investigation of an epidemic.**
- **Uses of epidemiology.**
- **Screening for disease.**
- **Disinfection, sterilization and control of Hospital acquired infections.**
- **Immunity.**

Environmental health

- **Introduction to environment health.**
- Water in relation to health and disease.
- Air pollution and ecological balance.
- Housing and health.
- Effects of radiation on human health (Ionizing, Non-ionizing & Nuclear warfare)
- Effects of Noise on human health.
- Meteorological environment.
- Solid waste disposal.
- Disposal of hospital waste.
- Liquid waste disposal

Medical entomology

Arthropods of medical importance and their control.

Biostatistics (Theory and Practical)

Introduction and uses.
Data- Types, Collection and Presentation.
Centering constants.
Measures of Variation.
Normal distribution.
Sampling methods and Sampling variability.

Tests of significance.

- SE of difference between two means.
- SE of difference between two proportions
- X^2 test. (Chi-square)
- Students 't' test
  - Paired .
  - Unpaired.
- Statistical fallacies.

Computers in Medicine

There use at all the stages to be demonstrated. The students should use computers in analysis and presentation of data

Epidemiology of communicable diseases.

- Air borne infections.
- Exanthematous fevers.
- Chicken pox, Rubella, and Measles
- Factors responsible to eradicate small pox.
- **Influenza and ARI.**
- Diphtheria and Pertussis

- Tuberculosis.
- Faeco-oral infections.
- Poliomyelitis.
- Hepatitis.
- Enteric Fever and Cholera
- Bacillary and Amoebic dysentery.

- Soil transmitted Helminths.
- Tetanus
- Rabies and other Viral Zoonotic disease.
- Leprosy.
- Leprosy.
- Malaria
- Filariasis.
- Arthropod borne viral diseases.
- Sexually transmitted diseases and their control.
- A.I.D.S.

Examinations at the end of 3rd and 4th semester.

(Phase III (6th and 7th Semester) 50 hrs.

(Teaching in 7th semester includes tutorials also.)

- Community development programmes and multisectoral development.
- Comprehensive medical care and Primary health care.
- National Health Policy.
- Maternal and Child Health care.
- Epidemiology of Non-communicable diseases.
- Occupational health.
- Problems of adolescence including Drug dependence.
- Geriatrics
- Vital statistics – sources and uses, Census, Fertility statistics.
- Management information system.
- Mental health.
- Genetics in public health.
- Health planning and management.
- National Health Programmes.
- International health and Voluntary Health Agencies.Tutorials.

Examination at the end of 6th and 7th semester.

Practicals

Phase I (Ist And 2nd semester) - 30 hours.

Field visit-

Every Medical College should have adequate transport facilities to take medical undergraduate for field visits. In the phase I total 15 visits, each of 2 hours duration or total 10 visits – each of 3 hours duration (depending on distances) are to be planned by the departments of community medicine. The broad outline of place for educational field visits is given below.

- Hospital visits (O.P.D., Casualty, Immunization clinic, different wards, Kitchen, FW Centre, PPP, Blood Bank, Sterilization section, Infectious disease ward, Minor operation theatre, etc.)
- Rural Health Training Centre.
- Primary Health Centre.
- Urban Health Centre.
- District Health Office (DHO).
- District Training Team (DTT)/IEC Bureau.
- District Tuberculosis Centre.
- Public Health Laboratory.
- District Malaria Office.
- Remand Home.
- Rehabilitation Centre.

III rd Semester, I st Clinical Posting - 66 hours.

Lecture – Cum – Demonstration, at appropriate places

SN	Topic	Demonstration
1	Visit to Urban / Rural health Training Centre.	Functions of UHC/ RHTC Manpower & Duty arrangements
2	Immunization Programme	I (demonstration)
3	Immunization Programme	II (Cold Chain)
4	Care of ANC mother	Demonstration of Antenatal case
5	Care of Infant	Demonstration of case
6	Post-natal case of mother/child.	Demonstration of case
7	Contraceptive devices	Situation to be given and sex education.
8	Exclusive breast feeding	Visit to Baby Friendly Hospital
9	Weaning foods	Demonstration
10	Nutritional demonstration	Explain nutritive values of Indian foodstuff
11	Nutritional assessment	Demonstration
12	Anthropometric measurements	Demonstration
13	Nutritional deficiency disorders	With A/V aids or case, Road to Health Chart
14	Protein Energy Malnutrition	With A/V aids or case, ORS preparation
15	Diarrhoea as a community health problem	With A/V aids or case
16	ARI as a community health problem	With A/V aids or case
17	Elementary essential drugs	Visit to drug store, Inventory control
18	Examination	

4th Semester 2nd Clinical Posting - 66 hours.

The board guidelines for planning programmes are as follows.

1) Posting for family care study - 6 days
   - Principle of clinical epidemiology
   - Morbidity Survey.
   - Data analysis and presentation.
2) Posting for School Health - 6 days
   - Health check-up of school children.
   - Data analysis and presentation.
   - Health education activities in the school by the students.
3) Visit to anganwadi and ICDS scheme block - 2 days
4) Visit to Home for aged and discussion - 2 days

on geriatric health problems

5) Students' seminars on topics like - 5 days
   - Disaster management
   - Road traffic accidents
   - Population explosion etc.

6) Examinations - 3 days.

Phase III (6th and 7th Semester)

3rd Clinical Posting - 66 hours.

Posting : Clinical case presentation by students

1. Introduction to infectious diseases – history taking
2. Exanthematous fever.
3. Diarrhoea / Cholera / Dysentery.
4. Tuberculosis
5. Leprosy.
6. Dog – bite case.
7. Tetanus.
8. PUO / Enteric fever / Malaria.
9. S.T.D. / AIDS.
10. Hepatitis
11. Introduction to non- communicable diseases.
    - Rheumatic heart disease.
    - Cancer.
    - Obesity / diabetes.

Examinations.

MARKS OF INTERNAL ASSESSMENT :-

Theory –20 marks and practical 20 marks. The students must secure at least 50% , marks of the total marks fixed for internal assessment in the subject in order to clear the subject.

I) Theory

1) 3rd Semester 50 Marks
2) 4th Semester 50 Marks
3) 6th Semester 50 Marks

Total 150 Marks — Converted it to out of 10 marks

4) Prelim exam. Theory Paper I - 60 Marks
Paper II - 60 Marks
Total 120 Marks,
Convert it to out of 10 marks

Total Theory Internal Assessment marks will be 20.

II) Practicals -

1) 1st Clinical rotation exam. - 3rd Semester - 50 Marks
2) 2nd Clinical rotation exam. - 4th Semester - 50 Marks
3) 3rd Clinical rotation exam. - 6th Semester - 50 Marks
Total 150 Marks
Convert it to out of 10 marks

4) Prelim exam. - 40 Marks
10 Marks for Journals
Total 50 Marks
Convert it to out of 10 marks

Total Practical Internal Assessment marks will be 20.

Introduction of " Brain Death and Organ Donation" topic in subjects of Physiology , Preventive & Social Medicine, Psychiatry, Medicine & Surgery

Introduction Of "Bio-Medical Waste" topic in subject of Microbiology & Preventive & Social Medicine

Introduction of " Intigrated Management of Neonatal And Childhood Illness" Topic in MBBS Syllabus

BOOKS RECMMENDED.

1. Text book of Community Medicine, Kulkarni A.P. and Baride J.P.
2. Park's Textbook of Preventive and Social Medicine, Park
3. Principles of Preventive and Social Medicine, K. Mahajan
4. Textbook of Community Medicine, B. Shridhar Rao.
5. Essentials of Community Medicine, Suresh Chandra.
6. Textbook of Biostatistics, B. K. Mahajan
7. Review in Community Medicine, V.R. Sheshu Babu.
8. **Reference Book for Community Medicine: "Principles and practice of Biostatistics", Author: Dr. J.V. Dixit**

FURTHER READINGS.

Epidemiology and Management for health care for all P.V. Sathe and A.P. Sathe.

Essentials of Preventive Medicine O.P. Ghai and Piyush Gupta.

Record Book:

1) The case records will have to be entered in a record book separately for General Medicine , for Paediatrics and for PSM.
2) In the record book of General Medicine, number of case records for Medicine shall be 12, for Skin & V.D. & Leprosy shall be 3, for Psychiatry shall be 2 and for Chest & TB shall be 3 cases.
3) The certificate of satisfactory completion of all Clinical postings will be entered based on similar certificates from all postings in all the above subjects.
4) In addition, details of the marks secured in the posting ending examination shall be entered on the second page on which the calculations of the internal assessments shall also be stated. Record book will not carry any marks but its satisfactory completion will be a prerequisite for appearing in examination.

University Examinations in Medicine and Allied Subjects at a Glance

MEDICINE :-

Theory 2 papers of 60 marks each = 120 marks
Paper I - General Medicine
Paper II - General Medicine(Including Psychiatry, Dermatology, STD shall contain one question on basic sciences and allied subject.)
Oral (viva) interpretation of X-Ray, ECG etc. = 20 marks
Clinical (Bedside) = 100 marks
Internal Assessment = 60 marks
(Theory 30 Marks, Practical 30 Marks)
Grand Total = 300 marks

PAEDIATRICS :- (Including Neonatology)

Theory – One paper	= 40 marks
(Shall include one question on basic sciences & allied subjects)	
Oral (Viva)	= 10 marks
Clinical	= 30 marks
Internal Assessment	= 20 marks
(Theory 10 Marks, Practical 10 Marks)	
Grand Total	= 100 marks

COMMUNITY MEDICINE :-

Theory 2 papers of 60 marks each = 120 marks

Includes problems showing applied aspects of management at primary level including essential drugs, occupational (agro based) diseases rehabilitation and social aspects of community.

Oral (Viva) = 10 marks

Practical /Project evaluation = 30 marks

Internal Assessment = 40 marks

(Theory 20 Marks, Practical 20 Marks)

Grand Total = 200 marks

Criteria of passing in various subjects at III MBBS Examination

SN	Subject	Theory Paper ./ Oral/ Practical / Internal Assessment		Maximum Marks in each of the subject	Minimum marks required to pass in each part of any subject		Minimum marks required to pass in each subject out of
01)	Community Medicine	a) Theory	Paper - I	60	60	65	100 / 200
			Paper - II	60			
		b) Oral		10			
		c) Practical		30		15	
		d) Internal Assessment	Theory	20		20	
			Practical	20			
02)	General Medicine	a) Theory	Paper I	60	60	70	150 / 300
			Paper II	60			
		b) Oral		20			
		c) Practical		100		50	
		d) Internal Assessment	Theory	30	30		
			Practical	30			
03)	Paediatrics	a) Theory	Paper	40	20	25	50 / 100
		b) Oral		10			
		c) Practical		30	15		
		d) Internal Assessment	Theory	10	10		
			Practical	10			

It is compulsory to obtain 50% marks in theory.

It is mandatory to obtain 50% marks in theory+viva/oral.

(The Frequency & other details of Internal Assessment Examinations shall be as stated in circular dated 15/02/01 table no III & IV. of General

Guidelines for U.G. teaching & training & Internal Assessment. Passing in Internal Assessment is prerequisite for eligibility to clear the subject. For passing in Internal Assessment student should secure minimum 30 out of 60 marks (theory & practical combined)

The Internal Assessment Examination shall consist of one clinical case paired with viva-voce for the periodical tests. However, the preliminary examination shall be carried out in a pattern similar to final University examination.

University (Final) Exam : General Medicine

Paper I (60 Marks) Time 3 hours.	Paper II (60 Marks) Time 3 hours.
Section A – Marks 15 MCQs – 30 Items each of ½ mark Time 30 minutes (Shall cover whole course syllabus stated in Section B and C of Paper I below	**Section A – Marks 15** MCQs 30 Items each of ½ mark Maximum time 30 minutes (Shall cover whole course syllabus stated in Section B and C of Paper I below
Section B – (Total Marks 25) Two long questions Each of 8 marks & 3 Short Answer Questions of 3 marks each. (3 out of 5 SAQs by choice. On course contents of - Cardiovascular System, Gastrointestinal System, Hepatobiliary System & Pancreas, Haematology,Haemato-oncology& Genetics	**Section B – (Total Marks 25)** ***Two long Questions each of 8 marks and*** 3 short answer questions (out of 5 SAQs) on course contents of Neurology, Psychiatry, Dermatology, Veneroleprology` & Collagen Disorders
Section C – (Total Marks 20) One long Question of 8 marks and 4 (out of six) SAQs of 3 marks each on course contents of Endocrinology, infectious diseases/Tropical Disease, Miscellaneous	**Section C – (Total Marks 20)** One long question of 8 marks and 4 (out of six) SAQs of 3 marks each on course contents on Respiratory Diseases, Tuberculosis & Clinical Nutrition and Nephrology
The Max Time for Section B & C shall be of 2 hrs. + 30 minutes	The Max time for section B and C shall be of 2 hrs. and 30 minutes

MCQ Section A shall be given to the candidates in the beginning of examination. After 30 min. section A will be collected following which B & C shall be given. The time given Section B & C together is two and half hours. This applies to paper I & II.

(one of the short answer questions shall be on basic & allied sciences.)

Final University Exam : Practical Exam :

Shall comprise of total 120 marks . with divisions as below :-

(A) Clinical Bed side :

One Long case - 50 Marks	Long Case / The time for case taking
Two short case - 25 Marks each	for student is 45 min. & for examination
Total - 100 Marks	is 10 min.
	Short Case / The same for each short case is 10 min. & 5 min. respectively

(B) Oral Viva Voce and interpretation of investigation materials (like X-Rays, ECGs, etc. – 20 marks

Viva at Two Tables Each for 10 mars There should be even & balanced distribution of the course contents on these tables, between Internal & External examiners. This should include, specimens, instruments, microscopy & drugs on table no 1 & emergencies, radio-diagnostics, electrodiagnostic & Biochemical Lab. investigations on table no 2 as applicable to the course contents of final M.B.B.S. Exam.

(C) The marks of Internal Assessment shall be sent to the University before the commencement of the Theory Examination.

Note – In the event when I.A. could not be held on the specified time due to technical reasons or otherwise, then it should be held during the vacation.

IIIrd MBBS EXAM. PATTERN

FINAL MBBS EXAMINATION IN Paediatrics

Evaluation

Internal assessment: 20 (Theory 10 +Practical 10)

Plan of Internal assessment in Paediatrics (as per university circular on 9th February 2001) Marks of Internal Assessment should be sent to University confidentially before the commencement of Theory examination.

- Passing in internal assessment will be pre-requisite for clearing the subject.

Combined theory and practical of internal assessment will be considered for passing in internal assessment.

Internal assessment in Theory -

1 . Examinations during semesters : This will be carried out by conducting two theory examinations at the end of 6th and 8th semesters (50 marks each). Total of 100 marks to be converted into 5 marks.(A/5)

2 . Prelim examination : This shall be carried out during 9th semester. One theory papers of 40 marks as per university examination. Total of 40 marks to be converted into 5 marks. (B/5)

Total marks of Internal assessment of Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

1 There will be practical examination at the end of each clinical posting of Paediatrics.: 6th and 8th semester. Each examination will be of 50 marks.

Total of 2 examinations – 100 marks , will be converted to 5 marks.(C/5)

2. Prelim examination:

This will be conducted for 40 marks as per university examination pattern and marks will be converted to 5 (D/5).

Total marks of Internal assessment of Practical will be addition of C and D.

Evaluation **Methods - Theory, Practical and Viva**

Pattern of theory examination including distribution of marks, questions and time

Pattern of theory examination including distribution of marks

1. There shall be one theory paper , carrying 40 marks
2. The paper will have two sections, A and B
3. The paper will be of 2.5 hours duration.
4. Section A will be MCQ in each paper. Section B will have to be written in separate answer sheets.

THEORY : 40 marks Duration Two and half hours (2.5) hours

MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected. Section B of paper will then be handed over to candidates.

Section A :30 min. duration

28 MCQs - 1/2 mark each 14 marks

- Separate paper
- Single based response
- MCQ will cover whole syllabus

Section B : 2 hours duration

2 LAQ of 7 marks each 14 marks

3 /5 SAQ of 4 marks each 12 marks

PRACTICAL (FINAL EXAMINATION): 40 Marks

One Long Case 20 Marks

Case Taking Time 45 Minutes

Examination Time 10 Minutes

One Short Case 10 Marks

Case Taking Time 10 Minutes

Examination Time 05 Minutes

ORAL (VIVA VOCE) **10 Marks**

Duration 10 Minutes

(Instruments, X-ray, Drugs, Emergency in Paediatrics.)

It is directed to interpretation of investigations

Clinical :One long case :30 marks :30 min. for taking case and 10 minutes for assessment

Oral (viva voce) :10 marks:10 min. duration

1.Dark Room	5 marks
2.Instruments	5 marks

FINAL EXAMINATION :- IN PSM

The distribution of marks at final examination

Theory : two papers of 60 marks each	120 Marks
Oral (Viva)	10 Marks
Practicals	30 Marks
Internal assessment	40 Marks
(Theory 20 Marks)	
(Practical 20 Marks)	
Total	**200 Marks**

PATTERN :
THEORY : TWO PAPERS OF 60 MARKS EACH 120 MARKS :-

- Paper I include Concepts in Health & Disease, Sociology / Humanities, Epidemiology, Biostatistics, Communicable and non- communicable diseases, Genetics and Environmental Health.
- Paper II includes Demography & Family Planning, Maternal and child health Nutrition, Occupational Health, Mental Health, Health Education, Health Planning & Management, Health Care Delivery System , National Health Programmes, International Health,
- These are broad divisions. There are some chances of overlapping.

NATURE OF THEROY QUESTION PAPERS :

Final MBBS Examination of subject-PSM

Theory

Paper –I	Paper -II
Section A : 30 MCQs	**Section A : 30 MCQs**
½ Mark each Should cover whole course content Of the Paper I stated in Section B & C below (Max time = 30 min)	½ Mark each Should cover whole course content Of the Paper II stated in Section B & C below (Max time = 30 min)
Section B: Total Marks =25 2. LAQs, each of 8 Marks 3. (out of 5) SAQs. each of 3 marks on Epidemiology, Bio-statistics & communicable & non communicable diseases	**Section B:** Total Marks =25 2. LAQs, each of 8 Marks 3. (out of 5) SAQs. each of 3 marks on Demography & Family Planning Maternal and child health, Nutrition, Occupational health;
Section C: Total Marks =20 One LAQ of 8 marks & 4 (out of 6) SAQs each of 3 marks **On** Concepts in Health & Disease, Sociology / Humanities Genetics & environmental Health	**Section C:** Total Marks =20 One LAQ of 8 marks & 4 (out of 6) SAQs each of 3 marks **On** Mental Health, Health Education, Health Planning & Management Health care delivery system. National Health Programmes International Health

The full time for section B plus section C shall be of 2½ hrs. of Paper I and 2½ hrs for Paper II.

MCQ Section will be given to candidates first. After 30 minutes the Section B & C will be given to the candidates.

PATTERN AT PRACTICAL EXAMINATION

	Marks
Orals (Viva)	10
Practical	30

The distribution of 30 marks of practical shall be -

1)	Spots	-	10 Marks	(5 spots of 2 marks each) Time 10 min.
2)	Exercises	-	10 Marks	(5 marks for Bio-Stat. & 5 marks for Epidemiological exercises) Time 10 min.
3)	Clinical case Presentation	-	10 Marks	Time 45 min.
			Total 30 Marks	

It is compulsory to obtain 50% marks in theory.
It is mandatory to obtain 50% marks in theory+viva/oral.

COURSE OF SURGERY AND ITS ALLIED SPECIALITIES FOR THIRD M.B.B.S.

These guidelines are based on MCI recommendations.
Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

SURGERY and allied specialties-

(i)GOAL:

The broad goal of the teaching of undergraduate students in Surgery is to produce graduates capable of delivering efficient first contact surgical care.

(ii) OBJECTIVES:

The departmental objectives, syllabus and skills to be developed in the department of surgery during undergraduate medical education are presented herewith. These are prepared taking into consideration of various aspects and institutional goals given below:

1. A medical student after graduation may have different avenues of his/her professional career and may work either as a first contact physician in a private, semi-private or public sector or may take up further specialization in surgery or other specialties.
2. He may have to work in different settings such as rural, semi-urban or urban which may have deficient or compromised facilities.
3. These are based on the various health services research data in our community.
4. These are also based on following institutional goals in general;

   At the end of the teaching/ training the undergraduate will be able to:

   - Diagnose and manage common health problems of the individual and the community appropriate to his/her position as a member of the health team at primary, secondary and tertiary levels.
   - Be competent to practice curative, preventive, promotive and rehabilitative medicine and understand the concepts of primary health care.
   - Understand the importance and implementation of the National Health Programmes in the context of national priorities.
   - Understand the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude required for professional responsibilities.
   - Develop the ability for continued self-learning with a scientific attitude of mind and acquire further expertise in any chosen area of medicine.

A. KNOWLEDGE

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

1. Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children;

2. Define indications and methods for fluid and electrolyte replacement therapy including blood transfusion.

3. Define asepsis, disinfection and sterilization and recommend judicious use of antibiotics.

4. Describe common malignancies in the country and their management including prevention.

5. Enumerate different types of anaesthetic agents, their indications, mode of administration, contraindications and side effects

B. <u>SKILLS</u>

At the end of the course, the student should be able to

1. Diagnose common surgical conditions both acute and chronic, in adult and children.
2. Plan various laboratory tests for surgical conditions and interpret the results;
3. Identify and manage patients of haemorrhagic; septicaemic and other types of shock.
4. Be able to maintain patent air-way and resuscitate:
   - A A critically injured patient.
   - B Patient with cardio-respiratory failure;
   - C A drowning case.
5. Monitor patients of head, chest, spinal and abdominal injuries, both in adults and children
6. Provide primary care for a patient of burns;
7. Acquire principles of operative surgery, including pre-operative, operative and post operative care and monitoring;
8. Treat open wounds including preventive measures against tetanus and gas gangrene.
9. Diagnose neonatal and paediatric surgical emergencies and provide sound primary care before referring the patient to secondary/territory centers;
10. Identify congenital anomalies and refer them for appropriate management.

In addition to the skills referred above in items (1) to (10), he shall have observed/assisted/performed the following:

i. Incision and drainage of abscess;
ii. Debridement and suturing open wound;
iii. Venesection;
iv. Excision of simple cyst and tumours.
v. Biopsy and surface malignancy
vi. Catheterisation and nasogastric intubation;
vii. Circumcision
viii. Meatotomy;
ix. Vasectomy;
x. Peritoneal and pleural aspirations;
xi. Diagnostic proctoscopy;
xii. Hydrocoele operation;
xiii. Endotracheal intubation
xiv. Tracheostomy and cricothyroidetomy;
xv. Chest tube insertion.

Human values,and Ethical practice

- .Adopt ethical principles in all aspects of his clinical practice. Professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- .Develop communication skills, in particular the skill to explain various options available in management
- .Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues and specialist in the field when needed.
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion

© **INTEGRATION**

The undergraduate teaching in surgery shall be integrated at various stages with different pre and para and other clinical departments.

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations
Distribution of Teaching hours -

- **Lectures - 160 hours**
- **Tutorials and revision - 140 hours**
- **Bedside clinics - 468 hours five clinical postings totalling 26 weeks including Anaesthesiology**
- **Clinical postings in General Surgery -**
  - 3rd Semester - 6 weeks
  - 5th Semester - 4 weeks
  - 7th Semester - 4 weeks
  - 8th Semester - 6 weeks
  - 9th Semester - 6 weeks

Sequential organisation of contents and their division -

GENERAL SURGERY LECTURES

4TH Term

General Surgery : Part I 16 Lectures

6th Term 3 modules

- Module l
  Vascular Surgery : 8 Lectures
  Tropical Surgery : 4 Lectures
  Gen. Surgery Remaining 16 Lectures
- Module 2
  Head and Neck surgery
  Endocrine surgery 16 Lectures
- Module (3)

  Breast surgery 4
  Plastic & Reconstructive Surgery 6
  Neurosurgery 6 16 Lectures

7th Term: 3 modules

- Module (1)

  Cardio Thoracic surgery 8
  Paediatric surgery 8 16 Lectures

- Module (3)

  Liver)
  Spleen) 16 Lectures
  Pancreas)
  Biliary Tract)
  Portal Hypertension.).

- Module (3)
  Upper Gastro intestinal Tract + Peritoneum 16 Lectures

8th Term **4 modules**

- Module (1)
  Lower G.I. tract — 16 Lectures
  Abdominal wall,
  Incisional Hernia

- Module (2)
  Upper GUT — 16 Lectures
  Organ transplantation

- Module (3)
  Lower GUT — 16 Lectures
  Hernia, Hydrocoele

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160 Hours

9th Term

Revision Lectures/ tutorials/ lecture cum demonstrations 48

208

TUTORIALS

6TH Term	Surgical pathology	32
8th Term	Operative Surgery + Instruments	32
9th Term	Imaging sciences- Interpretation of Investigations	28

300

Course contents- General Surgery - including paediatric surgery

COURSE CONTENTS

I. A. GENERAL PRINCIPLES

1. Wound healing and management, scars: Hypertrophic scar and keloid; First aid management of severely injured.
2. Asepsis, antisepsis, sterilisation.
3. Surgical sutures, knots, drains, bandages and splints.
4. Surgical infections and rational use of antibiotics: Causes of infection, prevention of infection, common organisms causing infection.
5. Boils, cellulitis, abscess, necrotising fascitis.
6. Tetanus and Gas gangrene: Prevention of Tetanus and Gas Gangrene.
7. Chronic specific infections: Tuberculosis, Filariasis, and Leprosy.
8. Antibiotic therapy.
9. Hospital infection.
10. AIDS and Hepatitis B; Occupational hazards and prevention.

I . B . 1. Mechanism and management of missile, blast and gunshot injuries.

2. Surgical aspects of diabetes mellitus.
3. Bites and stings.
4. Organ transplantation - Basic principles.
5. Nutritional support to surgical patients.

II. RESUSCITATION.

1. Fluid electrolyte balance.
2. Shock: Aetiology, pathophysiology and management.
3. Blood transfusion : Indication and hazards.
4. Common postoperative complications.

III. COMMON SKIN AND SUBCUTANEOUS CONDITIONS.

1. Sebaceous cyst, dermoid cyst, lipoma, haemangioma, neurofibroma, premalignant conditions of the skin, basal cell carcinoma, naevi and malignant melanoma.
2. Sinus and fistulae. Pressure sores; prevention and management.

IV. ARTERIAL DISORDERS.

1. Acute arterial obstruction : diagnosis and initial management; types of gangrene ; diagnosis of chronic arterial insufficiency with emphasis on Burger's disease, athreosclerosis and crush injuries.
2. Investigations in cases of arterial obstruction. Amputations;
3. Vascular injuries : basic principles of management.

V. VENOUS DISORDERS.

1. Varicose veins: diagnosis and management; deep venous thrombosis: diagnosis, prevention, principles of therapy; thrombophlebitis.

LYMPHATICS AND LYMPH NODES.

1. Diagnosis and principles of management of lymphangitis, lymphedema, acute and chronic lymphadenitis; cold abscess, lymphomas, surgical manifestations of filariasis.

VII. BURNS.

1. Causes, prevention and first aid management; pathophysiology; assessment of depth and surface area, fluid resuscitation; skin cover; prevention of contractures.

VIII. SCALP, SKULL AND BRAIN.

1. Wounds of scalp and its management: recognition, diagnosis and monitoring of patients with head injury including unconsciousness; Glasgow coma scale recognition of acute / chronic cerebral compression.

IX. ORAL CAVITY, JAWS, SALIVARY GLANDS.

1. Oral cavity: I) Cleft lip and palate; Leukoplakia; retention cyst; ulcers of the tongue.
   II) Features, diagnosis and basic principles of management of carcinoma lip, buccal mucosa and tongue, prevention and staging of oral carcinomas.
2. Salivary glands: I) Acute sialoadenitis, neoplasm: diagnosis and principles of treatment.

IX. B. Epulis, cysts and tumours of jaw: Maxillofacial injuries; salivary fistulae

X. NECK.

1. Branchial cyst; cystic hygroma.
2. Cervical lymphadenitis: Non-specific and specific, tuberculosis of lymphnodes, secondaries of neck.

X. B. Thoracic outlet syndrome: diagnosis.

XI. THYROID GLAND

1. Thyroid: Surgical anatomy, physiology, investigations of thyroid disorders; types, clinical features, diagnosis and principles of management of goitre, thyrotoxicosis and malignancy, thyroglossal cyst and fistula.

XI. B. Thyroiditis, Hypothyroidism.

XII. PARATHYROID AND ADRENAL GLANDS.

1. Clinical features and diagnosis of hyperparathyroidism, adrenal hyperfunction/ hypofunction.

XIII. BREAST.

1. Surgical anatomy; nipple discharge; acute mastitis, breast abscess; mammary dysplasia; gynaecomastia; fibroadenomas.
2. Assessment and investigations of a breast lump.
3. Cancer breast : diagnosis, staging, principles of management.

XIV. THORAX.

1. Recognition and treatment of pneumothorax, haemothorax, pulmonary embolism: Prevention/ recognition and treatment, flail chest; Stove in chest ; Postoperative pulmonary complications.

XIV. B. Principles of management of pyothorax; cancer lung.

XV. HEART AND PERICARDIUM.

1. Cardiac tamponade
2. Scope of cardiac surgery.

XVI. OESOPHAGUS.

1. Dysphagia: Causes, investigations and principles of management.
2. Cancer oesophagus : Principles of management.

XVII. STOMACH AND DUODENUM.

1. Anatomy; Physiology, Congenital hypertrophic pyloric stenosis; aetiopathogenesis, diagnosis and management of peptic ulcer, cancer stomach; upper gastrointestinal haemorrhage with special reference to bleeding varices and duodenal ulcer.

XVIII. LIVER

1. Clinical features , diagnosis and principles of management of : Amoebic liver abscess, hydatid cyst and portal hypertension. Liver trauma.

XVIII. B. Surgical anatomy; primary and secondary neoplasms of liver.

XIX. SPLEEN

- Splenomegaly: causes, investigations and indications for splenectomy: splenic injury.

XX. GALL BLADDER AND BILE DUCTS

1. Anatomy, physiology and investigations of biliary tree; clinical features, diagnosis, complications and principles of management of cholelithiasis and cholecystitis; obstructive jaundice.

XX. B. Carcinoma of gall bladder, choledochal cyst.

XXI. PANCREAS.

1. Acute pancreatitis : Clinical features, diagnosis, complications and management.
2. Chronic pancreatitis, pancreatic tumours.

XXII. PERITONEUM, OMENTUM, MESENTERY AND RETROPERITONEAL SPACE.

1. Peritonitis : Causes, recognition and principles of management; intraperitoneal abscess.

XXII B. Laparoscopy and laparoscopic surgery.

XXIII. SMALL AND LARGE INTESTINES

1. Diagnosis and principles of treatment of : Intestinal amoebiasis, tuberculosis of intestine, carcinoma colon; lower gastrointestinal haemorrhage; Enteric fever, parasitic infestations.

XXIII. B. Ulcerative colitis, premalignant conditions of large bowel.

XXIV. INTESTINAL OBSTRUCTION.

1. Types, aetiology, diagnosis and principles of management; paralytic ileus.

XXV. ACUTE ABDOMEN.

1. Causes, approach, diagnosis and principles of management.

XXVI. APPENDIX

1. Diagnosis and management of acute appendicitis, appendicular lump and abscess.

XXVII. RECTUM.

1. Carcinoma rectum: diagnosis, clinical features and principles of management; indications and management of colostomy.

XXVII. B. Management of carcinoma rectum; prolapse of rectum.

XXVIII. ANAL CANAL .

1. Surgical anatomy. Clinical features and management of: fissure, fistula in ano, perianal and ischiorectal abscess and haemorrhoids; Diagnosis and referral of anorectal anomalies.

XXVIII. B. Anal carcinoma.

XXIX. HERNIAS.

1. Clinical features, diagnosis, complications and principles of management of : Umbilical, Inguinal, epigastric and femoral hernia.
2. Omphalitis.

XXIX . B. Umbilical fistulae, Burst abdomen, ventral hernia.

XXX. GENITO- URINARY SYSTEM.

1. Symptoms and investigations of the urinary tract.

XXXI. KIDNEY AND URETER

1. Investigations of renal mass; diagnosis and principles of management of urolithiasis, hydronephrosis, pyonephrosis, and perinephric abscess, congenital anomalies of kidney & Ureter and renal tumours.
2. Renal tuberculosis.

XXXII. URINARY BLADDER.

1. Causes, diagnosis and principles of management of haematuria, anuria and acute retention of urine.

XXXIII. PROSTATE AND SEMINAL VESICLES.

1. Benign prostatic hyperplasia: diagnosis and management.

XXXIII. B. Carcinoma prostate.

XXXIII. URETHRA AND PENIS

1. Diagnosis and principles of management of Phimosis, paraphimosis and carcinoma penis.
2. Principles of management of urethral injuries.
3. Urethral strictures.

XXXV. TESTES AND SCROTUM

1. Diagnosis and principles of treatment of undescended testis; torsion testis; Hydrocoele, hematocoele, pyocoele, varicocele, epididymo-orchitis and testicular tumours.

XXXVI PAEDIATRIC SURGERY

1. Oesophageal atresia and Intestinal atresia
2. Anorectal malformations
3. Constipation in children: Hirschsprung's disease, Acquired megacolon,
4. Congenital diaphragmatic hernia
5. Extrophy, Epispadias complex and hypospadias
6. Spinal diastrophism and Hydrocephalus
7. Urinary tract infections in children- Vesicoureteral reflux, posterior urethral Valves, Vesico Ureteral Junction obstruction/Duplex ureter, Obstructive uropathy in Children : Hydronephrosis, Hydroureteronephrosis
8. Testicular Maldescent
9. Umbilical Hernia, Exompholos: Major/minor
10. Wilm's Tumours:Neuroblastoma, Ganglionioneuloblestoma, Ganglioneuroma, Endo-dermal Sinus Tumours.
11. Hamartomas in Children: Lymphangioma and Cystic hygroma, Haemangioma.

    Biliary Atresia and Surgical jaundice

Suggested lecture program

Distribution of syllabus in respective semesters

This is suggested programme and can vary at institute
Total 300 hours of teaching has to be done in General Surgery including Tutorials
Details of syllabus is given separately below after distribution as per semester

4 th Semester : 16 Lectures

1) Introduction to Surgery
2) Body response to injury
3) Wound and wound healing
4) Acute infection, Boils, Carbuncle etc
5) Chronic infections
6) Tetanus and Gas gangrene
7) Neoplasm General Consideration
8) Surgical Nutrition
9) Pre operative and Post operative Care
10) Sepsis and Anti Spesis
11) Burns
12) Shock
13) Fluid and Electrolyte Balance
14) Monitoring of surgical Patients
15) Hemostasis and Blood transfusion.

6th Term 3 modules

Module l

General surgery

a. Polytrauma
b. Missiles and their effects & blast injuries
c. Management of war wounds
d. Surgical diseases skin conditions
e. Minimally invasive surgery
f. Principal of Radiotherapy
g. OT Techniques
h. AIDS in surgery
i. Foot including Diabetic Foot
j. Hand and hand infection

Vascular Surgery

* ARTERIAL DISORDERS.

1. Acute arterial obstruction: diagnosis and initial management; types of gangrene ; diagnosis of chronic arterial insufficiency with emphasis on Burger's disease, athreosclerosis and crush injuries.
2. Investigations in cases of arterial obstruction. Amputations;
3. Vascular injuries : basic principles of management.
4. Surgically correctable Hypertension

* VENOUS DISORDERS.

1.Varicose veins: diagnosis and management; deep venous thrombosis : diagnosis, prevention, principles of therapy; thrombophlebitis.

LYMPHATICS AND LYMPH NODES.

Diagnosis and principles of management of lymphangitis, lymphedema, acute and chronic lymphadenitis; cold abscess, lymphomas, surgical manifestations of filariasis.

❑ *Module 2*

HEAD, FACE, NECK ***8 lectures***

1.ORAL CAVITY , JAWS, SALIVARY GLANDS.

1. Oral cavity :
   I) Cleft lip and palate; Leukoplakia ; retention cyst; ulcers of the tongue.
   II) Features, diagnosis and basic principles of management of carcinoma lip, buccal mucosa and tongue, prevention and staging of oral carcinomas.
2. Salivary glands :
   I) Acute sialoadenitis, neoplasm : diagnosis and principles of treatment
   II) Salivary fistulae

2. Epulis, cysts and tumours of jaw: maxilofacial injuries

3 NECK

1. Branchial cyst; cystic hygroma.
2. Cervical lymphadenitis : Non specific and specific,
3. Tuberculosis of lymphnodes, secondaries of neck.

4. Thoracic outlet syndrome : diagnosis.

2. ENDOCRINE SURGERY *8 lectures*

A.THYROID GLAND

I) Thyroid : Surgical anatomy, physiology, investigations of thyroid disorders; types, clinical features, diagnosis and principles of management of goitre, thyrotoxicosis and malignancy, thyroglossal cyst and fistula.

ii) Thyroiditis, Hypothyroidism.

B.PARATHYROID AND ADRENAL GLANDS.

Clinical features and diagnosis of hyperparathyroidism,

Tumours of the adrenal gland

Adrenal hyperfunction/ hypofunction

C.Diseases of thymus

- **Module 3**

1.NEURO-SURGERY *6 lectures*

1. Head injury
2. Intracranial tumours & other ICSOL
3. Congenital anomalies of brain & spinal cord
4. Surgery of peripheral nerves & diseases

2. Surgery of Breast *5 lectures*

1. Surgical anatomy; nipple discharge; acute mastitis, breast abscess; mammary dysplasia; gynaecomastia; fibroadenomas.
2. Assessment and investigations of a breast lump.
3. Cancer breast : diagnosis, staging, principles of management

3. PLASTIC & RECONSTRUCTIVE SURGERY *6 lectures*

1.Management of burns

2.Skin grafting including flaps

3.Injuries of the hand

4.Infections of the hand

7 th Semester

Module (1)

Cardio Thoracic surgery	8	
Paediatric surgery	8	*16 lectures*

- ***CARDIO-THORACIC SURGERY***

1. Injuries of the chest
2. Tumours of the lung & bronchial tree
3. congenital heart disease
4. Acquired heart disease
5. Surgery of ischaemic heart disease
6. Diseases of pericardium
7. Cardiac arrest

Paediatric Surgery

1. Oesophageal atresia and Intestinal atresia
2. Anorectal malformations
3. Constipation in children: Hirschsprung's disease, Acquired megacolon,
4. Congenital diaphragmatic hernia
5. Extrophy, Epispadias complex and hypospadias
6. Spinal diastrophism and Hydrocephalus
7. Urinary tract infections in children- Vesicoureteral reflux, posterior urethral Valves, Vesico Ureteral Junction obstruction/Duplex ureter, Obstructive uropathy in Children : Hydronephrosis, Hydroureteronephrosis
8. Testicular Maldescent
9. Umbilical Hernia, Exompholos : Major/minor
10. Wilm's Tumours: Neuroblastoma, Ganglionioneuloblestoma, Ganglioneuroma, Endo-dermal Sinus Tumours.
11. Hamartomas in Children : Lymphangioma and Cystic hygroma, Haemangioma.
12. Biliary Atresia and Surgical jaundice

Module 2

- ***TROPICAL SURGERY***

1. Surgical consideration in Amoebiasis & Enteric fever
2. Filariasis, Dracontiasis & Ascariasis
3. Hydatid disease
4. Leprosy, Madura foot, Tropical ulcer Actionomycosis

- ***HEPATOBILIARY PANCREATIC SURGERY +SPLEEN***

A.LIVER

- Clinical features, diagnosis and principles of management of: Amoebic liver abscess, Liver trauma
- Surgical anatomy; primary and secondary neoplasms of liver.

SPLEEN

- Splenomegaly: causes, investigations and indications for splenectomy: splenic injury.

GALL BLADDER AND BILE DUCTS

- Anatomy, physiology and investigations of biliary tree; clinical features, diagnosis, complications and principles of management of cholelithiasis and cholecystitis; obstructive jaundice.
- Carcinoma of gall bladder, choledochal cyst.

PANCREAS.

- Acute pancreatitis: Clinical features, diagnosis, complications and management.
- Chronic pancreatitis, pancreatic tumours.

PORTAL HYPERTENSION

- Clinical presentation, Investigation and management

Module 3

Upper gastrointestinal Tract and Peritoneum

- PERITONEUM, OMENTUM, MESENTERY AND RETROPERITONEAL SPACE.
  1. Peritonitis: Causes, recognition and principles of management;
  2. Intraperitoneal abscess
- OESOPHAGUS.
  1. Dysphagia: Causes, investigations and principles of management.
  2. Cancer oesophagus: Principles of management.

- STOMACH AND DUODENUM.
  1. Anatomy; Physiology, Congenital hypertrophic pyloric stenosis; aetiopathogenesis, diagnosis and management of peptic ulcer, cancer stomach; upper gastrointestinal haemorrhage with special reference to bleeding varices and duodenal ulcer.
- SMALL INTESTINES
  1. Diagnosis and principles of treatment of, tuberculosis of intestine.

8th Semester

Module 1

Lower gastrointestinal Tract and abdominal wall

- Acute Abdomen
- INTESTINAL OBSTRUCTION.
  Types, aetiology, diagnosis and principles of management; paralytic ileus
  Aetiology, Clinical Features. Invesigations and management
- Abdominal Wall
  1.Features, diagnosis, complications and principles of management of :
  Umbilical, epigastric hernia., incisional; hernia ventral hernia
- LARGE INTESTINES
  Ulcerative colitis, premalignant conditions of large bowel carcinoma colon; lower gastrointestinal haemorrhage;, parasitic infestations.

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- APPENDIX
  Diagnosis and management of acute appendicitis,
  Appendicular lump and abscess.
- RECTUM.
  Carcinoma rectum: diagnosis, clinical features and principles of management; indications and
  Management of colostomy.
  Management of carcinoma rectum;
  Prolapse of rectum.
- ANAL CANAL
- Surgical anatomy. Clinical features and management of: fissure, Fistula in ano, perianal and ischiorectal abscess and haemorrhoids; Diagnosis and referral of anorectal anomalies.
  Anal carcinoma.
- Umbilicus and Abdominal wall
  Umbilical fistulae, Burst abdomen, ventral hernia.

Module 2

Upper genito-urinary Tract and Organ Transplantation

- GENITO- URINARY SYSTEM.
- Symptoms and investigations of the urinary tract.
- KIDNEY AND URETER
  Anatomy and Embryology of Kidney and ureter
  Congenital anomalies of kidney & Ureter
  Investigations of renal mass;
  Diagnosis and principles of management of urolithiasis,
  Hydronephrosis, pyonephrosis, perinephric abscess,
  Renal tumours.
  Renal tuberculosis.

Module 3

Upper genito-urinary Tract and Hernia

- URINARY BLADDER.
  Causes, diagnosis and principles of management of haematuria,
  Anuria and Acute retention of urine.
- PROSTATE AND SEMINAL VESICLES.
  Benign prostatic hyperplasia: diagnosis and management.
  Carcinoma prostate.
- URETHRA AND PENIS
  Diagnosis and principles of management of Phimosis , paraphimosis and.
  Principles of management of urethral injuries.
  Urethral strictures.
  Carcinoma penis
- TESTES AND SCROTUM.
  Diagnosis and principles of treatment of undescended testis; torsion testis;
  Hydrocoele, hematocoele, pyocoele,
  Varicocele, epididymo-orchitis and
  Testicular tumours
- HERNIAS.
- Clinical features, diagnosis, complications and principles of management of:
  Umbilical, Inguinal, epigastric and femoral hernia.

Introduction of " Brain Death and Organ Donation" topic in subjects of Physiology , Preventive & Social Medicine, Psychiatry, Medicine & Surgery

RECOMMENDED BOOKS FOR GENERAL SURGERY

TEXT BOOKS:

1 . Charles V. Mann, R.C.G. Russel, Norman S., Williams,
Bailey and Love's Short Practice of Surgery, 23rd Edition, 2000 Chapman and Hall.

2. K.Das: Clinical Methods in Surgery, 8th Edition, 1968, Suhas Kumar Dhar, Calcutta.
3. JSP Lumley : Hamilton Bailey's Physical Signs 18th Edn Butterworth/Heinemann.

1997,

4. Somen Das ; A Practical Guide to Operative Surgery, 4th Edition, 1999, s. Das, Calcutta

REFERENCE TEXT BOOKS

1. .James Kyle : Pye's Surgical handicraft, Indian edition, k.m. Varghese Company David C.
2. Sabiston ; Text Book of surgery : The Biological basis of Modern Surgical Practice, 15th Edition, 1971, W.B. Saunders.
3. Seymour I. Schwartz, G. Tom Shines, Frank C. Spencer, Wendy Cowles Husser: Principles of Surgery, Vol. 1 & 2, 7th Edition, 1999, Mc Graw Hill
4. R.F. Rintoul : Farqharson's Text Book of Operative Surgery, 8th Edition, 1995, Churchill Livingstone.
5. Sir Charles Illingworth, Bruce m. Dick: A Text Book of Surgical Pathology,12th Edition, 2979, Churchill Livingstone.
6. R.W.H. McMinn : Last's Anatomy: Regional and Applied; 10th Edition, 1999, Churchill Livingstone

Goals and objectives of Allied Subjects

(B) ORTHOPAEDICS

(A) KNOWLEDGE

The student shall be able to:

1. Explain the principles of recognition of bone injuries and dislocation.
2. Apply suitable methods to detect and manage common infections of bones and joints.
3. Identify congenital, skeletal anomalies and their referral for appropriate correction or rehabilitation.
4. Recognize metabolic bone diseases as seen in this country:
5. Explain etiogenesis, manifestations, and diagnosis of neoplasm affecting bones.

(B) SKILLS:

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

1. Detect sprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, Colles's forearm, phalanges etc.
2. Use techniques of splinting, plaster, immobilization etc.
3. Manage common bone infections, learn indications for sequestration, amputations and corrective measures for bone deformities;
4. Advise aspects of rehabilitation for Polio, Cerebral Palsy and Amputation.

(C) APPLICATION

Be able to perform certain orthopaedic skills, provide sound advice of skeletal and related conditions at primary or secondary health care level.

(D) INTEGRATION

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations
Distribution of Teaching hours -

- Lectures - 50 hours
- Tutorials and revision - 50
- **Clinical postings in Orthopaedics**
  Total clinical Posting of 10 weeks of 180 hours
  5th Semester - 4 weeks
  6th Semester - 4 weeks
  9th Semester - 2 weeks

Course contents and suggested lecture program of Orthopaedics (Total 100 hours)

This is suggested programme and can vary at institute
Total 100 hours of teaching has to be done in Orthopaedics including Tutorials
Details of syllabus is given separately below after distribution as per semester

6th Semester	***Lectures***	***1 to 16***
8 th Semester	Lectures 1	17 to 32
8th Semester	Lectures 2	33 to 48

Topic : General Orthopaedics
Lectures

1. Introduction and scope of Orthopaedics Traumatology and Orthopaedic Diseases. Idea about Scheme of Examination.
2. Definition and Classification of Fracture and Dislocation Signs, symptoms and diagnosis of sprain, contusion fracture and dislocation.
3. First aid measures in Poly-trauma patient, spinal cord Injury patients and knowledge about various splints.
4. & 5 Principles of Management of sprain, Fracture and Dislocation with emphasis on various aspects of closed reduction, immobilization including internal fixation and rehabilitation.

6,7,8 Complications of fracture and its management with specific reference to malunion Delayed union, Non union, Myositis Ossificans, Sudeck's dystrophy, Volkman's ischaemia, Avascular Necrosis, Fat embolism, secondary Osteoarthrosis and injury to Muscles, Tendon, nerve and Blood vessels.

1. Plaster technique, plaster complications and plaster disease.
2. Fracture Healing in cortical and cancellous bones and factors affecting fracture healing.

Topic : Orthopaedic Traumatology

3. Fracture clavicle, scapula, neck humerus and shaft humours.
4. Supracondylar fracture humerus with complications.
5. Fracture Forearm bones, Monteggia and Galeassi fracture dislocations, fracture olecranon head and neck radius.
6. Fracture scaphoid, Metacarpals and phalanges.
7. Colles fracture and Complications.
8. Dislocation (Acute and Recurrent) of shoulder and elbow.
9. Fracture of Vertebrae with complications.
10. Fracture of Pelvis with complications.
11. Fracture Neck femur and trochanteric fracture.
12. Fracture shaft femur and fractures around knee.
13. Meniscus and ligaments injury at knee.
14. Fracture Tibia-fibula, fracture in tarsals, Metatarsals and phalanges.
15. Fracture dislocation around ankle,
16. Dislocation of Hip, knee, ankle, tarsals and small bones in foot.

Topic : <u>Orthopaedic Diseases</u>

25,26 Congenital skeletal anomalies with emphasis on congenital Talipes Equino varus (CTEV). :-

27. Congenital dislocation of hip (CDH), Osteogenesis Imperfecta, spina
28. Bifida and Torticollis.
29. Ostecochondritis – various types.
30. Post Polio Residual Palsy with stress on preventive and rehabilitation aspect.

30. Acute Osteomyelitis.
31. Chromic Osteomyelitis.
32. Pyogenic arthritis of Hip, knee.
33,& 34. Osteo-articular Tuberculosis with special reference to Tuberculous of Hip, knee and elbow.:-
35. Tuberculosis spine and paraplegia.
36. Fungal Infections and leprosy in Orthopaedics.
37. Cerebral palsy, Diagnosis and rehabilitation.
38. Rheumatoid arthritis.
39. Degenerative arthritis.
40. Nerve injuries and principles of management.
41. Amputation and Disarticulation – Indications methods and complications.
42. Metabolic bone disease : Rickets, Osteomalacia and Osteoporosis.
43,& 44 Tumours of bones and its classification. Benign :- Osteochondroma, Giant cell tumour Unicameral Bone cyst, Aneurysmal cyst.
45,46 Malignant- Osteogenic sarcoma, Ewing's tumour, Fibrosarcoma, Chondrosarcoma, Multiple Myeloma, Secondaries from Primary Carcinoma (Metastatic tumours)
47. Back ache,
48. Frozen shoulder, Tennis Elbow, Dequervain's disease, Dupuytren's Contracture Osgood – Schlatter;s disease, planter fascitis.

Practical and Lecture cum Demonstration Classes, in MBBS in Orthopaedics

Once a week class for two hours in $8^{th}/9^{th}$ semester.

Topics of Demonstrations :-

1. Plaster technique and splint applications.
2. Traction application, Orthopaedic appliances demonstration, Demonstration of Physiotherapy equipments.
3. Specimens of sequestrum and Tumours, Madura foot etc.
4. Common instruments and Implants.

5 to 7. Common X-rays of traumatology, bony infection, joint infection and tuberculosis, Malunited Colle's fracture, forearm or Supracondylar Humerus fracture.

8 to 10. Chronic osteomyelitis case, knee effusion case, Non union case, Bony tumour case.

Seminar Topics :-

1. Osteomyelitis.
2. Tuberculosis.
3. Bone tumours
4. First aid and Acute trauma Life saving (ATLS) measures.

Tutorial Topics :-

15. Supracondylar fracture Humerus.
16. Colle's fracture.
17. Fracture neck femur.
18. Spine examination, Pott's spine and paraplegia
19. CTEV.
20. Shoulder, Elbow and wrist examination.
21. Hip examination.
22. Knee, ankle foot examination.
23. Nerve examination and nerve injuries.

Internal assessment:

- Two Term ending examination at the end of Posting of 50 markseach
  Total 100 out of 450 marks under general surgery.

C) ANAESTHESIOLOGY

DEPARTMENTAL OBJECTIVES:

At the end of the training, the students should be able to:

1. Perform cardio-pulmonary resuscitation with the available resources and transfer the patients to a bigger hospital for advanced life support.
2. Set up intravenous infusion.
3. Clear and maintain airway in an unconscious patient.
4. Administer oxygen correctly.
5. Perform simple nerve block.
6. Exhibit awareness of the principles of administration of general and local anaesthesia.

SKILLS:

1. Start I V line and infusion in adults, children and neonates.
2. Do venous cutdown.
3. Insert, manage a CVP line.
4. Conduct CPR (Cardiopulmonary resuscitation) and first aid in newborns, children and adults including endotracheal intubation.
5. Perform nerve blocks like infiltration, digital and field blocks.
6. Do lumbar puncture.
7. Administer O_2 by mask, catheter, and O2 tent and be able to handle O_2 cylinder.

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations
Distribution of Teaching hours -

- **Lectures - 20 hours**
- **Tutorials and revision -**
- **Bedside clinics - 36 hours, one clinical postings 2 weeks in Anaesthesiology**

COURSE CONTENTS:

1. Cardiopulmonary resuscitation (CPR) - basic and advanced, including use of simple ventilators.
2. Anatomy of upper airway, sites of respiratory obstruction and management of airway in an unconscious patient.
3. Various methods of oxygen therapy and its indications.
4. The pharmacology of local anaesthetics, their use and how to perform simple nerve blocks like - Infiltration anaesthesia, digital block, ankle block, pudendal and paracervical blocks.
5. Management of complications of regional anaesthesia. The principles of administration of general anaesthesia.

D) Radiology :Diagnosis & Imaging

Goals :

- Realisation of the basic need of various radio-diagnostic tools.
- Radio-diagnostic Techniques to be adopted indifferent clinical situations in diagnosis of ailments.

Objectives :

- **Knowledge: -**

The student shall be able to

1. Understand basics of X-ray / USG production, its utility and hazards
2. Appreciate and diagnose radiological changes in diseases of Chest, Abdomen, Skeletal system, Gastro-intestinal system, Genito-urinary System & CNS
3. Learn about various Imaging techniques like nuclear medicine, computerised tomography (CT), Ultrasound, magnetic resonance imaging (MRI), conventional & Digital subtraction Angiography (DSA).

Skills: -

At the end of the course the student shall be able to

1. Interpret various radiological findings and their consequences
2. Use basic protective techniques during various Imaging procedures
3. Advice appropriate Diagnostic procedures to arrive at an appropriate diagnosis.

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations
Distribution of Teaching hours -

- Lectures - 20 hours
- Tutorials and revision -
- Bedside clinics - 36 hours, one clinical postings 2 weeks in Radiology

I : BONES & JOINTS :

Congenital dislocation of hip, congenital syphilis, Achonodroplasis, Osteogenesis Imperfecta.

Infection : Osteomyelitis, Tuberculosis of Bone & Spine.

Lesions of Joints : Septic / Tuberculous Arthritis, Rheumatoid, Arthritis, Ankylosing Spondylitis, Osteo-Arthritis, Gout.

Bone Tumours: Ewing's, Osteogenic Sarcoma, Giant Cell Tumour Neurofibroma.

Lymphoreticular system & Haemopoietic Disorders : Thalassaemia, Sickle Cell disease, Lymphomas, Multiple myeloma, plasmacytoma, Haemophilia.

Metabolic & Endocrine Disorders of Bone: Rickets & Osteomalacia, Scurvy, Osteoporosis, Acromegaly, and Hyperparathyroidism.

Skeletal trauma: General Principles.

II: Chest:

Methods of examination, Normal X-ray Chest, Bronchopulmonary Segments.

Interpretation of Abnormal Chest X-ray : Silhouette sign, Air Bronchogram,

Interstitial Shadows, Alveolar Shadows, Honeycomb Lung, Cavitations, Calcification, Hilar Shadow, Mediastinum, Pleura.

Bronchography.

Bronchogenic Carcinoma.

Miliary Shadows, Pulmonary Tuberculosis, Solitary Pulmonary Nodule, Bronchiectasis, Primary complex.

III : CARDIO-VASCULAR SYSTEM

Normal Heart : Methods of examination.

Cardiomegaly, Pericardial Effusion.

Acquired Heart Diseases: Valvular Heart Disease, Ischaemic Heart Disease.

Congenital Heart Disease.

Aortic Aneurysms, Co-arctation of Aorta.

IV : GASTRO-INTESTINAL TRACT & ABDOMEN :

Barium Examination of GI Tract.

Acute Abdomen.

Oesophagus: Carcinoma, Strictures, Varices, Achalasia, and Hiatus Hernia.

Stomach & Duodenum : Ulcer disease, Malignancy.

Intestine: Intestinal Obstruction, Volvulus, Ulcerative Colitis,

Intussusceptions, Malignancy, Hirschsprung's Disease, Koch's Abdomen Diverticular Disease, Polyp's.

V : HEPATO-BILARY SYSTEM, PANCREAS :

Liver : Abscess, Hepatoma, Cirrhosis, Portal Hypertension, and Spenoportography.

Gall-Bladder : Calculus Disease, Malignancy, PTC, ERCP.

Pancreas : Pancreatitis, Malignancy.

VI : URORADIOLOGY:

Method of Examination : Intravenous Urography (IVP)

Calculus Disease, PUJ Obstruction, PU Valves, Renal Artery Stenosis,

Wilm's Tumour, Renal Cell Carcinoma, GU Koch's.

VII : OBSTETRICS & GYNAECOLOGY :

Hysterosalpingography (HSG), Intra-Uterine Foetal Death, Fibroid, Ovarian Tumours, Ultrasongraphy & Transvaginal US.

VII: CENTRAL NERVOUS SYSTEM :

Raised Intracranial Tension, Intracranial Calcification, Head Injury, Cerebrovascular Accident, Rind Enhancing Lesions in Brain, Spinal Neoplasms, Myelograpy.

IX: MISCELLANEOUS:

Radiation Hazards, Radiation Protection.

Imaging Modalities :

USG, CT, MRI : Principles, Applications, Advantages, Limitations, Developments.

Angiography : Seldinger Technique, Conventional Angiogram, DSA, Carotid, Coronary, Renal Angiograms, Aortogram.

Contrast Media : Barium Sulphate, Water Soluble & Oily Contrast.

Interventional Radiology : Developments, Angioplasty, Embolisation.

Mammography: Principles & Applications.

Internal assessment:

- Term ending examination at the end of Posting of 50 marks out of Total 450 marks under general surgery.

Dentistry for MBBS students under Surgery

GOALS

- Comprehensive understanding of Dentistry, Orofacial structures, the Dentition, Maxillary and Mandibular jaws and the Diagnosis, Treatment, Prevention, Restoration and Rehabilitation of the common dental problems

OBJECTIVES

A. KNOWLEDGE

- Various Diseases, Syndromes, Lesions, Disorders manifesting and affecting the Oral cavity, the Jaws and the TM joint.
- Effects of Dental Caries, Gingival and Periodontal diseases and Malocclusion.

B. SKILLS

- Examination of the Oral cavity and the TM Joint
- Local Anaesthesia Administration. Dental block
- Exodontia.
- Emergency management of Maxillofacial Trauma.
- Plaque control and Oral health care regimen.

Learning methods

- **Total teaching hours: 10**
- **Theory lectures: 10** in 7th Semester

- Clinical Postings**; 2weeks** each in 7th semester

Internal assessment:

- Term ending examination at the end of Posting of 50 marks out of Total 450 marks under general surgery.

COURSE

III MBBS, 7Th SEMESTER LECTURES: 10 Hours.

1. Scope of Dentistry
   Introduction of various branches of Dentistry.
   Basic Understanding of Dental Epidemiology
   Effects of deleterious Habits on Dentition and Orofacial structures.

2. Development and Growth of Jaws & Orofacial structures.
   Development & Eruption of teeth, Deciduous & Permanent.
   Occlusion.
   Preventive Care in Paediatric patients.

3. Dental Caries
   Gingival & Periodontal Diseases.
   Developmental Anomalies.
   Cysts & Tumours of Oral cavity.
   Neoplasms of Oral cavity.
   Oral Microbiology.

4. Orofacial Pain & its Management

5. Maxillofacial Trauma and Management of patient.

6. Oral Medicine
   Systemic diseases, the relevance of medications prescribed & their Oral Manifestations.
   Infections of Orofacial structures esp. periodontal diseases & their Manifestations in Systemic conditions.
   Relationship between Oral and systemic health.
   Women's Oral health care in Reproductive phase.

7. Interdisciplinary team approach in the management of a patient in Dentistry involving Paediatrics, Plastic surgery, ENT Surgery, Neurosurgery, Opthalmic surgery, Gen. Surgery, Medicine, Orthopaedics, Dermatology, Endocrinology and OB-GYN.

8. Rehabilitation of lost Oral structures.
   Implantology.
9. Dentofacial Deformities and Surgical corrections.
10. Biomaterials used in Dentistry.
    Emerging technologies in Contemporary Dentistry.
    Molecular Dentistry.
    Integration with anatomy, surgery,
    pathology radiology and Forensic Medicine be done.

CLINICAL POSTING in DENTISTRY - 2 WEEKS

1. L.A. Administration, Techniques for different Blocks.
2. Exodontia
3. Preliminary Management of Maxillofacial Trauma
4. Pathological conditions of Oral cavity.
5. Oral and Maxillofacial Radiography & Imaging
6. Maxillo Facial Prosthodontics

Criteria of passing in various surgical subjects at III MBBS Examination

SN	Subject	Theory Paper / Oral/ Practical / Internal Assessment		Maximum Marks in each of the subject	Minimum marks required to pass in each part of any subject		Minimum marks required to pass in each subject out of
01)	Otorhinolaryngology	a) Theory	Paper - I	40	20	25	50
							100
		b) Oral		10			
		c) Practical		30		15	
		d) Internal Assessment	Theory	10			
			Practical	10		10	
02)	General Surgery	a) Theory	Paper I	60	60	70	150
			Paper II	60			300
		b) Oral		20			
		c) Practical		100		50	
		d) Internal Assessment	Theory	30	30		
			Practical	30			
03)	Obstetrics and Gynaecology	a) Theory	Paper1	40		50	100
		b) Oral		20			
		c) Practical		60	30		200
		d) Internal Assessment	Theory	20	40		
			Practical	20			

04)	Ophthalmology	a) Theory	Paper - I	40	20	25	50 100
		b) Oral		10			
		c) Practical		30		15	
		d) Internal Assessment	Theory	10		10	
			Practical	10			

It is compulsory to obtain 50% marks in theory.
It is mandatory to obtain 50% marks in theory+ viva/oral.

FINAL MBBS EXAMINATION IN SURGERY

Evaluation : Methods – Internal assessment, Theory, Practical and Viva

Internal Assessment (Formative Assessment)

Theory – 30 Practical - 30 Total 60

- Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
- Passing in internal assessment is essential for passing ,as Internal assessment is separate head of passing. in examination.
- It will also be considered for grace marks as per existing rules
- Combined theory and practical of internal assessment will be considered for passing in internal assessment.
- Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared **"Fail** in that Subject"

Internal assessment in Theory -

Examinations during semesters:
This will be carried out by conducting two theory examinations during 6th and 8rth semesters (100 marks each).
Total of 200 marks to be converted into 15 marks.(A/15)

Prelim examination :
This shall be carried out during 9th semester. Two theory papers of 60 marks each as per university examination Pattern
Total of 120 marks to be converted into 15 marks. (B/15)

Total marks of Internal assessmentfor Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

There will be practical examination at the end of each clinical posting of General Surgery. (3rd, 5th, 7th and 8th semester) Each examination will be of 50 marks.
Total of 4 examinations - 200 marks.
These marks and marks from Orthopaedics 100, Radiology 50, Dentistry 50 and Casualty 50 will be added. - Total 450 marks will be converted to 15 marks.(C/15)

Prelim examination:

This will be conducted for 120 marks as per university pattern and marks will be converted to 15 (D/15).

Total marks of Internal assessment for Practical will be addition of C and D.

Record BOOK

Case record will have to be entered in a record book.
A combined record book of General surgery, Orthopaedics, Causality, Anaesthesiology, Dentistry and radiology will have to be maintained
Minimum of five histories have to be recorded in each posting
The certificate of satisfactory completion of all clinical posting will be required from Head Of the department of Surgery. This will be base on multiple similar certificates from all postings in all subjects
In addition it will have details of all marks in posting ending exam on second page and calculation of internal assessment
Record book will not carry any marks but it will be prerequisite for Appearing for examination.

Pattern of theory examination including distribution of marks, Questions and Time

Theory

1. There shall be two theory papers - Paper I and II, carrying 60 marks each.
2. Each paper will have three sections, A, B and C. Each paper will be of 3 hours duration.
3. Section A will be MCQ in each paper. Section B and C will have to be written in separate answer sheets. Both will have Long Answer Question (LAQ) and Short Answer Questions (SAQ)
4. The topic covered in each section shall be as follows : -

A. Paper I

- Section A – MCQ : will cover whole syllabus of Paper I
- Section B- General principles of Surgery, Oncology, head, face, neck, Breast, Endocrine Surgery and Trauma
- Section C - Orthopaedic surgery.

B.Paper II

- Section A – MCQ : will cover whole syllabus of Paper II
- Section B- Gastrointestinal Tract including colon rectum and anal canal
  - Liver, pancreas and biliary tract, Spleen. Paediatric Surgery
- Section C - Urology, Cardio thoracic surgery and Plastic surgery Dental surgery, Radiology and Radiotherapy, Anaesthesiology.

Paper I - 3 hrs - 60 marks

Section . A - MCQ - 30 x ½ marks each – 15 marks

- 30 minutes
- Separate paper
- Single based response
- MCQ will cover whole syllabus of Paper I

Section . B - General Surgery 25 Marks

- 2 LAQS – 8 marks x 2 = 16 marks
- 3/5 SAQS – 3 marks = 9 marks

Topics - General principles of Surgery, Oncology, head, face, neck, Breast, Endocrine Surgery and Trauma..

NB : Shall contain one question on basic Sciences and allied subjects

.

Sec. C –Orthopaedics Surgery : 20 marks

- Topic; All topics in Orthopaedics
- Orthopaedics examiner will set this part of paper and to be evaluated by Orthopaedics examiner.

- 1 LAQS (Long answer questions) – 8 marks
- 4/6 SAQS(Short answer questions) x 3 marks each = 12 marks

Time Sec. B & C – Two and half hours.

Section B and C to be written in separate answer sheets.

MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected. Section B and C paper will then be handed over to candidates.

PAPER II - Time 3 hrs - 60 marks

Section . A - MCQ - 30 x ½ marks – 15 marks

- 30 minutes
- Separate paper
- Single based response
- MCQ will cover whole syllabus of Paper II

Section . B – Marks: 25 marks

Topics :Gastrointestinal Tract including colon rectum and anal canal
Liver, pancreas and Biliary tract, Spleen, Paediatric surgery.

- 2 LAQS – 8 marks x 2 = 16 marks
- One question clinical Problem solving.
- 3/5 SAQS – 3 marks = 9 marks

NB : Shall contain one question on basic Sciences and allied subjects

Section . C – Marks: 20 marks

Topics: Urology, Cardio thoracic surgery and plastic surgery
Dental surgery, Radiology and Radiotherapy, Anaesthesiology.

- 1 LAQS – 8 marks
- 4/6 SAQS x 3 marks each = 12 marks

Time Sec. B & C – Two and half hours.

Section B and C to be written in separate answer sheets.

MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected. Section B and C paper will then be handed over to candidates.

PRACTICAL EXAMINATION - 120 marks

Clinical examination

- Clinical cases
  - Long case I – Gen, Surgery. – 50 marks
  - Short case I - Orthopaedics – 25 marks
  - Short case II – Gen. Surgery -- 25 marks

Time for Long cases- 30 minutes for taking history and clinical examination.
10 minutes for viva
Time for 2 short cases - 20 minutes for taking history and clinical examination.
10 minutes for viva.

Viva examination - Duration and topic distribution (Total 20 marks)

- Tables – Viva will be directed towards **interpretation of investigation**

At two tables, each for ten marks. Time- 10 minutes at each table

- Instruments + Operations, – 10 marks
- Surgical Pathology, Imaging sciences and Orthopaedics – 10 marks

Marks of VIVA will be added to Theory marks
It is compulsory to obtain 50% marks in theory.
It is mandatory to obtain 50% marks in theory+viva/oral.

OPHTHALMOLOGY

These guidelines are based on MCI recommendations.
Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

(i) GOAL

The broad goal of the teaching of students in ophthalmology is to provide such knowledge and skills to the student that shall enable him/her to practice as a clinical and as a primary eye care physician and also to function effectively as a community health leader to assist in the implementation of National Programme for the prevention of blindness and rehabilitation of the visually impaired.

(II) OBJECTIVES

(a) KNOWLEDGE

At the end of the course, student shall have the knowledge of

1.Common problems affecting the eye,

2. Principles of management of major ophthalmic emergencies,

3.main systemic diseases affecting the eye;

4. Effects of local and systemic diseases on patient's vision and the necessary action required to minimize the sequelae of such diseases;

5. Adverse drug reactions with special reference to ophthalmic manifestations;

6, Magnitude of blindness in India and its main causes;

7. National programme for control of blindness and its implementation at various levels.

8. Eye care education for prevention of eye problems

9. Role of primary health center in organization of eye camps;

10.organization of primary health care and the functioning of the ophthalmic assistant;

11. Integration of the national programme for control of blindness with the other national health Programmes.

12. Eye bank organization

SKILLS

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

1. Elicit a history pertinent to general health and ocular status;
2. Assist in diagnostic procedures such as visual acuity testing, examination of eye, Schiotz tonometry, Staining of Corneal pathology, confrontation perimetry, Subjective refraction including correction of presbyopia and aphakia, direct ophthalmoscopy and conjunctival smear examination and Cover test;
3. Diagnose and treat common problems affecting the eye;
4. Interpret ophthalmic signs in relation to common systemic disorders,
5. Assist/observe therapeutic procedures such as subconjunctival injection, corneal conjunctival foreign body removal, carbolic cautery for corneal ulcers, Nasolacrimal duct syringing and tarsorraphy;
6. Provide first aid in major ophthalmic emergencies;
7. Assist to organize community surveys for visual check up;
8. Assist to organize primary eye care service through primary health centers.
9. Use effective means of communication with the public and individual to motivate for surgery in cataract and for eye donation.
10. Establish rapport with his seniors, colleagues and paramedical workers, so as to effectively function as a member of the eye care team.

(C) INTEGRATION

The undergraduate training in Ophthalmology will provide an integrated approach towards other disciplines especially Neuro-sciences, ENT, General Surgery and Medicine.

LEARNING METHODS

- Total teaching hours: 100
- Theory lectures: 70(4th,6th,7th term.)
- Tutorials :30(7th term)
- Clinical Postings Two clinical postings of 4weeks

First in 4th semester and second in 6th semester and 3rd posting of 2 weeks in 7th term Bedside clinics 10 weeks of three hours per day 180 hours

SYLLABUS OF III MBBS IN OPHTHALMOLOGY

INTRODUCTION ANATOMY & PHYSIOLOGY OF THE EYE

COMMON DISEASE OF EYE.

A) Conjunctiva.

Symptomatic conditions: - Hyperemia, Sub conjunctival Haemorrhage.

Diseases: - Classification of Conjunctivitis

:- Mucopurulant Conjunctivitis
:- Membranous Conjunctivitis Spring Catarrh.
:- Degenerations :- Pinguecula and Pterigium

B) Cornea: - Corneal Ulcers: Bacterial, Fungal, Viral, Hypopyon.
:- Interstitial Keratitis.
:- Keratoconus.
:- Pannus
:- Corneal Opacities.
:- Keratoplasty.

C) Sclera : :- Episcleritis.
:- Scleritis.
:- Staphyloma.

D) Uvea :- Classification of Uveitis
:- Gen. Etiology, Investigation and Principles Management of Uveitis.
:- Acute & Chronic Iridocyclitis.
:- Panophthalmitis.
:- End Ophthalmitis.
:- Choriditis.

E) Lens :

I) Cataract – Classification & surgical management of cataract.
:- Including Preoperative Investigation.
:- Anaesthesia.
:- Aphakia.
:- IOL Implant

F) Glaucoma :
:- Aqueous Humor Dynamics.
:- Tonometry.
:- Factors controlling Normal I.O.P.
:- Provocative Tests.
:- Classifications of Glaucoma.
:- Congenital Glaucoma.
:- Angle closure Glaucoma.
:- Open Angle Glaucoma.
:- Secondary Glaucoma

G) Vitreous :
:- Vitreous. Opacities.
:- Vitreous. Haemorrhage.

H) Intraocular Tumours :
:- Retinoblastoma.
:- Malignant Melanoma

I) Retina :
:- Retinopathies : Diabetic, Hypertensive Toxaemia of Pregnancy.
:- Retinal Detachment.
:- Retinitis Pigmentosa, Retinoblastoma

J) Optic nerve :
:- Optic Neuritis.
:- Papilloedema.
:- Optic Atrophy.

K) Optics :

:- Principles : V.A. testing Retinoscopy, Ophthalmoscopy.
:- Ref. Errors.
:- Refractive Keratoplasty.
:- Contact lens, Spectacles

L) Orbit :

:- Proptosis – Aetiology, Clinical Evaluation, Investigations & Principles of Management
:- Endocrinal Exophthalmos.
:- Orbital Haemorrhage.

M) Lids :

:- Inflammations of Glands.
:- Blepharitis.
:- Trichiasis, Entropion.
:- Ectropion.
:- Symblepharon.
:- Ptosis.

N) Lacrimal System :

:- Wet Eye.
:- Dry Eye
:- Naso Lacrimal Duct Obstruction
:- Dacryocystitis

O) Ocular Mobility :

:- Extrinsic Muscles.
:- Movements of Eye Ball.
:- Squint : Gen. Aetiology, Diagnosis and principles of Management.
:- Paralytic and Non Paralytic Squint.
:- Heterophoria.
:- Diplopia.

P) Miscellaneous :

:- Colour Blindness.
:- Lasers in Ophthalmology – Principles.

Q) Ocular Trauma : - Blunt Trauma.

:- Perforating Trauma
:- Chemical Burns
:- Sympathetic Ophthalmitis

2) Principles of Management of Major Opthalmic Emergencies :
   :- Acute Congestive Glaucoma.
   :- C. Ulcer.
   :- Intraocular Trauma.
   :- Chemical Burns.
   :- Sudden Loss of vision
   :- Acute Iridocyclitis.
   :- Secondary Glaucomas
3) Main Systemic Diseases Affecting the Eye :
   :- Tuberculosis.
   :- Syphilis.
   :- Leprosy.
   :- Aids.
   :- Diabetes.
   :- Hypertension
4) Drugs :
   :- Antibiotics
   :- Steroids.
   :- Glaucoma Drugs.
   :- Mydriatics.
   :- Visco elastics.
   :- Fluoresceue.
5) Community Ophthalmology :
   :- Blindness : Definition Causes & Magnitude
   N.P.C.B. – Integration of N.P.C.B. with other health
   :- Preventable Blindness.
   :- Eye care.
   :- Role of PHC's in Eye Camps.
   :- Eye Banking.
6) Nutritional :- Vit. A. Deficiency.

Clinical Ophthalmology cases To Be Covered

MBBS

History taking & Eye examination

Assessment of visual function.

Conjunctiva
   :- Pterigium.
   :- Pinguecula
   :- Conjunctivitis.
   :- Sub Conj. Haemorrhage.

Cornea
   :- Corneal Opacity .
   :- Corneal Ulcer.
   :- Corneal Abscess.
   :- Corneal Transplant

Sclera :- Scleritis, Epi Scleritis.
:- Staphyloma.

Uvea :- Iridocyclitis.

Lens :- Cataract.
:- Aphakia
:- IOLs
:- Complications

Glaucoma – Types, Signs, Symptoms & Management

Squint

Lids :- Entropion
:- Ectropion
:- Ptosis.

OPHTHALMOLOGY - MBBS

TUTORIALS TOPICS (Total 30 Hours)

SURGICAL TECHNIQUES

Cataract :- ECCE
:- ICCE
:- IOL Implantation
:- Phaco-emulsification.

- Pterigium
- Chalazion
- Glaucoma
- Foreign Body Removal
- Enucletion
- Keratoplasty
- Basic of squint, L 10

Instruments

- OPD
- Operative
- Basic Examination and Diagnostic instruments
  Tonometer, Sac Syringing, Slip Lamp.

Optics - **Lenses – Spheres, Cylinders, Prisms,**
Pinhole, Slit, Maddox Rod & Maddox wing,
Red & Green Glasses.
- IOLs
- Ophthalmoscopy
- Retinoscopy
- Contact Lenses
- Colour Vision

Drugs

Miotics	Antibiotics	Antiglaucoma
Mydriatics	Steroids	Anti virals
	NSAIDS	Anti Fungal
	Viscoflastics	Pre-Op. & Post – Op.

Lecture held each term for VII and VIII term : Under graduate Theory Lectures:

Topics	(No.of)
1. Anatomy & Physiology	4
2. Optics	6
3. Conjunctiva	4
4. Cornea	6
5. Sclera	1
6. Uvea	4
7. Cataract	6
8. Glaucoma	6
9. Optic Nerve	4
10. Retina	1
11. Vitreous	4
12. Squint	4
13. Community Ophthalmology	2
14. Lids	4
15. Orbit	2
16. Lacrimal Appartus and Dry Eye	4
17. Miscellaneous & Others	2
Total Lectures	**70**
Tutorials	30
	100

FINAL MBBS EXAMINATION IN OPHTHALMOLOGY

Evaluation

Internal assessment: 20 (Theory 10 +Practical 10)

Plan of Internal assessment in Ophthalmology

- Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
- Passing in internal assessment is essential for passing, as Internal assessment is separate head of passing. in examination.
- It will also be considered for grace marks as per existing rules
- Combined theory and practical of internal assessment will be considered for passing in internal assessment.
- Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared **"Fail** in that Subject"

Internal assessment in Theory -

1. Examinations during semesters : This will be carried out by conducting two theory examinations during 4th and 6th semesters (50 marks each).

Total of 100 marks to be converted into 5 marks.(A/5)

2. Prelim examination : This shall be carried out during 9th semester.
One theory papers of 40 marks as per university examination.
Total of 40 marks to be converted into 5 marks. (B/5)

Total marks of Internal assessment- Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

1. There will be practical examination at the end of each clinical posting of Opthalamology.,4th and 6th semester. Each examination will be of 50 marks. Total of 2 examinations – 100 marks , will be converted to 5 marks.(C/5)

2. Prelim examination:
This will be conducted for 40 marks as per university pattern and marks will be converted to 5 (D/5).
Total marks of Internal of-of Practical will be addition of C and D.

Evaluation **Methods - Theory, Practical and Viva**

Pattern of theory examination including distribution of marks, questions and time

Pattern of theory examination including distribution of marks

1. There shall be one theory papers , carrying 40 marks
2. The paper will have two sections, A and B
3. The paper will be of 2.5 hours duration.
4. Section A will be MCQ in each paper. Section B will have to be written in separate answer sheets.

THEORY : 40 marks Duration Two and half hours (2.5) hours

MCQ section A will be given to candidates at the beginning of the examination.
After 30 minutes Section A will be collected. Section B of paper will then be handed over to candidates.

Section A :30 min. duration
Twenty eight single MCQs- 1/2 mark each : 14 marks

- Separate paper
- Single based response
- MCQ will cover whole syllabus

Section B : 2 hours duration

- Two long questions (LAQ) of 7 marks each : 14 marks
  (will contain some preclinical/paraclinical aspects)
- Three /five (SAQ)short notes -4 marks each : 12 marks

PRACTICAL : 40 marks

Clinical : One long case :30 marks :30 min. for taking case and 10 minutes for assessment

- Oral (viva voce) :10 marks:10 min. duration
  1.Dark Room 5 marks
  2.Instruments 5 marks

Marks of VIVA will be added to Theory marks
It is compulsory to obtain 50% marks in theory.
It is mandatory to obtain 50% marks in theory+viva/oral.

Course of OTORHINOLARYNGOLOGY

These guidelines are based on MCI recommendations.

Teaching has to be done keeping in mind the goals and objectives to be achieved by medical student

1. GOAL

The basic idea of undergraduate students teaching and training in otolaryngology
is that he /she should have acquired adequate knowledge and skills for optimally
Dealing with common disorders, emergencies in E.N.T .and basic principles of
impaired hearing rehabilitation.

2. OBJECTIVES

(a) KNOWLEDGE

At the end of course the student shall be able to :

(1) Describe the basic pathophysiology and common Ear, Nose, Throat diseases and emergencies.

(2) Adopt the rationale use of commonly used drugs,keeping in mind their side effects

(3) Suggest common investigative methods and their interpretation.

(b)SKILLS

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

1. Examine and diagnose common ear ,nose ,throat problems including premalignant and malignant diseases of head and neck.
2. Manage ear ,nose ,throat (E.N.T)problems at the first level of care and be able to refer whenever and wherever necessary.
3. Assist/do independently basic E.N.T. procedures like ear syringing, Ear dressings, nasal packing removal of foreign bodies from nose, ear, throat.
4. Assist in certain procedures like tracheostomy, endoscopies.
5. Conduct CPR (cardiopulmonary resuscitation).
6. Be able to use auroscope, nasal speculum, tongue depressor, tunning fork and head mirror.

INTEGRATION

The undergraduate training in E.N.T. will provide an integrated approach towards other disciplines especially neurosciences, ophthalmology and general surgery.

LEARNING METHODS

1. Total teaching hours : 70
2. Theory lectures : 48(4th,6th,7th term.)
3. Tutorials : 22(7th term)
4. Clinical Postings Two clinical postings of 4weeks
   First in 4th semester and second in 6th semester
   Bedside clinics – 8 weeks of three hours per day 144 hours

Course distribution and Teaching Programme

This is suggested programme and can vary at institute
Total 70 hours of teaching has to be done in ENT including Tutorials
Details of syllabus is given separately below after distribution as per semester

Theory lectures will be taken once a week and their distribution will be as below:

1. 4th term :16(nose and Paranasal sinuses/throat)
   a. NOSE AND P.N.S. : 10
   b. THROAT AND NECK: 6
2. 6th term :16 (Remaining topics of throat, head and neck and / ear)
   a. THROAT AND NECK: 8
   b. EAR : 8
3. 7 th term : 16 lectures
   a. RECENT ADVANCES AND OTHERS : 4
   b. EAR 12
   Total Theory lectures 48

Tutorials 7th Term 22 hours teaching

THEORY LECTURES: 4th, 6th, 7th term (one hour per week)

Topics	No.of lectures
<u>Throat</u>	
• Anatomy/physiology	1
• Diseases of buccal cavity	1
• Diseases of pharynx	2
• Tonsils and adenoids	2
• Pharyngeal tumours and related Topics (trismus, Plummer.Vinson Syndrome etc.)	1
• Anatomy /physiology/examination Methods/symptomatology of larynx	2
• Stridor /tracheostomy	2
• Laryngitis /laryngeal trauma/ Laryngeal paralysis/ foreign body larynx/ Bronchus, etc.	2
• Laryngeal tumours	1
Nose and paranasal sinuses	
• Anatomy /physiology/ exam.	
• Methods /symptomatology	2
• Diseases of ext. nose/cong. Conditions	1
• Trauma to nose/p.n.s/Foreign Body. / Rhinolith	1
• Epistaxis	1
• Diseases of nasal septum	1
• Rhinitis	1
• Nasal polyps/nasal allergy	1
• Sinusitis and its complications	1
• Tumours of nose and Para nasal sinuses	1

EAR

• Anatomy /physiology		2
• Methods/methods of examination	1	
• Cong.diseases/ ext.ear /middle ear		1
• Acute/chronic supp. otitis media Aetiology, clinical features and its Management/complications	6	
• Serous/adhesive otitis media	1	
• Mastoid/middle ear surgery		1
• Otosclerosis/tumours of ear	2	
• Facial paralysis/Meniere's disease		2
• Tinnitus /ototoxicity	2	
• Deafness/hearing aids/rehabilitation Audiometry	2	

FINAL MBBS EXAMINATION IN OTORHINOLARYNGOLOGY

Evaluation

Internal assessment: 20 (Theory 10 +Practical 10)

- Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
- Passing in internal assessment is essential for passing, as Internal assessment is separate head of passing. in examination.
- It will also be considered for grace marks as per existing rules
- Combined theory and practical of internal assessment will be considered for passing in internal assessment.
- Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared **"Fail** in that Subject

Internal assessment in Theory -

1 **Examinations during semesters**: This will be carried out by conducting two theory examinations during 4th and 6th semesters (50 marks each). Total of 100 marks to be converted into 5 marks.(A/5)

2 Prelim examination : This shall be carried out during 7th semester.
One theory papers of 40 marks as per university examination.
Total of 40 marks to be converted into 5 marks. (B/5)

3 **Total marks of Internal assessment**- Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

There will be practical examination at the end of each clinical posting of ENT, 4th and 6th semester) Each examination will be of 50 marks.
Total of 2 examinations – 100 marks , will be converted to 5 marks.(C/5)

Prelim examination:

This will be conducted for 4 0 marks as per university pattern and marks will be converted to 5 (D/5).

Total marks of Internal assessment-of Practical will be addition of C and D.

Methods - Theory, Practical and Viva

Pattern of theory examination including distribution of marks, questions and time

1. There shall be one theory paper , carrying 40 marks
2. The paper will have two sections, A and B
3. The paper will be of 2.5 hours duration.
4. Section A will be MCQ in each paper. Section B will have to be written in separate answer sheets.
5. MCQ section A will be given to candidates at the beginning of the examination. After 30 minutes Section A will be collected. Section B of paper will then be handed over to candidates.

THEORY: 40 marks Duration: Two and half hours (2.5) hours

Section A :30 min. duration

1. Twenty eight MCQs- 1/2 mark each: 14 marks
2. Separate paper Single based response
3. MCQ will cover whole syllabus

Section B : 2 hours duration

1. Two long questions (LAQ) of 7 marks each : 14 marks
   (will contain some preclinical / paraclinical aspects)
2. Three /five (SAQ)short notes - 4 marks each : 12 marks

PRACTICAL : 40 marks

Clinical

1.One long case :20 marks :30 min. For examination and 10minutes for assessment
2.One short case :10 marks :15 min.for examination and 5 minutes for assessment

Oral (viva voce): 10 marks: 10 min. duration
(Instruments, x-rays, specimens, audiograms)

- **Marks of VIVA will be added to Theory marks**
- **It is compulsory to obtain 50% marks in theory.**
- **It is mandatory to obtain 50% marks in theory+viva/oral.**

OBSTETRICS & GYNAECOLOGY

These guidelines are based on MCI recommendations Teaching has to be done keeping in mind the goals and
objectives to be achieved by medical student

(i) GOAL

The broad goal of the teaching of undergraduate students in Obstetrics and Gynaecology is that he/she shall acquire understanding of anatomy, physiology and pathophysiology of the reproductive system & gain the ability to optimally manage common conditions affecting it.

(II) OBJECTIVES;

(A) KNOWLEDGE:

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

- Outline the anatomy, physiology and pathophysiology of the reproductive system and the common conditions affecting it.
- Detect normal pregnancy, labour puerperium and manage the problems he/she is likely to encounter therein,
- List the leading causes of maternal perinatal morbidity and mortality.
- Understand the principles of contraception and various techniques employed, methods of medical termination of pregnancy, sterilization and their complications.
- Identify the use, abuse and side effects of drugs in pregnancy, pre-menopausal and post-menopausal periods;
- Describe the national programme of maternal and child health and family welfare and their implementation at various levels.
- Identify common gynaecological diseases and describe principles of their management.
- State the indications, techniques and complications of surgeries like Caesarian Section, laparotomy, abdominal and vaginal hysterectomy, Fathergill's

operation and vacuum aspiration for Medical Termination of Pregnancy (MTP)

(B) SKILLS

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

1.Examine a pregnant woman; recognize high-risk pregnancies AND make appropriate referrals

2.conduct a normal delivery, recognize complications and provide postnatal care;

3. Resuscitate the newborn and recognize the congenital anomalies

4.advise a couple on the use of various available contraceptive devices and assist in insertion and removal of intra-uterine contraceptive devices.

5. Perform pelvic examination, diagnose and manage common gynaecological problems including early detection of genital malignancies;

6. Make a vaginal cytological smear, perform a post coital test and wet vaginal smear examination for Trichomonas vaginalis, Moniliasis and gram stain for gonorrhoea;

7.interpretation of data of investigations like biochemical, histopathological, radiological ultrasound etc.

(C) <u>INTEGRATION</u>

The student shall be able to integrate clinical skills with other disciplines and bring about coordination of family welfare programme for the national goal of population control.

(D) G<u>ENERAL GUIDELINES FOR TRAINING:</u>

1. attendance of a maternity hospital or the maternity wards of a general hospital including

(i) antenatal care

the management of the puerperium and

a minimum period of 5 months in-patient and out-patient training including family welfare planning

2. of this period of clinical instruction, not less than one month shall be spent as a resident pupil in a maternity ward of a general hospital.
3. during this period, the student shall conduct at least 10 cases of labour under adequate supervision and assist 10 other cases.
4. a certificate showing the number of cases of labour attended by the student in the maternity hospital and/or patient homes respectively, shall be signed by a responsible medical officer on the staff of the hospital and shall state:
    (a) that the student has been present during the course of labour and personally conducted each case, making the necessary abdominal and other examinations under the supervision of the certifying officer who shall describe his official position.
    (b) That satisfactory written histories of the cases conducted including wherever possible antenatal and postnatal observations, were presented by the student and initialed by the supervising officer

LEARNING METHODS

Lectures, Tutorials bedside clinics and lecture cum demonstrations

Distribution of Teaching hours -

- Lectures - 130 hours
- Tutorials and revision - 170 hours
- Bedside clinics - 468 hours

DIDACTIC LECTURES

SEMESTER	HOURS/WEEK	TOTAL
4	1 / WEEK	17
6	3 / WEEK	48
7	3 / WEEK	48
8	1 / WEEK	17
TOTAL		130

B) CLINICAL DEMONSTRATIONS, PRACTICAL DEMONSTRATIONS, SEMINARS ETC.

SEMESTER	HOURS/WEEK	TOTAL
8	4 / WEEK	68
9	6 / WEEK	102
TOTAL		170

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TOTAL TEACHING HOURS 300

Suggested lecture program

Distribution of syllabus in respective semesters

This is suggested programme and can vary at institute

Total 300 hours of teaching has to be done in OB GY including Tutorials

Details of syllabus is given separately below after distribution as per semester

*

4th Semester :OBSTETRICS :

1. Applied anatomy of female genital tract.
2. Development of genital tract
3. Physiology of menstruation
4. Puberty and menopause
5. Physiology of ovulation / conception / implantation.
6. Early development of human embryo.
7. Structure, function and anomalies of placenta.
8. Physiological changes during pregnancy / diagnosis of pregnancy.
9. Antenatal care, nutrition in pregnancy, detection of high-risk pregnancy.
10. Normal labour - Physiology, mechanism, clinical course and management, pain relief in labour.
11. Normal puerperium and breast-feeding.
12. Examination and care of newborn.
13. Contraception - Introduction and basic principles
14. Maternal mortality and morbidity, perinatal mortality and morbidity. National health Programme - safe-motherhood, reproductive and child health, social obstetrics.

6TH Semester: GYNAECOLOGY & FAMILY PLANNING

GYNAECOLOGY

1. Development of genital tract, congenital anomalies and clinical significance, Chromosomal abnormalities and intersex.
2. Physiology of Menstruation, Menstrual abnormalities - Amenorrhoea,Dysmenorrhea, Abnormal Uterine Bleeding, DUB.
3. Puberty and its disorders, Adolescent Gynaecological problems.
4. Menopause & H R T.
5. Infections of genital tract, Leucorrhoea, Pruritus vulvae, Vaginitis, Cervicitis, PID, Genital TB, Sexually transmitted infections including HIV infection.
6. Benign & Malignant tumours of the genital tract. Leiomyoma, carcinoma cervix, carcinoma endometrium,chorio carcinoma, ovarian tumors.Benign & Malignant Lesions of Vulva
7. Radiotherapy & Chemotherapy in Gynaecology.
8. Other gynaecological disorders - Adenomyosis, Endometriosis
9. Genital Prolapse, Genital Tract displacement,
10. Urinary disorders in Gynaecology, Perineal tears, Genital Fistulae, RVF & VVF.

FAMILY PLANNING :

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1. Demography and population Dynamics.

2. Contraception - Temporary methods.
   Permanent methods.

1. MTP Act and procedures of MTP in first & second trimester.

2. Emergency contraception. :

7TH Semester : OBSTETRICS & NEWBORN

1. Complications in early pregnancy.

Hyperemesis gravidarum / abortion / ectopic pregnancy / gestational trophoblastic disease.

2. Obstetrical complications during pregnancy.
   APH - Accidental hemorrhage. Placenta praevia.
3. Poly hydramnios / oligohydramnios, multifetal pregnancy.
4. Medical disorders in pregnancy.
   Anemia, Heart disease. Hypertensive disorder, PIH and Eclampsia, Diabetes, jaundice, pulmonary disease in pregnancy.
5. Infections in pregnancy
   Urinary tract diseases, sexually transmitted infections including HIV, malaria, TORCH etc.
6. Gynaecological and surgical conditions in pregnancy.
   Fibroid with pregnancy, ovarian tumours, acute abdomen, genital prolapse.
7. High risk pregnancy, pre-term labour, post term pregnancy, IUGR, IUFD, pregnancy wastages, Rh incompatibility, post caesarean pregnancy.
8. Induction of labour.
9. Abnormal position & presentation : Occipito posterior, Breech, Transverse, Face & Brow, Compound, Cord Presentation and prolapse.
10. Abnormal labour - abnormal uterine action, CPD.
    Obstructed labour, uterine rupture.
11. Third stage complications - Retained placenta, PPH, Shock, Uterine inversion, Fluid Embolism.
12. Puerperial Sepsis and Other Complications in puerperium.
13. Evaluation of Foetal Health during pregnancy and labour.
14. Drugs used in obstetric practice.
15. Operative procedures in Obstetrics : Caesarean Section, Instrumental Vaginal Delivery. Forceps, Vacuum,
16. Maternal Mortality and morbidity, Perinatal mortality and morbidity. National program - safe motherhood, reproductive and child health , Social Obstetrics.

NEW BORN :
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1. Examination and care of new born & low birth weight babies.

2. Asphyxia and neonatal resuscitation.

3. Diagnosis of early neonatal problems.

4. Birth injuries, jaundice, infection.

5. Anencephaly & Hydrocephalus and other Congenital Anomalies of fetus.

8TH Semester : PREVENTIVE ONCOLOGY

1. Preventive Oncology

2. Principles of gynaecological surgical procedures
3. Pre and post operative care in Gynaecology
4. Ultrasongraphy and Radiology, in Gynaecology
5. Endoscopy in in Gynaecology
6. Drugs and hormones in Gynaecology
7. Surgical procedures in obstetrics
8. Maternal mortality
9. Perinatal mortality
10. Recurrent pregnancy wastages
11. High risk pregnancy
12. Rural obstetrics
13. Drugs in Pregnancy
14. Drugs in obstetric practice

In addition, integrated teaching with other departments like anatomy, physiology, biochemistry, pathology, microbiology, Forensic Medicine and Preventive and Social medicine to be organized for selected topics.

LIST OF TOPICS INTEGRATED TEACHING: 8TH TERM

1. Development of genital tract - any malformations
   of genital tract and their clinical significance - Anatomy
2. Fetal physiology - fetal circulation Physiology
3. fetal malformations - genesis- Embryology
4. CIN Pathology
5. ARF Physiology Medicine
6. Coagulation failure Pathology Medicine
7. Diabetes, heart disease Medicine
8. USG Radiology
9. Infections in pregnancy Microbiology
10. Medico-legal aspects Forensic Medicine
11. Nutrition in pregnancy and lactation PSM
12. Evidence based obstetrics PSM
13. Drugs in pregnancy Pharmacology

SCHEME FOR EXAMINTION FOR FINAL MBBS

EXAMINATION IN OBSTETRICS AND GYNAECOLOGY

Methods – Internal assessment, Theory, Practical and Viva

- **Internal assessment: 40 (Theory 20 +Practical 20)**

  - Marks of Internal Assessment should be sent to University before the commencement of Theory examination.
  - Passing in internal assessment is essential for passing ,as Internal assessment is separate head of passing. in examination.
  - It will also be considered for grace marks as per existing rules
  - Combined theory and practical of internal assessment will be considered for passing in internal assessment.
  - Student will be allowed to appear for both theory and practical exam independent of marks obtained in internal assessment but he if fails in that head even after including the grace marks he will be declared **"Fail** in that Subject"

Internal assessment in Theory -

Examinations during semesters : This will be carried out by conducting two theory examinations during

6th and 8rth semesters (100 marks each). Total of 200 marks to be converted into 10 marks.(A/10)

Prelim examination : This shall be carried out during 9th semester. Two theory papers of 40 marks

each as per university examination. Total of 80 marks to be converted into 10 marks. (B/10)

Total marks of Internal assessment- Theory will be addition of A and B.

Internal assessment in Practical

Examinations at end of Clinical postings:

There will be practical examination at the end of each clinical posting of OBGY. Each examination will be of 50 marks. Total of all exams marks will be converted to 10 marks.(C/10)

Prelim examination:

This will be conducted for 60 marks as per university pattern and marks will be converted to 10 (D/10). Total marks of Internal assessment- Practical will be addition of C and D.

Evaluation **Methods - Theory, Practical and Viva**

Pattern of theory examination including distribution of marks, questions and time

Pattern of theory examination including distribution of marks

1. There shall be two theory papers - Paper I and II, carrying 40 marks each.
2. Each paper will have three sections, A , B and C. Each paper will be of 2.5 hours duration.
3. Section A will be MCQ in each paper. Section B will have SAQ and Section C LAQ answer sheet.
4. MCQ section A will be given to candidates at the beginning of the examination.
5. After 30 minutes Section A will be collected. Section B & C of paper will then be handed over to candidates

PAPER I

Topics - Obstetrics including social obstetrics and newborn care

.**Section A :30 min. duration**

- Twenty eight MCQs- /2 mark each : 14 marks
  - Single based response
- MCQ will cover whole syllabus of Paper I

Section B & C : 2 hours duration

Section B - Three /five (SAQ)short notes -4 marks each 12 marks

- **Section C** - Two long questions (LAQ) of 7 marks each 14 marks

(will contain some preclinical/Para clinical aspects)

PAPER II :

Topics :Gynaecology, Family Welfare and Demography -

Section A :30 min. duration

- Separate paper
- Twenty eight MCQs- 1/2 mark each 14 marks
- Single based response
- MCQ will cover whole syllabus of Paper II

Section B & C : 2 hours duration

Section B - Three /five (SAQ)short notes -4 marks each 12marks

- **Section C** - Two long questions (LAQ) of 7 marks each 14 marks (will contain some preclinical/Para clinical aspects)

Scheme Of Practical & Oral Examination For Obstecrics & Gynaecology

PRACTICAL : Total – 60 Marks

1) LONG CASE : 40 Marks
   - A) History 10 Marks
   - B) Clinical Exam 10 Marks
   - C) Investigations & diagnosis 10 Marks
   - D) Management 10 Marks
2) SHORT CASE : 10 Marks
   - A) Presentation 05 Marks
   - B) Discussion 05 Marks
3) FAMILY PLANNING 10 Marks

Total : 60 Marks

4) ORAL / VIVA 20 Marks

- A) Obstetric Viva 10 Marks
- B) Gynaecology Viva 10 Marks

TOTAL MARKS FOR PRACTICAL & ORAL (60+20) = 80 Marks

Marks of VIVA will be added to Theory marks

It is mandatory to obtain 50% marks in theory+viva/oral.

REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR: - Third (I) MBBS

SN.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	PSM	IV	60	20	VI	60	20	VII	120	40
2.	ophthalmology	VI	40	40	-	-	-	VII	40	40
3.	ENT	VI	40	40	-	-	-	VII	40	40

(B) Calculation Method:-

I) For PSM Theory Marks to be send to the University out of 20 $= \frac{(A)+(C)+(E)}{12} = \frac{60+60+120}{12} = \frac{240}{12} = 20$

II) For PSM Practical Marks to be send to the University out of 20 $= \frac{(B)+(D)+(F)}{4} = \frac{20+20+40}{4} = \frac{80}{4} = 20$

III) For Ophthalm & ENT Theory Marks to be send to the University out of 10 $= \frac{(A)+(C)+(E)}{8} = \frac{40+0+40}{8} = \frac{80}{8} = 10$

IV) For Ophthalm & ENT Practical Marks to be send to the University out of 10 $= \frac{(B)+(D)+(F)}{8} = \frac{40+0+40}{8} = \frac{80}{8} = 10$

REVISED INTERNAL ASSESSMENT EXAMINATION SCHEME w.e.f. JUNE 2007 EXAMINATION

YEAR: - Third (II) MBBS

SN.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Medicine	VI	60	60	VIII	60	60	IX	120	120
2.	Surgery	VI	60	60	VIII	60	60	IX	120	120
3.	Obstetrics/Gynecology	VI	40	40	VIII	40	40	IX	80	80
4.	Pediatrics	VI	20	20	VIII	20	20	IX	40	40

(B) Calculation Method:-

I) For Medicine & Surgery Theory Marks to be send to the University out of 30 $= \frac{(A)+(C)+(E)}{8} = \frac{60+60+120}{8} = \frac{240}{8} = 30$

II) For Medicine & Surgery Practical Marks to be send to the University out of 30 $= \frac{(B)+(D)+(F)}{8} = \frac{60+60+120}{8} = \frac{240}{8} = 30$

III) For Obstetrics/Gynecology Theory Marks to e send to the University out of 20 $= \frac{(A)+(C)+(E)}{8} = \frac{40+40+80}{8} = \frac{160}{8} = 20$

IV) For Obstetrics/Gynecology Practical Marks to be send to the University out of 20 $= \frac{(B)+(D)+(F)}{8} = \frac{40+40+80}{8} = \frac{160}{8} = 20$

V) For Pediatrics Theory Marks to be send to the University out of 10 $= \frac{(A)+(C)+(E)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$

VI) For Pediatrics Practical Marks to be send to the University out of 10 $= \frac{(B)+(D)+(F)}{8} = \frac{20+20+40}{8} = \frac{80}{8} = 10$

Note:- For Surgery and Orthopedics Scheme will be as follows, however these marks should be combined and send to the University out of 30.

SN.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Surgery	VI	48	48	VIII	48	48	IX	96	96
2.	Orthopedics	VI	12	12	VIII	12	12	IX	24	24

SECTION C :

INTERNSHIP PROGRAMME

Internship discipline related and curriculum in family welfare shall be according to norms laid down by Medical Council of India

SECTION D :

CURRICULAI FOR THE FAMILY WELFARE :

It shall be as per M.C.I. and is included in respective subjects.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES,NASHIK

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Dr. Udaysinh S. Raorane
Controller of Examinations

Ref. No. MUHS/XC-40/ 6649/2006

Date: 17/08/2006

To,
The Dean/Principal,
All Medical Colleges
Affiliated to M.U.H.S., Nashik.

Sub. :- Revised Scheme Of Internal Assessment For All MBBS Courses

Ref :- B.O.E. resolution no. 67/2006 dated 31/07/2006

Sir/Madam,

The revised scheme of Internal Assessment for I, II, III(I) & III(II) M.B.B.S. is enclosed herewith. This scheme will be strictly implemented from June-2007 examination onwards for all those students admitted for first term of First, Second, Third (part First) & Third (part Second) M.B.B.S. respectively. It is clarified therefore that this scheme will effectively come into existence for all students / batches whose results were declared for June-2006 examination.

Yours,

Sd/-
Controller of Examinations

Encl : Scheme of Internal Assessment for I, II, III(I) & III(II) M.B.B.S.

INTERNAL ASSESSMENT EXAMINATION SCHEME

YEAR: - First MBBS

Sr. No.	Subject	1st Term End			Preliminary Examination		
		Semester	Theory (A)	Practical (B)	Semester	Theory (C)	Practical (D)
1.	Anatomy	I	60	40	II	100	40
2.	Physiology	I	60	40	II	100	40
3.	Biochemistry	I	60	40	II	100	40

(B) Calculation Method:-

I) Theory Marks to be send to the University out of 20 $= \frac{(A)+(C)}{8} = \frac{60+100}{8} = \frac{160}{8} = 20$

II) Practical Marks to be send to the University out of 20 $= \frac{(B)+(D)}{4} = \frac{40+40}{4} = \frac{80}{4} = 20$

INTERNAL ASSESSMENT EXAMINATION SCHEME

YEAR :- Second MBBS

Sr. No.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Pharmacology	III	50	40	IV	50	40	V	80	40
2.	Pathology	III	50	40	IV	50	40	V	80	40
3.	Microbiology	III	50	40	IV	50	40	V	80	40
4.	FMT	III	20	20	IV	20	20	V	40	40

(B) Calculation Method:-

eory Marks to be send to the University out of 15 Except FMT $= \frac{(A)+(C)+(E)}{12} = \frac{50+50+80}{12} = \frac{180}{12}$

actical Marks to be send to the University out of 15 Except IT $= \frac{(B)+(D)+(F)}{8} = \frac{40+40+40}{8} = \frac{120}{8}$

r FMT Theory Marks to be send to the University out of 10 $= \frac{(A)+(C)+(E)}{8} = \frac{20+20+40}{8} = \frac{80}{8}$

r FMT Practical Marks to be send to the University out of $= \frac{(B)+(D)+(F)}{8} = \frac{20+20+40}{8} = \frac{80}{8}$

INTERNAL ASSESSMENT EXAMINATION SCHEME

YEAR: - Third (I) MBBS

Sr. No.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	PSM	IV	60	20	VI	60	20	VII	120	40
2.	ophthalmology	VI	40	40	-	-	-	VII	40	40
3.	ENT	VI	40	40	-	-	-	VII	40	40

(B) Calculation Method:-

PSM Theory Marks to be send to the University out of 20 $= \frac{(A)+(C)+(E)}{12} = \frac{60+60+120}{12} =$

SM Practical Marks to be send to the University out of 20 $= \frac{(B)+(D)+(F)}{4} = \frac{20+20+40}{4} =$

Ophthalm & ENT Theory Marks to be send to the University out of $= \frac{(A)+(C)+(E)}{8} = \frac{40+0+40}{8} =$

Ophthalm & ENT Practical Marks to be send to the University out of $= \frac{(B)+(D)+(F)}{8} = \frac{40+0+40}{8} =$

INTERNAL ASSESSMENT EXAMINATION SCHEME

YEAR: - Third (II) MBBS

Sr. No.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical

			(A)	(B)		(C)	(D)		(E)	(F)
1.	Medicine	VI	60	60	VIII	60	60	IX	120	120
2.	Surgery	VI	60	60	VIII	60	60	IX	120	120
3.	Obstetrics/Gynecology	VI	40	40	VIII	40	40	IX	80	80
4.	Pediatrics	VI	20	20	VIII	20	20	IX	40	40

(B) Calculation Method:-

dicine & Surgery Theory Marks to be send to the University out of 30 $= \frac{(A)+(C)+(E)}{8} = \frac{60+60+120}{8} =$

dicine & Surgery Practical Marks to be send to the University out of 30 $= \frac{(B)+(D)+(F)}{8} = \frac{60+60+120}{8} =$

stetrics/Gynecology Theory Marks to e send to the University out of 20 $= \frac{(A)+(C)+(E)}{8} = \frac{40+40+80}{8} =$

stetrics/Gynecology Practical Marks to be send to the University out of $= \frac{(B)+(D)+(F)}{8} = \frac{40+40+80}{8} =$

diatrics Theory Marks to be send to the University out of 10 $= \frac{(A)+(C)+(E)}{8} = \frac{20+20+40}{8} =$

diatrics Practical Marks to be send to the University out of 10 $= \frac{(B)+(D)+(F)}{8} = \frac{20+20+40}{8} =$

Note:- For Surgery and Orthopedics Scheme will be as follows, however these marks should be combined and send to the University out of 30.

Sr. No.	Subject	1st Term End			2nd Term End			Preliminary Examination		
		Semester	Theory	Practical	Semester	Theory	Practical	Semester	Theory	Practical
			(A)	(B)		(C)	(D)		(E)	(F)
1.	Surgery	VI	48	48	VIII	48	48	IX	96	96
2.	Orthopedics	VI	12	12	VIII	12	12	IX	24	24