Course Content

Human Anatomy **First M.B.B.S. (From August 2019)**

(Based on Medical Council of India, Competency based Undergraduate curriculum for the Indian Medical Graduate, 2018. Vol. 1; page no.41-90)

Teaching Lectures(hours)-220 Self directed learning (hours)- 40 **hours**

Small group teachings/tutorials/Integrated teaching/Practicals(hours)-415 Total(hours) -675 Early clinical exposure(hours)- 90 to be divided equally in all three subjects .

Competency No.	Topics & Subtopics
1	**Anatomical Terminology**
AN1.1	Anatomical position planes, movement in our body
AN1.2	Composition of bone & bone marrow
2	**General features of bones & Joints**
AN2.1	Parts, blood and nerve supply of long bone
AN2.2	Laws of ossification
AN2.3	Features of sesamoid bone
AN2.4	Cartilage
AN2.5	Types of Joints & examples
AN2.6	Nerve supply of joints & Hilton’s law
3	**General features of Muscle**
AN3.1	Classification of muscles
AN3.2	Parts of skeletal muscle
AN3.3	Shunt and spurt muscles

4	**General features of skin and fascia**
AN4.1	Types of skin& dermatomes in body
AN4.2	Structure & function of skin
AN4.3	Superficial fascia
AN4.4	Deep fascia
AN4.5	Principles of skin incisions
5	**General features of the cardiovascular system**
AN5.1	Blood Lymph & vascular system
AN5.2	Pulmonary and systemic circulation
AN5.3	Arteries & Veins
AN5.4	Functional Classification of Vessels
AN5.5	Portal System
AN5.6	Anastomoses
AN5.7	Meta-arterioles, sphincters & AV anastomoses
AN5.8	Thrombosis, infarction & aneurysm
6	**General Features of lymphatic system**
AN6.1	Components & functions of Lymphatic system
AN6.2	Lymph capillaries & Circulation
AN6.3	Lymphoedema & tumor spread

7	**Introduction to the nervous system**
AN7.1	General plan & components of CNS, ANS, PNS.
AN7.2	Components of nervous tissue & functions
AN7.3	Classifications & parts of neuron
AN7.4	Typical spinal nerve
AN7.5	Principles of innervation of muscles
AN7.6	Loss of innervation of a muscle and applied anatomy
AN7.7	Synapse –types
AN7.8	Ganglia

8	**Features of individual bones (Upper Limb)**
AN8.1	Bones of upper limb
AN8.2	Joints formed by bones of upper limb
AN8.3	Peculiarities of clavicle
AN8.4	Muscle attachments of bones
AN8.5	Articulated hand
AN8.6	Scaphoid fracture
9	**Pectoral region**
AN9.1	Pectoralis major & pectoralis minor
AN9.2	Breast
AN9.3	Development of breast

10	**Axilla, Shoulder and Scapular region**
AN10.1	Boundaries & Contents of axilla
AN10.2	Axillary artery & Vein
AN10.3	Brachial plexus
AN10.4	Axillary lymphnodes
AN10.5	Variation in brachial plexus
AN10.6	Erb's Palsy & klumpke's paralysis
AN10.7	Enlarged axillary lymph nodes
AN10.8	Trapezius and latissimus dorsi
AN10.9	Anastomosis around the scapula & triangle of auscultation
AN10.10	Deltoid and rotator cuff muscles
AN10.11	Serratus anterior
AN10.12	Shoulder joint
AN10.13	Axillary nerve injury during IM injections

11	**Arm & Cubital fossa**
AN11.1	Biceps & triceps brachii
AN11.2	Important nerves and vessels in arm
AN11.3	Venipuncture of cubital veins
AN11.4	Saturday night palsy

AN11.5	Cubital fossa
AN11.6	Elbow joint anastomosis
12	**Forearm & hand**
AN12.1	Muscle groups of ventral forearm
AN12.2	Nerves & vessels of forearm
AN12.3	Flexor retinaculum
AN12.4	Carpal tunnel syndrome
AN12.5	Muscles of hand. movements of thumb
AN12.6	Movements of thumb
AN12.7	Vessels & nerves in hand
AN12.8	Claw hand
AN12.9	Fibrous flexor sheaths, synovial sheaths
AN12.10	Infection of Fascial spaces of palm
AN12.11	Muscle groups of dorsal forearm
AN12.12	Nerves and vessels of back of forearm
AN12.13	Wrist drop
AN12.14	Extensor retinaculum
AN12.15	Extensor expansion formation
13	**General Features, Joints, radiographs & surface marking**
AN13.1	Fascia, compartments, veins & lymphatic of upper limbs
AN13.2	Dermatomes of upper limbs
AN13.3	Joints of upper limb Elbow, Radio-ulnar, wrist & first carpometacarpal joint)

AN13.4	Joints of upper limb Sternoclavicular, Acromioclavicular, Carpometacarpal joints & Metacarpophalangeal joints
AN13.5	Radiographs of UL
AN13.6	Bony landmarks of UL
AN13.7	Surface projection of vessels, testing of muscle
AN13.8	Development of UL
14	**Features of individual bones (Lower Limb)**
AN14.1	Features of given bones
AN14.2	Joints formed by given bone
AN14.3	Importance of ossification of femur & tibia
AN14.4	Articulated foot
15	**Front & Medial side of thigh**
AN15.1	Nerves & vessels of thigh
AN15.2	Major Muscles
AN15.3	Femoral triangle
AN15.4	Psoas abscess & Femoral hernia
AN15.5	Adductor canal
16	**Gluteal region & back of thigh**

AN16.1	Nerves and vessels
AN16.2	Sciatic nerve injury
AN16.3	Trendelenburg sign
AN16.4	Hamstrings muscle
AN16.5	Nerve & vessels of back of thigh
AN16.6	Popliteal fossa
17	**Hip Joint**
AN17.1	Details of hip joint
AN17.2	Fracture neck of femur
AN17.3	Dislocation
18	**Knee joint, Anterolateral compartment of leg & dorsum of foot**
AN18.1	Major muscles
AN18.2	Nerves & vessels
AN18.3	Foot drop
AN18.4	Knee joint
AN18.5	Locking and unlocking
AN18.6	Knee joint injuries with its applied anatomy
AN18.7	Osteoarthritis
19	**Back of leg & sole**
AN19.1	Major muscles
AN19.2	Nerves & Vessels

AN19.3	Peripheral heart
AN19.4	Rupture of calcaneal tendon
AN19.5	Arches of foot
AN19.6	Flat & club foot
AN19.7	Metatarsalgia & plantar fasciitis
20	**General Features, joints, radiographs & surface marking**
AN20.1	Tibiofibular & ankle joint
AN20.2	Subtalar and transverse tarsal joints
AN20.3	Fascia, venous drainage, lymphatic Retinacula & dermatomes of Lower limb
AN20.4	Enlarged inguinal lymph nodes
AN20.5	Varicose veins & deep vein thrombosis
AN20.6	Radiographs of lower limb
AN20.7	Bony landmarks
AN20.8	Vessels of lower limb palpation
AN20.9	Surface projection nerves & veins
AN20.10	Development of lower limb
21	**Thoracic cage**
AN21.1	Sternum,Typical Rib, first Rib & typical thoracic vertebra
AN21.2	A typical Ribs & vertebra
AN21.3	Thoracic inlet, cavity and outlet

AN21.4	Intercostal muscles
AN21.5	Typical intercostal nerve
AN21.6	Intercostal vessels
AN21.7	A typical intercostal nerve subcostal artery, superior Artery
AN21.8	Joints of thorax
AN21.9	Mechanics of respiration
AN21.10	Costochondral & interchondral joints
AN21.11	Mediastinum
22	**Heart & Pericardium**
AN22.1	Pericardium
AN22.2	Each chamber of heart
AN22.3	Coronary arteries
AN22.4	Ischemic heart disease
AN22.5	Coronary sinus
AN22.6	Fibrous skeleton of heart
AN22.7	Conducting system of heart
23	**Mediastinum**
AN23.1	Oesophagus
AN23.2	Thoracic duct
AN23.3	Superior venacava , Azygos, hemiazygos & accessory hemiazygos veins
AN23.4	Arch of aorta & descending aorta

AN23.5	Thoracic sympathetic chain
AN23.6	Splanchnic nerves
AN23.7	Lymphatic duct
24	**Lungs & Trachea**
AN24.1	Pleura, Pleural, recess & applied anatomy
AN24.2	Root of lung & bronchial tree
AN24.3	Broncho pulmonary segment
AN24.4	Phrenic nerve
AN24.5	Blood Supply nerve supply Lymphatic drainage of Lungs
AN24.6	Trachea
25	**Thorax**
AN25.1	Draw & label microanatomy of trachea and lung
AN25.2	Development of pleura, lung & heart
AN25.3	Fetal circulation
AN25.4	Atrial septal defect, Ventricular septal defect, Fallot's tetralogy & Tracheo-oesophageal fistula
AN25.5	Transposition of great vessels, Dextrocardia, Patent ductus arteriosus & Coarctation of aorta
AN25.6	Development of aortic arch arteries, SVC, IVC & coronary Sinus.
AN25.7	Chest Radiograph AP & Lateral view
AN25.8	Barium swallow
AN25.9	Surface projection of pleura heart lungs
26	Skull osteology

AN26.1	Anatomy of skull bones
AN26.2	Skull Norma
AN26.3	Interior of skull
AN26.4	Mandible
AN26.5	Typical and Atypical cervical vertebrae (Atlas & axis)
AN26.6	Bones that ossify in membrane
AN26.7	7th cervical vertebra
27	Scalp
AN27.1	Scalp, Blood supply,nerve supply, Layers & Surgical importance
AN27.2	Emmissary veins
28	Face & parotid region
AN28.1	Facial muscles
AN28.2	Nerve supply of facial muscles
AN28.3	Facial vessels
AN28.4	Facial Nerve
AN28.5	Cervical Lymph node
AN28.6	Superficial muscles of face
AN28.7	Facial Nerve Palsy
AN28.8	Deep facial vein
AN28.9	Parotid gland
AN28.10	Frey’s syndrome Can be covered with 28.3

29	**Posterior triangle of neck**
AN29.1	Sternocleidomastoid
AN29.2	Erb's & Klumpke's palsy
AN29.3	wry neck
AN29.4	Omohyoid, scalenus & levator scapulae
30	**Cranial cavity**
AN30.1	Cranial fossa
AN30.2	Foramina
AN30.3	Dural venous sinuses
AN30.4	Cavernous sinuses
AN30.5	Visual Pathways
31	**Orbit**
AN31.1	Extra ocular muscles
AN31.2	Nerves and vessels in the orbit
AN31.3	Horner's syndrome
AN31.4	Lacrimal apparatus
AN31.5	3rd, 4th & 6th Cranial Nerves
32	**Anterior Triangle**
AN32.1	Anterior triangle
AN32.2	Carotid, muscular, digastric and submental triangles
33	**Temporal and Infratemporal regions**

AN33.1	Temporal & infratemporal fossae
AN33.2	Muscle of mastication
AN33.3	Temporomandibular joint
AN33.4	Pterygoid venous plexus
AN33.5	Dislocation with Temporomandibular joint
34	**Submandibular region**
AN34.1	Submandibular Salivary Gland & Ganglion
AN34.2	Submandibular stones
35	**Deep Structures in the neck**
AN35.1	Deep Cervical Fascia
AN35.2	Thyroid gland
AN35.3	Subclavian Artery
AN35.4	internal jugular & Brachiocephalic vein
AN35.5	Cervical lymph nodes
AN35.6	Cervical Sympathetic chain
AN35.7	IX, X, XI, & XII, Cranial nerve
AN35.8	Thyroid Swellings
AN35.9	Clinical features of compression by Cervical rib
AN35.10	Fascial Spaces of neck
36	**Mouth, pharynx & palate**

AN36.1	1) Soft palate 2) Palatine tonsil
AN36.2	Waldeyer's Lymphatic Ring
AN36.3	Pyriform fossa & Applied
AN36.4	Tonsils & Adenoids with applied anatomy
AN36.5	Clinical significance of Kilian's dehiscence
37	**Cavity of Nose**
AN37.1	Nasal septum, lateral wall of Nose,
AN37.2	Paranasal sinuses
AN37.3	Maxillary sinus –Applied Anatomy
38	Larynx
AN38.1	Intrinsic & Extrinsic muscles of larynx
AN38.2	Anatomical aspects of laryngitis
AN38.3	Recurrent laryngeal nerve Injury

39	**Tongue**
AN39.1	Tongue
AN39.2	XII Cranial hypoglossal Applied Anatomy
40	**Organs of hearing and equilibrium**
AN40.1	External ear

AN40.2	Middle ear
AN40.3	Internal ear
AN40.4	Applied Anatomy otitis externa / media
AN40.5	Myringotomy
41	**Eyeball**
AN41.1	Eyeball
AN41.2	Eyeball applied cataract, glaucoma & central retinal artery occlusion
AN41.3	Intraocular muscles
42	**Back region**
AN42.1	Vertebral canal
AN42.2	Sub occipital triangle
AN42.3	Semi spinalis capitis & Splenius Capitis
43	**Head & neck joints, Histology, Development , Radiography & surface marking**
AN43.1	Movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint
AN43.2	Pituitary , Thyroid, parathyroid & Salivary gland tongue, Epiglottis, Cornea, Retina
AN43.3	Microanatomy of olfactory epithelium, Eyelid, lip. Optic nerve, pineal gland
AN43.4	Development and anomalies of face, palate, tongue, brachial apparatus pituitary gland, Thyroid, Eye
AN43.5	Muscles of facial Expression, extraocular muscles palpation of carotid, superficial temporal, facial arteries, location of internal jugular & Ext. jugular veins. hyoid bone, thyroid cartilage, cricoid cartilage

AN43.6	Surface anatomy thyroid, parotid gland common carotid artery, IJV, SCV, EJV, facial artery.
AN43.7	X-Ray skull AP & Lat. view
AN43.8	Carotid & vertebral Angiogram
AN43.9	Structures in carotid & vertebral angiogram
44	**Anterior abdominal wall**
AN44.1	Planes, Quadrants of abdomen.
AN44.2	Fascia, nerves & Blood supply of ant. Abdominal wall.
AN44.3	Rectus sheath
AN44.4	Inguinal canal
AN44.5	Inguinal Hernia
AN44.6	Muscles of Ant. Abdominal wall
AN44.7	Common Abdominal Incisions
45	**Posterior abdominal wall**
AN45.1	Thoracolumbar fascia
AN45.2	Lumbar plexus
AN45.3	Back muscles
46	**Male external genitalia**
AN46.1	Testis & its descent
AN46.2	Epididymis
AN46.3	Penis
AN46.4	Varicocele
AN46.5	Phimosis & circumcision

47	**Abdominal cavity**
AN47.1	Lesser & Greater sac
AN47.2	Peritoneal folds & pouches
AN47.3	Ascites & peritonitis
AN47.4	Sub phrenic Abscess
AN47.5	Major Viscera
AN47.6	Accessory spleen, Kehr's sign, Vagotomy, Liver biopsy
AN47.7	Calot's triangle
AN47.8	Portal vein, Inferior Vena Cava, Renal vein
AN47.9	Abdominal aorta, coeliac trunk
AN47.10	Portosystemic Anastomosis
AN47.11	Portal Hypertension
AN47.12	Nerve plexus post. Abdominal wall.
AN47.13	Thoraco abdominal diaphragm
AN47.14	Diaphragmatic Hernia
48	**Pelvic wall and viscera**
AN48.1	Muscles of pelvic diaphragm
AN48.2	Male & female pelvic viscera
AN48.3	Internal iliac Artery
AN48.4	Sacral plexus
AN48.5	BPH, Uterine anomalies anal fistula
AN48.6	Automatic bladder

AN48.7	BPH & prostate cancer
AN48.8	P/V & P/R examination
49	**Perineum**
AN49.1	Sup. & deep perineal pouch
AN49.2	Perineal body
AN49.3	Perineal Membrane in male & female
AN49.4	Ischiorectal fossa
AN49.5	Perineal tear, episiotomy perineal abscess & Anal fissure
50	**Vertebral Column**
AN50.1	Curvatures of vertebral Column
AN50.2	Intervertebral joint & sacroiliac joint, Pubic symphysis
AN50.3	Lumbar puncture
AN50.4	Scoliosis, lordosis, PID, Spina bifida, Spondylolisthesis
51	**Sectional Anatomy**
AN51.1	Cross section at T8, T10, & L1
AN51.2	Midsagittal section male & female pelvis
52	**Histology & Embryology**
AN52.1	GIT
AN52.2	Excretory system
AN52.3	Cardiooesophageal junction, Corpus luteum

AN52.4	Development of anterior abdominal wall
AN52.5	Congenital anomalies of Diaphragm
AN52.6	Congenital anomalies of foregut midgut hindgut
AN52.7	Urinary System Development
AN52.8	Reproductive system Development
53	**Osteology**
AN53.1	Bone – Identification, anatomical position, articulations & attachments
AN53.2	Bony pelvis
AN53.3	Bones of abdominopelvic region
AN53.4	Clinical importance of bones of abdominopelvic region
54	**Radio diagnosis**
AN54.1	KUB plain X Ray abdomen
AN54.2	(contrast X ray Barium swallow, Barium meal, Barium enema,) Cholecystography, intravenous pyelography & Hysterosalpingography
AN54.3	ERCP, CT abdomen, MRI Arteriography in radio diagnosis of abdomen
55	**Surface marking**
AN55.1	Surface projections of regions and planes of abdomen , superficial inguinal ring, deep inguinal ring, Mc Burney's point, renal angle & murphy's point
AN55.2	Surface marking of stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, lleocaecal junction, Kidneys & Root of mesentery
56	**Meninges & CSF**

AN56.1	Various layers of meninges with its extent & modifications
AN56.2	Formation and circulation of CSF with its applied anatomy
57	**Spinal Cord**
AN57.1	External features of spinal cord
AN57.2	Extent of spinal cord in child & adult with its clinical implication
AN57.3	Transverse section of spinal cord at mid-cervical & midthoracic level
AN57.4	Ascending & descending tracts at mid thoracic level of spinal cord
AN57.5	Describe anatomical basis of syringomyelia
58	**Medulla Oblongata**
AN58.1	External features of medulla oblongata
AN58.2	Transverse section of medulla oblongata at the level of 1) pyramidal decussation 2) sensory decussation 3) ION
AN58.3	Cranial nerve nuclei in medulla oblongata with their functional group
AN58.4	Anatomical basis & effects of medial & lateral medullary Syndrome
59	**Pons**
AN59.1	External features of pons
AN59.2	Transverse section of pons at the upper and lower level
AN59.3	Cranial nerve nuclei in pons with their functional group
60	**Cerebellum**
AN60.1	External & internal features of cerebellum
AN60.2	Connections of cerebellar cortex and intracerebellar nuclei
AN60.3	Anatomical basis of cerebellar dysfunction

61	**Midbrain**
AN61.1	External & internal features of midbrain
AN61.2	Internal features of midbrain at the level of superior & inferior colliculus
AN61.3	Anatomical basis & effects of benedikt's and weber's syndrome
62	**Cranial nerve nuclei & cerebral hemispheres**
AN62.1	Cranial nerve nuclei with its functional component
AN62.2	Surfaces, sulci, gyri, poles & functional areas of cerebral hemisphere
AN62.3	White matter of cerebrum
AN62.4	Parts & major connections of basal ganglia & limbic lobe
AN62.5	Boundaries, parts, gross relation, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus
AN62.6	Formation, branches & major areas of distribution of circle of willis
63	**Ventricular System**
AN63.1	Parts, boundaries & features of 3^{rd}, 4^{th} & lateral ventricle
AN63.2	Describe anatomical basis of congenital hydrocephalus
64	**Histology & Embryology**
AN64.1	Micro anatomical features of spinal cord, cerebellum & cerebrum
AN64.2	Development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere& cerebellum

AN64.3	Various types of open neural tube defects with its embryological basis
65	**Epithelium histology**
AN65.1	Types of epithelium under the microscope & describe the various types that correlate to its function
AN65.2	Ultrastructure of epithelium
66	**Connective tissue histology**
AN66.1	Various types of connective tissue with functional correlation
AN66.2	Ultrastructure of connective tissue
67	**Muscle histology**
AN67.1	Various types of muscle under the microscope
AN67.2	Classification of various types of muscle and describe the structure-function correlation of the same
AN67.3	Ultrastructure of muscular tissue
	Nervous tissue histology
AN68.1	Multipolar & unipolar neuron, ganglia, peripheral nerve
AN68.2	Structure-function correlation of neuron
AN68.3	Ultrastructure of nervous tissue
69	**Blood Vessels**
AN69.1	Elastic & muscular blood vessels, capillaries under the microscope
AN69.2	Various types and structure-function correlation of blood vessel
AN69.3	Describe the ultrastructure of blood vessels
70	**Glands & Lymphoid tissue**
AN70.1	Various exocrine gland under the microscope & distinguish between serous, mucous and mixed acini

AN70.2	Identify the lymphoid tissue under the microscope & describe microanatomy of lymph, node, spleen, thymus, tonsil and correlate the structure with function
71	**Bone & Cartilage**
AN71.1	Bones under the microscope classify various types & describe the structure – Function correlation of the same
AN71.2	Structure of cartilage under the microscope & describe various types and structure-function correlation of the same
	Integumentary system
AN72.3	Skin and its appendages under the microscope and correlate the structure with function
	Chromosomes
AN73.1	Structure of chromosomes with classification
AN73.2	Technique of karyotyping with its applications
AN73.3	Lyon's hypothesis
	Patterns of inheritance
AN74.1	Various modes of inheritance with examples
AN74.2	Pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance
AN74.3	Multifactorial inheritance with examples
AN74.4	Genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & sickle cell anaemia
75	**Principle of Genetics, Chromosomal Aberrations & Clinical Genetics**
AN75.1	Structural and numerical chromosomal aberrations
AN75.2	Mosaics and chimeras with example
AN75.3	Genetic basis & clinical features of prader willi syndrome, Edward syndrome & patau syndrome
AN75.4	Genetic basis of variation : polymorphism and mutation

AN75.5	Principles of genetic counselling
76	**Introduction to embryology**
AN76.1	Stages of human life
AN76.2	Phylogeny, ontogeny, trimester, viability
77	**Gametogenesis and fertilization**
AN77.1	Uterine changes occurring during the menstrual cycle
AN77.2	Synchrony between the ovarian and menstrual cycles
AN77.3	Spermatogenesis and oogenesis along with diagrams
AN77.4	Stages and consequences of fertilization
AN77.5	Anatomical principles underlying contraception
AN77.6	Teratogenic influences, Fertility & sterility, surrogate motherhood, social significance of “sex-ratio”.
78	**Second week of development**
AN78.1	Cleavage and formation of blastocyst
AN78.2	Development of trophoblast
AN78.3	Process of implantation & common abnormal sites of implantation
AN78.4	Formation of extra –embryonic mesoderm and coelom, bilaminar disc and prochordal plate
AN78.5	Abortion; deciducal reaction, pregnancy test
79	**3rd to 8th week of development**
AN79.1	Formation & fate of the primitive streak
AN79.2	Development of trophoblast , fate of Notochord
AN79.3	Process of neurulation

AN79.4	Describe the development of somites and intra-embryonic coelom
AN79.5	Embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein
80	**Fetal membranes**
AN80.1	Formation , functions & fate of chorion; amnion; yolk sac; allantois & decidua
AN80.2	Formation & structure of umbilical cord
AN80.3	Formation of placenta, its physiological functions, foetomaternal circulation & placental barrier
AN80.4	Embryological basis of twinning in monozygotic & dizygotic twins
AN80.5	Role of placental hormones in uterine growth & parturition
AN80.6	Embryological basis of estimation of fetal age.
AN80.7	Various types of umbilical cord attachments
81	**Prenatal Diagnosis**
AN81.1	Various methods of prenatal diagnosis
AN81.2	Indications, process and disadvantages of amniocentesis
AN81.3	Indications, process and disadvantages of chorion villus biopsy
82	**Ethics in anatomy**
AN82.1	Respect and follow the corrected procedure when handling cadavers and other biologic tissue

Paper wise distribution of topics for Prelim & MUHS Annual Examination

Year: First MBBS Subject: Anatomy

Paper	Section	Topics
I	A	MCQs on all topics of the paper I
	B & C	Superior extremity
		General embryology
		Genetics
		Head , neck , face
		Central nervous system
		One short answer question on AETCOM module 1.1 & 1.5
		Scenario based / application questions can be on any topic of the paper I
		For long answer question and scenario based / application questions , region will not be repeated
II	A	MCQs on all topics of the paper II
	B & C	General Anatomy
		General histology
		Gross Anatomy of Abdomen and Pelvis
		Gross Anatomy of Inferior extremity
		Thorax
		Scenario based / application questions can be on any topic of the paper II
		For long answer question and scenario based / application questions , region will not be repeated

Internal Assessment

Anatomy

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Sr. No	**I-Exam (December)**			**II-Exam (March)**		
	Theory	Practical (Including 05 Marks for Journal & Log Book)	Total Marks	Theory	Practical Including 05 Marks for Journal & Log Book	Total Marks
1	100	50	150	100	50	150

Sr. No	Preliminary Examinations			Sr. No	Remedial internal assessment examination for **Non - eligible** students		
	III-Exam **(July)**				**October**		
	Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks		Theory	Practical Including 10 Marks for Journal & Log Book	Total Marks
1	200	100	300	1	200	100	300

1. There will be 3 internal assessment examinations in the academic year. The structure of Preliminary examinations should be similar to the structure of University examination.
2. There will be only one additional examination for absent students (due to genuine reason) after approval by the Committee Constituted for the same. It should be taken after preliminary examination and before submission of internal assessment marks to the University.
3. First internal assessment examination will be held in December, second internal assessment examination will be held in March and third internal assessment examination will be held in July.
4. Internal assessment marks for theory and practical will be converted to out of 40. Internal assessment marks, after Conversion, should be submitted to university by 7th of August.
5. The student must secure at least 50% marks for total marks (combined in theory and practical / clinical: not less than 40% marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final university examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.
6. **Remedial internal assessment examination for Non - eligible students**: Student who were not eligible due to less than 50% combined or less than 40% in any theory or practical, will re appear as repeater student for Prelim exam which will be conducted before Supplementary Exam. His/her internal assessment will be calculated on the basis of this Examination marks only. Students who will not be eligible in this Examination will appear with regular batch as repeater student.
7. The internal assessment marks of the remedial examination alone shall be considered and converted into out of 40.
8. Conversion **Formula for calculation of marks in internal assessment examinations**

	First IA	Second IA	Third IA (Prelim)	Total	Internal assessment marks: Conversion formula (out of 40)	Eligibility to appear for final University examination (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	100	100	200	400	$\frac{\text{Total marks obtained}}{10}$	16 (minimum)	Total of Theory + Practical Must be 40.
Practical	50	50	100	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	

9. Conversion formula for calculation of marks in Remedial internal assessment examination

	Remedial Exam (Prelim)	Int. Assess. marks conversion formula (out of 40)	Eligibility to appear for Supplementary Exam. (after conversion out of 40) (40% Separately in Theory and Practical, 50% Combined)	
Theory	200	$\frac{\text{Total marks obtained}}{5}$	16 (minimum)	Total of Theory + Practical Must be 40.
Practical	100	$\frac{\text{Total marks obtained}}{2.5}$	16 (minimum)	

While preparing Final Marks of Internal Assessment, the rounding-off marks shall done as illustrated in following table

Internal Assessment Marks	**Final rounded marks**
15.01 to 15.49	15
15.50 to 15.99	16

First Year MBBS Practical Mark's Structure Internal Assessment Examinations I & II (Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards)

Anatomy Practical										
Seat No.	**Soft Part**	**Micro Anatomy (5 Spots)**	**Micro Anatomy slide for Discussion (1 slide)**	**Hard Part (Bones)**	**Embryology Models**	**Clinical Anatomy Including Genetics charts (2 spots)**	**Journal/ Logbook**	**Radiology**	**Living Anatomy**	**Practical Total**
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
Max. Marks	**10**	**05**	**05**	**05**	**05**	**05**	**05**	**05**	**05**	**50**

First Year MBBS Practical Mark's Structure (Prelim)

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Anatomy													
Practical									Oral/Viva				Total
Seat No.	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Journal /logbook	Total	Appendicular Skeleton	X - ray	Surface Living Anatomy	Total	PR/Oral Total
	A	B	C	D	E	F	G	H	I	J	K	L	M
Max. Marks	25	10	05	10	10	10	10	80	10	05	05	20	100

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

First Year MBBS Practical Mark's Structure (MUHS Exam)

Applicable w.e.f August 2019 onwards examination for batches admitted from June 2019 onwards

Anatomy												
Practical								Oral/Viva				Total
Seat No.	Soft Part	Micro Anatomy (10 Spots)	Micro Anatomy slides for Discussion (2 slides)	Axial Skeleton	Embryology Models	Clinical Anatomy Including Genetic charts (2 Spots)	Total	Appendicular Skeleton	Radiology	Surface Living Anatomy	Total	PR/Oral Total
	A	B	C	D	E	F	G	H	I	J	K	L
Max. Marks	30	10	10	10	10	10	80	10	05	05	20	100

(Please Note - The above examination pattern will be applicable to the students admitted from Academic Year 2019-20 and onwards, which is informed to all Medical Colleges vide University letter No MUHS /X-1 /UG /1692 /2020 Date: 28/02/2020)

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year	:	**First MBBS** *(applicable w.e.f. Sept. 2020& onwards examinations)*						2. Subject Code	: ***Appendix - a***
3. Subject (PSP)	:	**Anatomy / Physiology / Biochemistry**							
(TT)	:								
4. Paper :	:	***I***	5. Total Marks	: **100**	6. Total Time	: **3 Hrs.**		7. Remu. (PS)	: **Rs. 300/-**
								8. Remu. (PM)	: **Rs. 350/-**
9. Web Pattern	: [ ]		10. Web Skeleton	: [ ]	11. Web Syllabus	: [ ]		12. Web Old QP	: [ ]

Instructions:

SECTION "A" MCQ

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 mark.***
4) *A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)*
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 (20 Marks)

Q1. Multiple Choice Questions (Total 20 MCQ of One mark each) ***(4 MCQ Should be clinical application based)*** (20x1=20)

a) b) c) d) e) f) g) h) i) j)

k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

1) *Use **blue/black** ball point pen only.*
2) ***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.*
3) ***All** questions are **compulsory**.*
4) *The number to the **right** indicates **full** marks.*
5) *Draw diagrams **wherever** necessary.*
6) *Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.*
7) *Use a common answer book for all sections.*

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)

a) b) c) d) e) f) g) h) i) j) k)

3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)

One SAQ has to be on AETCOM Module ***(For Anatomy 1.1, 1.5, For Physiology 1.2.,1.3&For Biochemistry, 1.4) &***
Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.

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

4. Long Answer Questions (Any Two out of Three) (2x 10= 20)

a) b) c)

Note: All questions should be structured .Wherever necessary; split up of marks should be specified.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK
FORMAT / SKELETON OF QUESTION PAPER

1. Course and Year	:	**First MBBS** *(applicable w.e.f. Sept. 2020& onwards examinations)*						2. Subject Code	: ***Appendix - a***
3. Subject (PSP)	:	**Anatomy / Physiology / Biochemistry**							
(TT)	:								
4. Paper :	:	***II***	5. Total Marks	: **100**	6. Total Time	: **3 Hrs.**		7. Remu. (PS)	: **Rs. 300/-**
								8. Remu. (PM)	: **Rs. 350/-**
9. Web Pattern	: [ ]		10. Web Skeleton	: [ ]	11. Web Syllabus	: [ ]		12. Web Old QP	: [ ]

Instructions:

SECTION "A" MCQ

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 mark.***
4) *A student will not be allotted any marks if he/she overwrites, strikes out or puts white ink on the circle once filled (darkened)*
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 (20 Marks)

1. Multiple Choice Questions (Total 20 MCQ of One mark each) ***(4 MCQ Should be clinical application based)*** (20x1=20)

a) b) c) d) e) f) g) h) i) j)

k) l) m) n) o) p) q) r) s) t)

SECTION "B"

Instructions:

1) *Use **blue/black** ball point pen only.*
2) ***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.*
3) ***All** questions are **compulsory**.*
4) *The number to the **right** indicates **full** marks.*
5) *Draw diagrams **wherever** necessary.*
6) *Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As It is only for the placement sake, the distribution has been done.*
7) *Use a common answer book for all sections.*

SECTION "B" (80 Marks)

2. Brief answer questions (Any Ten out of Eleven) (10x 2= 20)

a) b) c) d) e) f) g) h) i) j) k)

3. Short Answer Questions (Any Eight out of Nine) (8x5= 40)

Minimum 2 SAQs should be Case Based Questions/ Clinically applied Questions.

4. a) b) c) d) e) f) g) h) i) (2x 10= 20)

Long Answer Questions (Any Two out of Three)

b) c)

Note: All questions should be structured .Wherever necessary, split up of marks should be specified.

MAHARASHTRA UNIVERSITY OF HEALTH SCIENCES, NASHIK

MARKLIST FOR PRACTICAL / ORAL / VIVA VOCE

(Summer / Winter – 20…Exam (MBBS UG Courses)

(Applicable for batch admitted in M.B.B.S Course from Academic Year 2019-20 & onwards)

Course : FIRST MBBS **Subject : Anatomy**

CENTRE : **Marks : (Practical = Practical/Clinical + Viva) Min. 50 Max. 100**

Date : / /20 **Batch :**

Practical								Oral/Viva				Total
Seat No.	Soft Part	Histology (Spotting)	2 slide for Discussion	Axial Skeleton	Embryo	Clinical Anatomy	Practical Total	Appendicular Skeleton	X-ray	Surface Living Anatomy	Oral/Viva Total	PR/Oral Total
	A	B	C	D	E	F	G	H	I	J	K	L
Max. Marks	30	10	10	10	10	10	**80**	10	05	05	**20**	**100**

Note : Both Examiners should jointly conduct practical examination for each student.

Verified above entries from Answerbooks and we hereby certify that the marks entered against each Seat Number are found correct.

	NAME OF EXAMINER	COLLEGE	SIGNATURE WITH DATE	
1			Convenor	
2			Internal	
3			External	
4			External	

RECOMMENDED BOOKS

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 Anatomy
18) Text Book of General Anatomy – V. Subhadra Devi
19) Dissection Manual with Regions & Applied Anatomy, Lower Extremity Abdomen Pelvis and Perineum Vol 2 -1 Edition 2018 - Dr. Mercy Navis
20) Dissection Manual with Regions & Applied Anatomy, Head , Neck &Brain. Mercy Navis
21) Clinical Anatomy by-Neeta V Kulkarni.