MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)
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COMPETENCY BASED MEDICAL EDUCATION

(CBME)

(with effect from 2019-2020 Batches)

Curriculum for

First M.B.B.S

Human Anatomy

Amended upto AC-41/2021, Dated 27/08/2021

Amended History

1. Approved as per BOM 57/2019, [Resolution no. 3.1.1.13], Dated 26/04/2019.
2. Amended upto BOM 62/2020, [Resolution No 3.2.1.3.i], Dated 16/09/2020.
3. Amended upto BOM 63/2021, [Resolution No. 4.4.1.6], Dated 17/02/2021.
4. Amended upto AC-41/2021, Resolution No. , [Resolution No. 4.1], [Resolution No. 4.3], [Resolution No. 4.4], [Resolution No. 4.8], [Resolution No. 4.9], [Resolution No. 4.10]; Dated 27/08/2021

Resolution No. 4.4 of AC-41/2021: Resolved to include "MGMIHS Graduate Attributes" in 1st MBBS Anatomy Physiology and Biochemistry syllabi and cover them in the foundation course, Journals & logbooks, with effect from the batch admitted in 2021-22 onwards

Annexure-23 of AC-41-2021

MGM INSTITUTE OF HEALTH SCIENCES, NAVI MUMBAI

GRADUATE ATTRIBUTES

A student graduating from MGM Institute of Health Sciences, Navi Mumbai, should attain the following attributes:

1. Dynamic professionalism
2. Exemplary leadership
3. Effective communication skills
4. Scholarly attitude
5. Element of critical thinking
6. Enthusiasm for research
7. Social commitment
8. Global competencies

Dynamic professionalism:

Abide by professional codes of conduct, demonstrate high personal standards of behaviour, be considerate, trustworthy and honest, act with integrity. Apply effective strategies to maintain their own physical, psychological, social and spiritual well-being. Should be able to apply profession-specific knowledge, clinical skills and professional attitudes in implementation of evidence-based protocols for optimal outcome.

Exemplary leadership:

Focuses on the qualities required to effectively manage a career, as a practitioner or academician , work effectively within a system aiming at quality improvement ,fostering a spirit of team-building.

Effective communication skills:

Communicates effectively and humanely with all stakeholders, their families, colleagues, through a variety of means , gathers and conveys information respectfully , in a culturally acceptable and dignified manner.

Scholarly attitude:

Demonstrates a lifelong commitment to reflective learning, strives to maintain professional competence. Committed to learn, disseminate, apply and translate knowledge

Element of critical thinking:

Will develop a habit of inquiry, use the knowledge gained for dealing with complex situations foster an ambience conducive for effective learning with constructive criticism, exercise critical judgement in evaluating sources of information.

Enthusiasm for research:

Develop intellectual curiosity and embark upon opportunities to develop research capabilities. Imbibe the basic principles of research methodology and engage in ethical research.

Social commitment:

Inculcate values of self-awareness, empathy, mutual respect. Understand our obligation to society and foster an ability to work in a diverse cultural setting. Understand how one's actions can enhance the well-being of others.

Global competencies:

Team- building, communication, self-management, collaborative working, openness and respect for a range of perspectives.

Annexure – C – I

MGM Institute of Health Sciences, Navi Mumbai

MGM Medical College

1st year MBBS. CBME

Human Anatomy Syllabus

(As per MCI CBME Curriculum)

Subject – **Human Anatomy**

Total Subject hours – 675 + **30 hours** of **Early Clinical Exposure + 12 hours of AETCOM**

1. **Lectures** – 220 hours
2. **SGT / Tutorial / Practical (Dissection, Demonstration, Histology, Embryology -** 415 hours
3. **SDL** – 40 hours

Sr. No.	Topic	Hours	
1	Theory		220
2	Practical		415
	• Dissection	245	
	• Demonstration	70	
	• Histology	62	
	• Embryology	23	
	• Radiology + Surface & living anatomy	15	
3	SDL		40
4	ECE		30
5	AETCOM		12
Total			717 (675+30+12)

SR. NO.	TOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
	I - GENERAL ANATOMY		**AN1- AN7**
	CORE/ Y		
1	**Introduction**	Introduction to Anatomy & Terminology	AN1.1,2
2	**Bone & Cartilage**	Definition, Parts of a long bone, blood supply of long bone, various Classifications , types - structure, subtypes and examples,	AN2.1,4
		Epiphysis and its types,	
		Cartilage - definition, types, examples	
3	**Joints**	Classification, Fibrous joints, cartilaginous joints, Synovial joints – definition, Classification, stucture and examples, applied anatomy	AN2.5,6
		Synovial joints - nerve supply, Hilton's law,	
		Close packed and loose packed joints, range of movements,	
4	**Muscle**	Definition, Classification – functional and morphological, Origin, Insertion, Tendon, ligaments, Bursae.	AN3.1,2
5	**Skin & fascia**	Structure and Functions of Skin, Superficial fascia, deep fascia, modifications of deep fascia	AN4.2,3,4
6	**Circulatory System**	Types of circulation and its importance, classification of vessels (anatomical and physiological),	AN5.1,2,3,4,5,6
		Structure of blood vessels,	
		Factors affecting venous return,	
		anastomosis, end arteries,	
		pulmonary and systemic circulation, define portal circulation with examples	
8	**Nervous System**	Classification – Central Nervous System(CNS), Peripheral nervous system (PNS) and autonomic nervous system (ANS),	AN7.1,2,3,4,6
		PNS – Cranial Nerves, Spinal Nerves, Typical Spinal Nerve, Myelination & Dermatomes, concept of muscle paralysis	
		Classification of neurons, Nerve fibres & Glial cells,	

SR. NO.	TOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
	I - GENERAL ANATOMY		**AN1- AN7**
	NON CORE/ N		
1	**Bone**	Enumerate special features of a sesamoid bone, ossification and its classification, Laws of ossification.	AN2.2,3
2	**Muscles**	Spin, swing components of movememts, types of levers, Explain Shunt and spurt muscles, Bursitis Kinesiology, Describe principles of sensory and motor innervation of muscles	AN3.3
3	**Skin & fascia**	Describe different types of skin & dermatomes in body, Langer's lines, Flexure creases, Explain principles of skin incisions, Dermatoglyphics, Skin graft	AN4.1,5
4	**Circulatory System**	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses, Define atherosclerosis, thrombosis, infarction & aneurysm	AN5.7,8
5	**Lymphatic System**	Lymphatic circulation, circulating lymphocytes, lymphoid tissue, functions, lymphoedema, tumours	AN6.1,2,3
6	**Nervous System**	Describe various type of synapse, Describe differences between sympathetic and spinal ganglia	AN7.5,7,8

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
	II UPPER LIMB		**AN8- AN13**
	CORE/ Y		
1	**Bones**	Clavicle, Scapula, Humerus, Radius, Ulna, Articulated hand, Supracondylar fracture, fracture neck humerus, Colles fracture, peculiarities of clavicle and pisiform	AN8.1,2,3,4,5
2	**Pectoral region,**	Mammary gland - location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy	AN9.1,2
		Muscle Attachments, Nerve Supply, actions of pectoralis major, minor	
3	**Axilla, Scapular & shoulder region**	axilla - boundaries, contents, applied anatomy	AN10.1,2,3,4,5,8, 9,10,11
		Brachial plexus,	
		Axillary artery, vein & lymph nodes,	
		Muscle Attachments, Nerve Supply, actions of deltoid, serratus anterior, Winging of scapula, Trapezius, lattissimus dorsi, rotator cuff,	
4	**Arm, Cubital fossa**	Muscle Attachments, Nerve Supply, actions of muscles of arm (esp.- biceps, triceps),	AN11.1,2,3,4,5
		Axillary nerve, Musculocutaneous nerve, brachial artery,	
		fascial compartments of upper limb,	
		cubital fossa - boundaries, contents, applied anatomy, Venepuncture of cubital veins	
5	**Forearm, hand**	Muscle Attachments, Nerve Supply, actions of muscles of forearm - flexors & extensors (esp. brachioradialis, pronator teres), intrinsic muscles of palm (groups, esp. lumbricals, interossei),	AN12.1,2,3,4,5,6, 7,8,9,11,12,13,14, 15 AN13.1
		Nerves - , Radial Nerve, Median nerve, Ulnar nerve,	
		Radial and ulnar arteries, superficial and deep palmar arches, Venous and lymphatic drainage of upper limb,	
		retinacula, fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths, extensor expansion formation,	
		Applied – , Tennis elbow, Wrist drop, claw hand, Dupuytren's contracture, carpal tunnel syndrome, Anatomical snuff box.	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
II UPPER LIMB			**AN8- AN13**
	CORE/ Y		
6	**Joints**	shoulder girdle & shoulder joint, elbow joint, wrist joint, Superior and inferior radioulnar joints, 1st carpometacarpal joint. - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	AN10.12 AN13.3
	NON CORE/ N		
1	**Bones**	scaphoid fracture	AN8.6
2	**Applied**	anatomical basis of clinical features of Injury to axillary nerve, infection of fascial spaces of palm, enlarged axillary lymph nodes	AN10.7,13, AN12.10
3	**Anastomoses**	Arterial anastomosis around the scapula & elbow joint and mention the boundaries of triangle of auscultation	AN10.9, AN11.6
4	**Dermatomes**	Dermatomes of upper limb	AN13.2
5	**Joints**	Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal joint	AN13.4

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
III LOWER LIMB			**AN14- AN20**
	CORE/ Y		
1	**Bones**	Hip bone, Femur, Tibia, Fibula, Patella, articulated foot, (esp. talus and calcaneum) importance of ossification of lower end of femur & upper end of tibia, blood supply of head of femur	AN14.1,2,3
2	**Front & medial side of thigh**	Muscles – Attachments, nerve supply and actions of muscles of front & medial side of thigh (esp. quadriceps femoris, sartorius, adductor longus, magnus)	AN15.1,2,3,5
		Nerves - Femoral nerve, Obturator nerve, Vessels – Femoral artery	
		Boundaries, contents, applied anatomy of - femoral triangle with femoral sheath & adductor canal	
3	**Gluteal region, back of thigh,**	Muscles – Attachments, nerve supply and actions of muscles of Gluteal region (Glutei), back of thigh with anatomical basis of sciatic nerve injury during gluteal intramuscular injections and Trendelenburg sign	AN16.1,2,3,4,5,6
		Nerves – Sciatic nerve, vessels - cruciate and trochanteric anastomosis, popliteal artery	
		Boundaries, contents, applied anatomy of - popliteal fossa	
4	**Anterolateral compartment of leg & dorsum of foot**	Muscles – Attachments, nerve supply and actions of Anterolateral compartment of leg (esp. tibialis anterior)	AN18.1,2,3
		Nerve - common peroneal nerve with anatomical basis of foot drop, vessels - anterior tibial and dorsalis pedis artery	
5	**Back of Leg & Sole**	Muscles – Attachments, nerve supply and actions of muscles of Back of Leg (esp. triceps surae with concept of Peripheral heart, tibialis posterior) & Sole, layers (names of muscles)	AN19.1,2,3
		Nerve - tibial nerve, vessels - posterior tibial, and medial and lateral plantar nerves and vessels	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
III LOWER LIMB			**AN14- AN20**
	CORE/ Y		
6	**General Features**	Fascia lata, Retinacula & Dermatomes of lower limb	AN20.3,5
		Venous drainage of lower limb with applied anatomy (esp. anatomical basis of varicose veins and deep vein thrombosis)	
		Lymphatic drainage,	
7	**Joints**	Hip joint, knee joint, tibiofibular, ankle joint - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy (esp. Trendelenburg sign,)	AN17.1, AN18.4,5, AN19.5, AN 20.1
		arches of foot - formation, functions, maintaining factors and applied anatomy	
	NONCORE/ N		
1	**Bones**	Various bones in the articulated foot with individual muscle attachment	AN14.4
2	**Applied**	Anatomical basis of Psoas abscess & Femoral hernia, complications of fracture neck of femur, dislocation of hip joint and surgical hip replacement, knee joint injuries, Osteoarthritis, rupture of calcaneal tendon, Flat foot & Club foot, Metatarsalgia & Plantar fasciitis, enlarged inguinal lymph nodes	AN15.4, AN17.2,3, AN18.6,7, AN19.4,6,7, AN20.4
3	**Joints**	Subtalar and transverse tarsal joints - type, articular surfaces, ligaments, movements, muscles involved, nerve supply and applied anatomy	AN20.2

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
IV THORAX			**AN21- AN24**
	CORE/ Y		
1	**Thoracic cage**	Bones – Ribs, sternum, Thoracic vertebrae	AN21.1,3,4,5,6,8,9
		Joints of Thorax - type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	
		Thoracic cage – Inlet, cavity, outlet	
		intercostal spaces - types, boundaries, contents with vessels, nerves with its clinical importance,	
		mechanism of respiration - types, movements, muscles, applied anatomy	
2	**Heart & Pericardium**	Pericardium - subdivisions, sinuses, blood supply, nerve supply and applied aspect	AN22.1-7
		heart - features, blood supply, fibrous skeleton, conducting system, applied anatomy	
3	**Mediastinum**	Mediastinum – Divisions, boundaries and contents	AN23.1,2,3,4,5,7
		Oesophagus - features, relations, blood supply, nerve supply,lymphatic drainage and applied anatomy	
		Thoracic duct - extent, relations, tributaries, applied anatomy	
		Superior vena cava, azygos venous system - origin, course, relations, tributaries, termination and applied anatomy	
		Aorta - extent, branches, relations and applied anatomy	
		Thoracic sympathetic chain	
4	**Lungs & Trachea**	Pleura - extent, recesses, blood supply, lymphatic drainage, nerve supply, applied anatomy	AN24.1-5
		Lung - features, relations, Bronchopulmonary segments, blood supply, lymphatic drainage, nerve supply, applied anatomy	
		Phrenic nerve - formation & distribution	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
IV THORAX			**AN21- AN24**
	NON CORE/ N		
1	**Thoracic cage**	Features of 2nd, 11th and 12th ribs, 1st, 11th and 12th thoracic vertebrae	AN21.2
		Origin, course, relations and branches of 1) atypical intercostal nerve 2) superior intercostal artery, subcostal artery	AN21.7
		Costochondral and interchondral joints	AN21.10
2	**Mediastinum**	Splanchnic nerves	AN23.6
3	**Lungs & Trachea**	Extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	AN24.6

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
V HEAD, FACE, NECK			**AN26- AN43**
	CORE/ Y		
1	**Osteology**	skull – parts, bones, Normas-verticalis, occipitalis, Frontalis, lateralis, basalis, interior of skull, Mandible, Cervical vertebrae, fetal skull	AN26.1-5
2	**Scalp**	layers, blood supply, nerve supply and surgical importance	AN27.1,2
3	**Face & parotid region**	Muscles of facial expression with nerve supply	AN28.1-9
		Facial vessels - course, branches with applied aspect	
		Nerve supply of face - sensory, motor - with course and distribution, applied anatomy of VII nerve	
		lymphatic drainage of HFN - cervical lymph nodes with applied anatomy	
		parotid gland - features, relations, nerve supply, duct and surgical importance	
4	**Neck**	Anterior & posterior triangles of neck – Boundaries, subdivisions, contents, applied aspect, Midline structure of neck,	AN29.1,2 AN32.1,2 AN35.1-7
		Muscle Attachments, Nerve Supply, actions of Sternocleidomastoid, digastric, omohyoid, stylohyoid, mylohyoid	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
V HEAD, FACE, NECK			**AN26- AN43**
	CORE/ Y		
4	**Neck**	deep cervical fascia - parts, extent, attachments, modifications, spaces, applied anatomy	AN29.1,2 AN32.1,2 AN35.1-7
		thyroid gland - location, parts, borders, surfaces, relations, blood supply and applied anatomy	
		Vessels - origin, course, relations, branches/ tributaries and termination of Carotid arteries, subclavian artery, internal, external jugular, brachiocephalic veins	
		Nerves - course and distribution of IX, X, XI & XII nerves, cervical sympathetic chain	
5	**Cranial cavity, Orbit**	dural folds - attachments and contents, dural venous sinuses - classification, location, communications, tributaries and applied of sagittal, cavernous sinuses	AN30.1-4 AN31.1,2,4,5
		Extraocular - Muscles Attachments, Nerve Supply, actions, applied anatomy	
		Vessels - origin, branches/ tributaries and termination of ophthalmic vessels	
		Nerves - course and distribution of III,IV,VI nerves & ciliary ganglion - roots, branches	
5	**Cranial cavity, Orbit**	Pituitary gland - location, parts, relations, blood supply and applied anatomy	AN30.1-4 AN31.1,2,4,5
		Lacrimal apparatus	
6	**Temporal, Infra-temporal & sub-mandibular regions**	Temporal and infratemporal fossae - extent, boundaries and contents	AN33.1-4 AN34.1
		Muscles of mastication - Attachments, Nerve Supply, actions, applied anatomy	
		Temporo-mandibular joint - type, articular surfaces, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	
		Nerves - course and distribution, applied anatomy of V3 nerve with otic, submandibular & Pteriogopalatine ganglia - roots, branches, applied anatomy	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
V HEAD, FACE, NECK			**AN26- AN43**
	CORE/ Y		
6	**Temporal, Infra-temporal & sub-mandibular regions**	Vessels - origin, branches/ tributaries and termination and applied anatomy of maxillary artery, pterygoid venous plexus	AN33.1-4 AN34.1
		morphology, relations, nerve supply & applied anatomy of submandibular salivary gland	
7	**Mouth, Pharynx & Palate**	Parts if any, morphology, relations, blood supply and applied anatomy of - pharynx, palatine tonsil, palate	AN36.1,2 AN39.1
		Tongue - morphology, muscles, nerve & blood supply, lymphatic drainage, applied anatomy	
8	**Nose & Larynx**	nasal septum, lateral wall of nose - features, blood supply, nerve supply and applied anatomy	AN37.1,2 AN38.1
		paranasal sinuses - number, features, relations, blood supply, nerve supply and applied anatomy	
		Larynx - external & internal features, muscles, nerve supply, blood supply, lymphatic drainage, applied anatomy	
9	**Ear & Eye**	External ear - parts, blood supply and nerve supply	AN40.1,2 AN41.1
		Middle ear and auditory tube - boundaries, contents, relations and functional anatomy	
		Parts and layers of eyeball	
10	**Back**	Boundaries and contents of Suboccipital triangle	AN42.2
11	**Joints**	Craniovertebral joints - type, articular surfaces, ligaments, movements, muscles involved and applied anatomy	AN43.1

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
V HEAD, FACE, NECK			AN26- AN43
	NON CORE/ N		
1	**Bones**	concept of membrane bones, 7th cervical vertebra	AN26.6,7
2	**Applied aspects**	Anatomical basis of - Frey's syndrome, wry neck, Horner's syndrome, TMJ dislocation, submandibular stones, cervical rib with compression signs, effect of pituitary tumours on visual pathway, tonsillitis, tonsillectomy, adenoids, peri-tonsillar abscess, significance of Killian's dehiscence, sinusitis & maxillary sinus tumours, laryngitis, recurrent laryngeal nerve injury, hypoglossal nerve palsy, otitis externa and otitis media, myringotomy, cataract, glaucoma & central retinal artery occlusion, Thyroid swellings & their significance,	AN28.10 AN29.3 AN30.5 AN31.3 AN33.5 AN34.2 AN35.8,9 AN36.4,5 AN37.3 AN38.2,3 AN39.2 AN40.4,5 AN41.2
3	**Muscles**	omohyoid, scalenus anterior & medius, levator scapulae, intraocular muscles, semispinalis capitis and splenius capitis - attachments, nerve supply and actions	AN29.4 AN41.3 AN42.3
4	**Spaces**	Fascial spaces of neck, boundaries and clinical significance of pyriform fossa	AN35.10 AN36.3
5	**Ear**	features of internal ear	AN40.3

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
VI ABDOMEN AND PELVIS			AN44 - AN53
	CORE/ Y		
1	**Bones**	lumbar vertebrae, sacrum - features, articulations & attachments	AN53.1,2,3
		Pelvis: Types of pelvis, inlet, cavity, outlet of pelvis and pelvimetry and sex differences	
2	**Anterior & Posterior abdominal wall**	Anterior abdominal wall – planes,quadrants, regions, layers, Muscles, nerve & blood supply, applied aspect	AN44.1-6 AN45.1,2
		Rectus sheath and inguinal canal - site, boundaries, contents, applied aspect	
		Posterior abdominal wall: muscles, fascia, nerves - lumbar plexus	
3	**Male external genitalia**	Testis - coverings, structure, blood & nerve supply, lymphatic drainage & applied anatomy, Epididymis, Spermatic cord, scrotum, Penis - parts, components, blood supply and lymphatic drainage	AN46.1,2,3
4	**Abdominal cavity**	Peritoneum – Greater sac, lesser sac, Epiploic foramen, peritoneal folds, pouches, recesses and applied anatomy	AN47.1,2,5,8,9,10, 11,13
		Viscera - Position, features, relations, blood & nerve supply, lymphatic drainage and applied aspects - Stomach, Duodenum, Small and large intestine, Appendix, Liver, Pancreas, spleen, kidney, suprarenal glands, ureter	
		extrahepatic biliary apparatus - Position, parts, features, relations, blood & nerve supply, lymphatic drainage and applied aspects	
		Vessels - formation, course, relations and Branches/ tributaries and applied aspects of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric, Common iliac artery & Portal vein, Inferior vena cava & Renal vein,	
		thoracoabdominal diaphragm - attachments, openings, nerve supply, actions and applied anatomy	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
VI ABDOMEN AND PELVIS			**AN44 - AN53**
	CORE/ Y		
5	**Pelvic wall and viscera**	Pelvic diaphragm - layers, attachments, openings, nerve supply, actions and applied anatomy	AN48.1-4
		Viscera - Position, features, relations, blood & nerve supply, lymphatic drainage and applied aspects - urinary bladder, Rectum and anal canal, vas deference, prostate, urethra, ovary, Uterus, fallopian tubes, vagina	
		Vessels - formation, course, relations and Branches and applied aspects of internal iliac arteries	
		Nerves - Lumbosacral plexus	
6	**Perineum**	Perineal pouches, ischioanal fossa - site, boundaries, contents, applied aspect	AN49.1-4
		Urogenital diaphragm - layers, attachments, openings, actions and applied anatomy with Perineal body	
7	**Vertebral column**	curvatures,Intervertebral joints - type, articular ends, ligaments and movements, applied aspect	AN50.1,2 AN42.1
		Contents of the vertebral canal,	
8	**Sectional Anatomy**	Cross-section at the level of T8, T10 and L1	AN51.1,2
		Midsagittal section of male and female pelvis	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	COMPETENCY NUMBER	
VI ABDOMEN AND PELVIS			**AN44 - AN53**
	NON CORE/ N		
1	**Bones**	anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	AN50.4 AN53.4
		Clinical importance of sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx	
2	**Abdominal wall**	Common Abdominal incisions	AN44.7,8 AN47.12
		nerve plexuses of posterior abdominal wall	
3	**Back**	Major subgroups of back muscles, nerve supply and action	
4	**Applied aspects - Abdomen**	Anatomical basis - Psoas abscess, Varicocoele, Phimosis & Circumcision, Ascites & Peritonitis, Subphrenic abscess, Splenic notch, Accessory spleens, Kehr's sign, Different types of vagotomy, Liver biopsy (site of needle puncture), Referred pain in cholecystitis, Obstructive jaundice, Calot's triangle, Referred pain around umbilicus, Radiating pain of kidney to groin & Lymphatic spread in carcinoma stomach,	AN44.9 AN44.10 AN47.3,4,6,7
5	**Applied aspects - Pelvis**	Anatomical basis of - suprapubic cystostomy, Automatic bladder, Urinary obstruction in benign prostatic hypertrophy, benign prostatic hypertrophy & prostatic cancer, Retroverted uterus, Prolapse uterus, Internal and external haemorrhoids, Anal fistula, Vasectomy, Tubal pregnancy & Tubal ligation	AN48.5,6,7
6	**Applied aspects - Perineum**	Anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure and structures palpable during vaginal & rectal examination	AN48.8 AN49.5
7	**Diaphragm**	abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	AN47.14

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	**DESCRIPTION**	
VII NEURO ANATOMY			**AN56 - AN63**
	CORE/ Y		
1	**Meninges & CSF**	Meninges - layers, extent, Spaces, modifications and applied anatomy	AN56.1,2
		CSF - circulation & applied anatomy	
2	**Spinal cord**	Features, Cross section - mid-cervical & mid- thoracic level, tracts, Blood supply & clinical anatomy,	AN57.1-4
3	**Brain stem**	Medulla oblongata, Pons, Midbrain - Features, Blood Supply, cranial nerve nuclei & syndromes	AN58.1-3 AN59.1-3 AN61.1,2 AN62.1
		Sections of Medulla oblongata, Pons, Midbrain - sensory & pyramidal decussation,olivary levels, upper & lower levels of pons, Superior & inferior collicular levels	
		Cranial nerve nuclei with its functional components	
4	**Cerebellum**	Features, Classification, connections - Superior, middle and inferior cerebellar peduncles, deep cerebellar nuclei, , functions, Blood supply and clinical anatomy	AN60.1,2
5	**Cerebrum**	Features, sulci and gyri, functional areas & applied anatomy,	AN62.2-6
		White matter – Classification, & corpus callosum, internal capsule –parts, blood supply & applied anatomy,	
		Blood Supply of Brain, Blood brain barrier, Circle of Willis, applied aspects	
		Diencephalon - Parts, relations, Gross connections, major nuclei - Thalamus, hypothalamus, epi, meta & subthalamus, applied aspects	
		Basal ganglia - parts, connections, applied aspects	
		Limbic system - parts, connections, applied aspects	
6	**Ventricular System**	Overview ventricular system and its communication, CSF circulation,	AN63.1
		Lateral & IIIrd, IVth ventricle - parts, boundaries, features & applied anatomy	
7	**ANS**	Autonomic nervous system - Parts, connections, functions, applied aspect	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
VII NEURO ANATOMY			**AN56 - AN63**
	NON CORE/ N		
1	**Anatomical aspect**	Anatomical basis of - syringomyelia, Effects of medial & lateral medullary syndrome, cerebellar dysfunction, Effects of Benedikt's and Weber's syndrome, congenital hydrocephalus	AN57.5 AN58.4 AN60.3 AN61.3 AN63.2
SR. NO.	**SUBTOPIC**		**COMPETENCY NUMBER**
	NAME	**DESCRIPTION**	
VIII HISTOLOGY			
VIII A GENERAL HISTOLOGY			**AN65 - AN72**
	CORE/ Y		
1	**Intro to lab techniques, Microscope, cell**	Microscopy and Types of microscopes and lab techniques for H & E staining	
		Cell: Organelles and cytoskeleton, Cell	
2	**Epithelium**	Features, classification, functions, cell surface modification, cell junctions, applied aspect	AN65.1
3	**Connective tissue**	Types - features with examples and functions, cells, matrix and clinical importance.	AN66.1
4	**Cartilage**	Cells, matrix, classification, each type - structure, example, function, applied aspect	AN71.2
5	**Bone**	Cells, matrix, classification, Each type - structure, function, applied aspect	AN71.1
6	**Muscle**	Classification, Each type - structure, ultrastructure, function, applied anatomy	AN67.1,2
7	**Nervous tissue**	Peripheral nerve - structure, coverings, functions	AN68.1,2
		Ganglia - types, cells, distribution	
8	**Blood vessels**	Layers, classification, Each type - structure, ultrastructure, function, applied anatomy	AN69.1,2,3
9	**Glands**	General glands - definition, classification with structure, function and examples	AN70.1
10	**Lymphoid tissue**	cells, classification, lymph node, Thymus , spleen, , MALT- palatine tonsil - structure, function	AN70.2
11	**Skin**	Types - features with examples and functions, Cells, appendages	AN72.1
	NON CORE/ N		
1	**Basic tissues**	Ultrastructure of epithelium, connective tissue, muscular tissue, nervous tissue	AN65.2, AN66.2, AN67.3, AN68.3

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
VIII HISTOLOGY			
VIII A SYSTEMIC HISTOLOGY			**AN9,25,43,52,64**
	CORE/ Y		
1	**Respiratory Histology**	Epiglottis, Trachea, lung - strucutre, function	AN25.1 AN43.2
2	**HFN Histology**	salivary glands - serous, mucous, mixed - structure, function and examples	AN43.2 AN52.1
		Tongue - strucutre, function, taste buds	
		Retina, Cornea - strucutre, function, cells	
		Endocrine system - Pituitary, Thyroid, parathyroid & suprarenal glands - strucutre, function, cells	
3	**Abdomen & Pelvis Histology**	GIT - strucutre, function, glands & cells - Oesophagus, Stomach-fundus, pylorus, small Intestine – Duodenum, Jejunum, ileum, Large intestine, appendix, Accessory glands- Liver, pancreas, gall bladder	AN52.1
		Urinary system - strucutre, function, cells - Kidney, ureter, urinary bladder	AN52.2 AN9.2
		Male reproductive system - strucutre, function, cells - Testis, Epididymis, Vas deferens, prostate, penis	
		Female reproductive system-Ovary, Fallopian tube, uterus, mammary gland, Cervix, Placenta & Umbilical cord	
4	**CNS Histology**	Cerebrum, Cerebellum & spinal cord	AN64.1
	NON CORE/ N		
1	**HFN Histology**	Strucutre, function - olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland	AN43.3
2	**Abdomen & Pelvis Histology**	Strucutre, function - Cardiooesophageal junction, Corpus luteum	AN52.3

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
IX EMBRYOLOGY			
IX A GENERAL EMBRYOLOGY			**AN76 - AN81**
	CORE/ Y		
1	**Introduction**	Stages of human life, terms- phylogeny, ontogeny, trimester, viability	AN76.1
2	**Gameto-genesis and fertilization**	Cell division – mitosis & meiosis. Stages & Changes - Spermatogenesis, Oogenesis wuth ovarian cycle	AN77.1-5
		Menstrual cycle - Stages & Changes	
		Fertilization - Process, barriers, effects, applied aspects	
		anatomical principles of contraception	
3	**1st week of development**	Zygote, cleavage, morula, blastocyst	AN78.1
4	**2nd week of development**	Implantation - Type, Process, decidual reaction, applied aspects	AN78.2-5
		Bilaminar embryonic disc, embryoblast,amniotic cavity, yolk sac,	
		Trophoblast , extra-embryonic mesoderm, chorion	
		anatomical principles of abortion, pregnancy test	
5	**3rd & 4th week of development**	Primitive streak, Gastrulation,Trilaminar embryonic disc, , notochord, development of neural tube, Neural crest cells, vasculogenesis.	AN79.1-4
		Folding of embryo – craniocaudal and lateral	
		Intraembryonic mesoderm & coelom	
		3 germ layers and derivatives	
6	**Foetal membrane**	Formation, functions & fate of chorion, amnion, allantois, umbilical cord.	AN80.1-5
		Placenta - Formation, functions, hormones, foetomaternal circulation, placental barrier and applied aspects	
		Embryological basis of twinning	
7	**Prenatal Diagnosis**	Various methods	AN81.1-3
		Indications, process and disadvantages of amniocentesis & chorion villous biopsy	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
IX GENERAL EMBRYOLOGY			
	NON CORE/ N		
1	**1st week of development**	Teratogenic influences; fertility and sterility, surrogate motherhood, social significance of "sex-ratio".	AN77.6
2	**3rd to 8th week of development**	Embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects	AN79.5,6
		Diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein	
3	**Foetal membrane**	Embryological basis of estimation of fetal age.	AN80.6,7
		Various types of umbilical cord attachments	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
IX EMBRYOLOGY			
IX B SYSTEMIC EMBRYOLOGY			**AN9,13,20,25,43,52,64**
	CORE/ Y		
1	**Thorax**	Respiratory system - Development of lungs & Pleura	AN25.2-5
		Cardiovascular system - Development of heart - heart tube, 4 chambers, Septa and applied aspects - like ASD, VSD, Fallot's tertralogy,	
		Foetal & neonatal circulation	
2	**HFN**	development and congenital anomalies of Pharyngeal apparatus	AN43.4
		development and congenital anomalies of tongue, thyroid, face, palate, pituitary	
		development and congenital anomalies of eye	
3	**Abdomen & Pelvis**	Development and congenital anomalies of GIT – Foregut, midgut, hindgut derivatives	AN52.5-8
		Development and congenital anomalies of Diaphragm	
		Development and congenital anomalies of Kidney, ureter, bladder	
		Development and congenital anomalies of male and female reproductive system	
4	**Nervous system**	Development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum	AN64.2
	NON CORE/ N		
1	**Limbs**	Development of upper limb, lower limb	AN13.8 AN20.10
2	**Breast**	Development of breast	AN9.3
3	**Thorax**	Development of aortic arch arteries, SVC, IVC and coronary sinus	AN25.6
4	**Abdomen**	Describe the development of anterior abdominal wall	AN52.4
5	**Nervous system**	Describe various types of open neural tube defects with its embryological basis	AN64.3

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
X GENETICS			**AN73 - AN75**
	CORE/ Y		
1	**Chromosomes**	Introduction, Mendel's Laws	AN73.1,2,3
		Chromosome - structure & classification, Karyotyping - process & application , Barr body, Lyon's hypothesis	
		Structural and numerical chromosomal aberrations	AN75.1
2	**Patterns of Inheritance**	Various modes of inheritance with examples, Pedigree charts, multifactorial inheritance	AN74.1,2,3
3	**Variation**	Genetic basis of: polymorphism and mutation	AN75.4
4	**Genetic Counseling**	Principles	AN75.5
	NON CORE/ N		
1	**Diseases & syndromes**	Genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia, Prader Willi syndrome, Edward syndrome & Patau syndrome	AN74.4 AN75.3
2	**Cell lines**	Mosaicism and chimerism with example	AN75.2

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
XI RADIOLOGY			**AN13,20,25,43,54**
	CORE/ Y		
1	**Introduction**	Various imaging techniques with Principles of plain radiograms and CT scan, Ultrasonography, MRI	
2	**Upper limb**	Bones and joints seen in AP and lateral view radiographs of shoulder, elbow, wrist joints & hand	AN13.5
3	**Lower limb**	Bones and joints seen in AP and lateral view radiographs of hip, knee, ankle joints and foot	AN20.6
4	**Thorax**	Structures seen in a plain x-ray chest (PA view)	AN25.7
5	**Head, face, neck**	Structures seen in 1) Plain x-ray skull -AP and lateral view 2) Plain x-ray cervical spine-AP and lateral view 4) Plain x- ray of paranasal sinuses	AN43.7
6	**Abdomen & pelvis**	Structures seen in a plain x-ray abdomen	AN54.1,2
		Structures seen in contrast radiographs of Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography	
	NON CORE/ N		
1	**Head, face, neck**	anatomical route used for & structures seen in carotid angiogram and vertebral angiogram	AN43.8,9
2	**Abdomen & pelvis**	Describe role of ERCP, CT abdomen, MRI, Arteriography in radiodiagnosis of abdomen	AN54.3

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
XII LIVING ANATOMY			**AN10,13,17,18,20, 43**
	CORE/ Y		
1	**Upper limb**	Important bony landmarks : Jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, Inferior angle of the scapula	AN10.12 AN13.3,6,7
		Testing of muscles: Trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis	
		Movements of - Shoulder, elbow, radio-ulnar, wrist, 1st carpometacarpal joints	
		Palpation of radial, brachial arteries, ulnar nerve	
2	**Lower limb**	Important bony landmarks of : Vertebral levels of highest point of iliac crest, anterior & posterior superior iliac spines, iliac tubercle, pubic tubercle, Mid inguinal point, ischial tuberosity, adductor tubercle, Tibial tuberosity, head of fibula, Medial and lateral malleoli, Condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal, tuberosity of the navicular	AN17.1 AN18.4 AN20.1,7,8,9
		Palpation of femoral, popliteal, posterior & anterior tibial, dorsalis pedis arteries and common peroneal nerve	
		Movements of - Hip, knee, ankle	
3	**HFN**	Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	AN43.1,5
		Movements of atlantooccipital joint & atlantoaxial joint	
		Testing of muscles of facial expression, extraocular muscles, muscles of mastication,	
		Palpation of carotid arteries, facial artery, superficial temporal artery	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
XIII SURFACE MARKING			**AN13,20,25,43,55**
	CORE/ Y		
1	**Upper limb**	Surface projection of:Cephalic and basilic vein,	AN13.7
2	**Lower limb**	Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins	AN20.9
3	**Thorax**	Surface marking of lines of pleural reflection, lung borders and fissures, trachea,	AN25.9
		Surface marking of heart borders, apex beat & surface projection of valves of heart	
4	**Abdomen**	Surface marking of; Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring , McBurney's point, Renal Angle & Murphy's point	AN55.1
		Surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery	AN55.2
	NON CORE/ N		
1	**Head, face, neck**	Surface projection of Thyroid gland, Parotid gland and duct, Pterion,	AN43.6
		Surface projection of Common carotid artery, Internal jugular vein, Subclavian vein, External jugular vein, Facial artery in the face & accessory nerve	

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
XIV BIOETHICS			**AN82**
	CORE/ Y		
1	**Ethics**	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue	AN 82.1

*** Resolution No. 4.1 of AC-41/2021 : Resolved to continue the same AETCOM questions and their distribution for Anotomy, Physiology & Biochemistry as per syllabus in 2019-20, for subsequent batches**

SR. NO.	SUBTOPIC		COMPETENCY NUMBER
	NAME	DESCRIPTION	
	*** XIV AETCOM**		
	CORE/ Y		
1	Write dos and don'ts of doctor-patient verbal communication.		
2	Boundaries of the doctor-patient relationship		
3	"Cadaver as our first teacher" Justify		
4	Write a note on importance handling of biological tissues.		
5	Need for biomedical waste management		
6	Enumerate drum/bag colors used with the types of biomedical waste to be disposed in them.		
7	Write note on things you will do & not do in dissection hall to show your respect for cadaver.		
8.	Enumerate different locations in medical colleges and hospitals where biomedical waste disposal		

LECTURE TOPICS – 2019-20

Sr. No.	Unit Name	Competency No.	Topic
1	General Anatomy (11 hours)	AN1.1	Introduction
2		AN1.1	Terminology
3		AN4.1,2,3,4	Skin & Fascia
4		AN2.1, 2.3	Bone
5		AN2.2	Ossification of Bone
6		AN2.5, 6	Joint – I
7		AN2.5, 6	Joint – II
8		AN3.1, 2, 3 AN7.5,6	Muscular System
9		AN5.1,2,3,6,7,8 6.1,2,3	CVS & Lymphatic system
10		AN7.1,2,3,7	Nervous system
11			Imaging techniques
12	Upper Limb (17 hours)	AN9.2	Mammary Gland
13		AN10.8	back muscles
14		AN10.1,4,7	Axilla with axillary lymph nodes
15		AN10.3,5,6	Brachial Plexus
16		AN10.2,13	Axillary vessels & Nerve
17		AN13.4	Pectoral Girdle
18		AN10.10,12	Shoulder joint
19		AN11.1,2,3,5	Compartments of arm and cubital fossa
20		AN13.3	Elbow Joint
21		AN10.9, 11.6	Arterial anastomoses & venous drainage of upper limb

22	Upper Limb	AN13.3	Radio-Ulnar Joint
23		AN12.9,10	Spaces of Hand
24		AN12.7	Blood supply & nerve supply of palm
25		AN12.6 13.3	Wrist Jt. & 1st CPM Jt.
26		AN12.2,8,12	Median & ulnar nerve
27		AN11.4, 12.2,12,13	Radial Nerve
28		AN13.1,2	Cutaneous nerve supply of upper limb & dermatomes of upper limb
29	Lower Limb (12 hours)	AN20.3,5	Venous drainage of lower limb
30		AN15.3,4	Femoral triangle
31		AN15.5	Adductor canal & obturator nerve
32		AN16.1,2,	Gluteal region
33		AN16.4,5	Back of thigh and sciatic nerve
34		AN17.1,2,3	Hip joint
35		AN16.6	Popliteal fossa
36		AN18.4, 5,6,7	Knee joint
37		AN18.1,2,3, AN19.1,2,3	Compartments of Leg
38		AN20.1	Ankle joint
39		AN20.2	Inversion & Eversion and subtalar joint
40		AN19. 5,6	Arches of foot
41	HFN (39 hours)	AN27.1,2	Scalp
42		AN28.1	Face 1-Muscles of
43		AN28.2,3,4,8	Face 2-Nerve supply & Blood Supply of face with clinical

44	HFN	AN35.1,10	Deep Cervical Fascia
45		AN29.1a, 3,4	Post. triangle of Neck
46		AN42.2,3	Sub-Occipital Triangle with semispinalis capitis and splenius capitis
47		AN32.1,2	Division of Ant. Triangle & carotid triangle
48		AN35.2,8	Thyroid gland
49		AN62.1	Functional component of Cr. Nr. Nuclei
50		AN35.6,7	Cervical sympathetic chain & 11th Cr. Nr.
51		AN28.9,10	Parotid gland
52		AN28.6,7	Facial nerve
53		AN33.1	Infratemporal fossa & Mandibular nerve
54		AN33.3,2,5	T M Joint & muscles of mastication
55		AN34.1,2	Submandibular region & gland
56		AN35.7	12th Cranial nerve
57		AN35.7	Styloid App. & 9th Cranial nerve
58		AN42.1, AN50.1,2,4	Vertebral column & vertebral canal with its contents
59		AN30.3,4, AN56.1	Meninges & Dural venous sinuses
60		AN30.3,4	superior sagittal and cavrnous sinus
61		AN30.5	Pituitary gland with development
62		AN31.1,2	Extra ocular muscles
63			Ophthalmic & maxillary division of 5th Cr. Nr
64		AN31.2,5	3rd cranial nerve
65		AN31.2,5	4th & 6th Cranial nerve
66			Peripheral parasympathetic ganglia

67	HFN	AN41.1,2,3	Parts and layers of eyeball (L)
68		AN43.1	Cranio vertebral joints
69		AN36.1,2,3,4,5	Pharynx & palatine tonsil
70		AN39.1,2	Tongue
71		AN36.1	Palate
72		AN37.1	Nasal Septum
73		AN37.1	Lateral wall of nose
74		AN37.2,3	Para nasal air sinus
75		AN38.1,2,3	Larynx-I
76		AN38.1,2,3	Larynx-II
77		AN40.2,4,5	Middle ear cavity
78		AN40.3	Describe the features of internal ear (L)
79		AN28.5, AN35.5	cervical lymph nodes and lymphatic drainage of HFN
80	Neuroanatomy (22 hours)	AN57.1,2	Spinal Cord external features with blood supply
81		AN57.3,4,5	Spinal Cord -I - 2 sections, nuclei, descending tracts
82		AN57.3,4,5	Spinal cord -II - tracts, applied anatomy
83		AN58.1,2,3,4	Medulla oblongata -I
84		AN58.1,2,3,4	Medulla oblongata -II
85		AN59.1,2,3	Pons
86		AN61.1,2,3	Midbrain
87		AN60.1,2,3	Cerebellum
88		AN62.5	Thalamus
89		AN62.5	Hypothalamus

90	Neuroanatomy	AN62.5	Boundaries, parts, gross relations, major nuclei and connections of epithalamus and subthalamus
91		AN62.4	Basal ganglia
92		AN62.2	Cerebrum -I
93		AN62.2	Cerebrum -II
94		AN63.1,2	Lateral Ventricles & III ventricle
95		AN56.2, AN63.1,2	4^{th} ventrical & CSF circulation
96		AN62.6	Blood supply of brain
97		AN62.3	White fibres of cerebrum with corpus callosum
98		AN62.3	Internal capsule
99		AN62.4	Limbic system
100			Autonomic nervous system
101			Revision lecture
102	Thorax (15 hours)	AN21.3,8	Thoracic cage with joints of thorax
103		AN21.4,5,6,7,10	Intercostal space
104		AN24.1	Pleura
105		AN24.1,2,3,5	Lung & Bronchopulmonary segments
106		AN21.11	Division of Mediastinum, sup.mediastinum
107		AN23.1	Oesophagus
108		AN21.11	Posterior Mediastinum + splanchnic nerves
109		AN22.1,2	Exterior of heart & Pericardium
110		AN22.2	Interior of heart
111		AN22.6,7	fibrous skeleton of heart & conducting system of heart

112	Thorax	AN22.3,4,5	Coronary circulation
113		AN23.3	Azygous veins
114		AN23.2,7	Thoracic duct + Right lymphatic duct (L)
115		AN47.13,14	Diaphragm
116		AN21.9,	movements of respiration
117	Abdomen & Pelvis (27 hours)	AN44.1,2,6	Anterior abdominal wall
118		AN44.3,7	Rectus sheath & abdominal incisions
119		AN44.4,5	Inguinal canal
120		AN46.1,2,4	Testies
121		AN47.1,2,3,4	Peritoneum I
122		AN47.1,2,3,4	Peritoneum II
123		AN47.5,6	Stomach
124		AN47.5,6	Duodenum
125		AN47.8,10,11	Portal vein & circulation
126		AN47.5,6	Extra Hepatic Billiary app.
127		AN47.5,6	Pancreas
128		AN47.5,6	Spleen
129		AN47.5,6	Caeum & Appendix
130		AN47.5,6	Kidney
131		AN45.1, AN47.12	Post. Abdominal wall with Thoracolumbar fascia ,
132		AN45.2	Lumbar & Lumbosacral plexus
133		AN47.9	Abdominal aorta & its branches
134		AN51.1	cross-section at the level of T8, T10 and L1

135	Abdomen & Pelvis	AN48.2,5,6	Urinary bladder
136		AN48.2,5,7	Prostate
137		AN48.2,5	Uterus & its support
138		AN48.2,5	Rectum
139		AN48.2,5,8	Anal canal
140		AN48.1	Pelvic floor
141		AN49.4,5	Ischiorectal fossa
142		AN49.1,2,3,5	Perineal pouches
143		AN50.2	Intervertebral joints, Sacroiliac joints & Pubic symphysis (LD)
144	General Histology (14 hours)		Cell and microscope-LD
145		AN65.1	Epithelium
146		AN65.1	Epithelium
147		AN70.1	Glands
148		AN66.1	Connective tissue
149		AN71.2	Cartilage
150		AN71.1	Bone
151		AN67.1,2	Muscle tissue
152		AN68.1,2	Nervous tissue
153		AN69.1,2,3	Blood vessels
154		AN70.2	Lymphatic tissue -I
155		AN70.2	Lymphatic tissue -II
156		AN72.1	Skin
157			Revision lecture

158	Systemic Histology (16 hours)	AN25.1, AN43.2	Respiratory system + olfactory epithelium
159		AN52.1	(salivary glands)
160		AN52.1	lip,Tongue
161		AN52.1	GIT-1 general features of GIT & oesophagus
162		AN52.1	GIT-2 (stomach +Cardioesophageal junction)
163		AN52.1	GIT-3 (Small & Large Intestine)
164		AN52.1	GIT -4 (accessory glands)
165		AN52.2	Urinary system
166		AN52.2	Male reproductive system + Penis
167		AN52.2	Female reproductive system – 1 (ovary, + Corpus luteum & Fallopian tube)
168		AN52.2	Female reproductive system – 2 (cervix, uterus)
169		AN52.2, AN9.2	Female reproductive system - 3 (Mammary gland + placenta & umbilical cord)
170		AN52.1	Endocrine + pineal gland
171		AN52.1	special senses + eyelid, sclero-corneal junction, optic nerve + cochlea- organ of corti
172		AN64.1	Central nervous system
173			Revision lecture
174	General Embryology (14 hours)		Mitosis & Meosis
175		AN77.3	Gamatogenesis
176		AN77.1, 2	Ovarian & menstrual cycles
177		AN77.4, AN78.1, 3	Fertilization, Implantation
178		AN78.4	2^{nd} week of development
179		AN79.1, 2	3^{rd} week -1 (primitive streak, gastrulation & notochord)

180	General Embryology	AN79.3	3rd week -2 (Neural tube & 3 germ layers)
181		AN79.4	4th week – folding , development of anterior abdominal wall & Embryonic period
182		AN80.3	Placenta
183		AN79.6, AN80.6	diagnosis of pregnancy in first trimester & embryological basis of estimation of fetal age.
184		AN78.5, AN77.5, AN79.6	anatomical principles underlying contraception + in brief abortion & teratogens
185		AN77.6	ertility and sterility, surrogate motherhood, social significance of “sex-ratio”.
186		AN80.4	embryological basis of twinning in monozygotic & dizygotic twins
187			Revision lecture
188	Systemic Embryology (24 hours)	AN13.8, AN9.3	Limb development with development of breast
189		AN43.4	Pharyngeal arches
190		AN43.4	Tongue and thyroid
191		AN43.4	Face and palate
192		AN43.4	development and developmental basis of congenital anomalies of eye
193		AN25.2,4,5	Cardio vascular system - 1 (Heart)
194		AN25.2,4,5	Cardio vascular system - 2 (Heart)
195		AN25.2,4,5	Cardio vascular system – 3 (Arteries)
196		AN25.2,4,5	Cardio vascular system – 3 (Veins)
197		AN25.3	Fetal & Neonatal circulation
198		AN52.5	Body cavities & diaphragm
199		AN25.1	Respiratory system
200		AN64.2,3	Describe the development of neural tube, cerebral hemisphere & cerebellum
201		AN64.2,4	Describe the development of spinal cord, medulla oblongata, pons, midbrain,

202	Systemic Embryology	AN64.2,5	Describe various types of open neural tube defects with its embryological basis
203		AN52.6	Gastro intestinal system – 1
204		AN52.6	Gastro intestinal system – 2
205		AN52.6	Gastro intestinal system – 3
206		AN52.6	Gastro intestinal system – 4
207		AN52.7	Urinary system - Kidney & Ureter
208		AN52.8	Reproductive system - 1
209		AN52.8	Reproductive system - 2
210		AN52.8	Reproductive system - 3
211			Revision lecture
212	Genetics (10 hours)		Introduction
213		AN73.1	Structure of gene & chromosome
214		AN73.2	Karyotyping
215		AN75.1	Chromosomal aberrations
216		AN74.1,2,3	Inheritence
217		AN75.5	PND &Genetic Counseling
218		AN74.3	Describe multifactorial inheritance with examples
219		AN74.4	Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia
220		AN75.3	Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome
221		AN75.4	Describe genetic basis of variation: polymorphism and mutation
222	Bioethics (1 hour)	AN 82.1	Biomedical waste disposal

Anatomy paper wise syllabus distribution (Prelim & University)

Paper I

- Upper Limb
- Thorax
- Head, Face & Neck
- Neuroanatomy
- Related Systemic Histology
- Related Systemic Embryology
- Genetics
- AETCOM – 1 SAQ (Module – 1.2,1.3)

Paper II

- Lower Limb
- Abdomen
- Pelvis
- Related Systemic Histology
- Related Systemic Embryology
- General Anatomy
- General Histology
- General Embryology

MGMIHS
1st year MBBS. CBME
Format for Internal assessment examinations

Sr. No.	Exam	Theory	Practical
1.	Internal assessment examinations	200	100
2.	Preliminary examination	200	100
Total		**400**	**200**

- Preliminary examination pattern will be as per University examination
- Respective colleges/ departments will conduct internal assessment examinations and maintain records of the same.

***Resolution No. 4.8 of AC-41/2021:** Resolved to approve the change in the pattern of Internal Assessment calculations, to be implemented from current batch of 1st MBBS (CBME) (i.e. AY- 2020-21) onwards

Annexure-27C of AC-41-2021

MGM Medical College, Navi Mumbai & Aurangabad

1st year MBBS CBME

INTERNAL ASSESSMENT CALCULATION

Sr. No.	Criteria	Theory	Practical
1.	*All internal assessment examinations including preliminary examination	50	50
2.	Day to Day assessment		
	➢ Day to Day assessment (PBL/ TBL/ Seminar/ MCQ test etc)	30	
	➢ Day to Day assessment (Viva/ Spotters/ OSPE / OSVE etc)		30
3.	Logbooks (Foundation Course, AETCOM, Competency logbook, SDL – each 5 marks)	20	
	Journals + ECE Logbook		20
Total		**100**	**100**

FORMAT FOR INTERNAL ASSESSMENT EXAMINATIONS

Sr. No.	Exam	Theory	Practical
1.	Internal assessment examinations (Midterm + Terminal)	200 (100 + 100)	100 (50 + 50)
2.	Preliminary examination	200	100
3.	Additional examination forstudents who have missed any of 3 internal assessment exams or are not qualifying	200	100

***Internal assessment examinations marks conversion to internal assessment marks -**
Student's internal assessment examinations scores [Midterm, Terminal, Preliminary and additional (where applicable)] will be converted to 50 marks eachfor theory and practical internal assessment.

Annexure-28A of AC-41-2021

MGMIHS

I MBBS CBME

UNIVERSITY EXAMINATION PATTERN
I MBBS - HUMAN ANATOMY

Part of exam	Marks
Theory Paper I	100 Marks
Theory Paper II	100 Marks
Practical	100 Marks
Total	**300 Marks**

FORMAT FOR INTERNAL ASSESSMENT EXAMINATIONS

Sr. No.	Exam	Theory	Practical
1.	Internal assessment examinations (Midterm + Terminal)	200 (100 + 100)	100 (50 + 50)
2.	Preliminary examination	200	100
3.	Additional examination for students who have missed any of 3 internal assessment exams or are not qualifying for University exam *Marks to be computed as per the missed exam or low score exam for not qualifying students.	200	100

***Internal assessment examinations marks conversion to internal assessment marks -**

Theory – Total 400 marks will be converted to 50

Practical – Total 200 marks will be converted to 50

INTERNAL ASSESSMENT CALCULATION

Sr. No.	Criteria	Theory	Practical
1.	*All internal assessment examinations including preliminary examination	50	50
2.	Day to Day assessment		
	➢ Day to Day assessment (PBL/ TBL/ Seminar/ MCQ test etc)	30	
	➢ Day to Day assessment (Viva/ Spotters/ OSPE / OSVE etc)		30
3.	Logbooks (Foundation Course, AETCOM, Competency logbook, SDL – each 5 marks)	20	
	Journals + ECE Logbook		20
Total		**100**	**100**

BLUEPRINT OF UNIVERSITY QUESTION PAPER

1.THEORY EXAMINATION PATTERN

1. 1. Theory Question Paper Pattern:

Two papers each of 3 hours duration and carrying 100 marks each.

1.2. Marks distribution for each paper:

Type of question	Numbers X Marks	Total marks
Multiple Choice Questions	20 X 1	20
Long Answer Questions (LAQ)	2 X 10	20
Short Answer Questions (SAQ)	6 X 5	30
Brief Answer Questions (BAQ)	10 X 3	30
Total		**100**

Each Paper is divided into 3 sections:
Section A: MCQ 20 marks
Section B: 40 marks: BAQ 5/6 x 3= 15; SAQ 3/4 x 5= 15; LAQ 1/2 x 10 = 10
Section C: 40 marks: BAQ 5/6 x 3= 15; SAQ 3/4 x 5= 15; LAQ 1/2 x 10 = 10

1.3. Paper I & Paper II Contents

1.3.a. Paper I

- Upper Limb
- Thorax
- Head, Face & Neck
- Neuroanatomy
- Related Systemic Histology
- Related Systemic Embryology
- Genetics
- AETCOM – 1 SAQ (Module – 1.3,1.5)

1.3.b. Paper II

- Lower Limb
- Abdomen
- Pelvis
- Related Systemic Histology
- Related Systemic Embryology
- General Anatomy
- General Histology
- General Embryology

1.4. Note to exam paper setters (Ref.: GMER 2019- Assessment)

1.4.A Multiple Choice Questions (MCQs) (20X1=20 Marks)		
• 10 % of MCQ marks should be from clinically based questions (Any 2)		
1.4. B Brief Answer Questions (BAQs) (10X3=30 Marks)		
Various Levels of Cognitive Domain must be considered as follows:		
Level of cognitive domain	**Number of questions**	**Marks**
Knowledge	3	3X3=9
Comprehension	3	3X3=9
Application	2	2X3=6
Analysis	2	2X3=6
Synthesis	1	1X3=3
Evaluation	1	1X3=3
1.4. C Short Answer Questions (SAQs) (6X5=30 Marks)		
1 SAQ will be clinical application based (In section B)		
1 SAQ will be from AETCOM modules (In Paper I)		
Various Levels of Cognitive Domain must be considered as follows:		
Level of cognitive domain	**Number of questions**	**Marks**
Knowledge	2	2X5=10
Comprehension	2	2X5=10
Application	1	1X5=5
Analysis	1	1X5=5
Synthesis	1	1X5=5
Evaluation	1	1X5=5
1.4.D Long Answer Question (LAQ) (2X10=20 Marks)		
• Long Answer Questions (LAQ) in both Papers I & II must be structured, covering various levels of cognitive domain.		

1.4.E Percentage of marks allotted to various levels of cognitive domains:

Level of cognitive domain	**Marks (Total = 76)**	**Percentage (%)**
1. Knowledge	19	25
2. Comprehension	19	25
3. Application	11	15
4. Analysis	11	15
5. Synthesis	8	11
6. Evaluation	8	10

1.4.F Verbs in various levels in Knowledge domain.

Level	Suggested Verbs
Knowledge (Remember)	Define, describe, Draw, Find, Enumerate, Cite, Name, Identify, List, Label, Match, Sequence, Write, State
Comprehension (Understand)	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate understanding, Explain, Generalise, Identify, Illustrate, Interpret, Review, Summarise
Application (Apply)	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis (Analyze)	Analyse, Characterise, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorise
Synthesis (Create)	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organise, Plan, Produce, Propose, Rewrite
Evaluation (Evaluate)	Appraise , Assess, Conclude, Critic, Decide, Evaluate, Judge, Justify, Predict, Prioritise, Prove, Rank

(Reference GMER-2019, Assessment Module Page no.17& Revised Bloom's Taxonomy by Anderson, L.W. et al in (2001))

1.5. Paper I

S. No.	Topics	MCQ (20 x 1 = 20 marks)	BriefAnswer Question (BAQ) (10 x 3 = 30 marks)	Short Answer Question (SAQ) (6 x 5 = 30 marks)	Long Answer Question (LAQ) (2 x 10 = 20 marks)	Total Marks
1	Upper Limb / Thorax	3 X 1 = 3 (Upper limb) 3 X 1 = 3 (Thorax)	2 X 3 = 6 Upper Limb/Thorax - from the region not covered in LAQ&SAQ	1 X 5 = 5 (Upper Limb/Thorax - from the region not covered in LAQ& BAQ	1 X 10 = 10 (Upper Limb/Thorax)	27 (as option - 8)
2	Head and Neck / Neuro-anatomy	4 X 1 = 4 (HFN) 4 X 1 = 4 (Neuro-anatomy)	3 X 3 = 9 HFN / Neuroanatomy- from the topic not covered in LAQ& SAQ	1 X 5 = 5 HFN / Neuroanatomy - from the topic not covered in LAQ& BAQ	1 X 10 = 10 HFN / Neuroanatomy	32 (as option - 8)
3	Systemic Histology Thorax / HFN / Neuro-anatomy	2 X 1 = 2	2 X 3 = 6 Thorax/HFN/ Neuroanatomy- from the topic not covered in LAQ& SAQ	1 X 5 = 5 Thorax/ HFN/ Neuroanatomy- from the topic not covered in LAQ& BAQ		13
4	Systemic Embryology Thorax / Head and Neck / Neuro-anatomy	2 X 1 = 2	2 X 3 = 6 Thorax / HFN/ Neuroanatomy - from the topic not covered in LAQ& SAQ	1 X 5 = 5 (Thorax/ HFN/ Neuroanatomy - from the topic not covered in LAQ& BAQ		13
5	Genetics	2 X 1 = 2	1 X 3 = 3 - from different topic thanSAQ	1 X 5 = 5 - from different topic thanBAQ		10
6	AETCOM			1 X 5 = 5		5
			1 extra* question as option from Upper Limb / Thorax / HFN/ Neuroanatomy (Marks are shown as option in respective topic)	1 extra* question as option from Upper Limb / Thorax / HFN/ Neuroanatomy (Marks are shown as option in respective topic)		
			*extra question asked as option should be from different topics for BAQ & SAQ			
	Total	**20**	**30**	**30**	**20**	**100**

1.6. Paper II

S. No.	Topics	MCQ (20 x 1 = 20 marks)	Brief Answer Question (BAQ) (10 x 3 = 30 marks)	Short Answer Question (SAQ) (6 x 5 = 30 marks)	Long Answer Question (LAQ) (2 x 10 = 20 marks)	Total Marks
1	Lower Limb / Pelvis	2 X 1 = 2 Lower Limb 4 X 1 = 4 Pelvis	3 X 3 = 9 Lower limb/ Pelvis - from the topic not covered in LAQ& SAQ	1 X 5 = 5 Lower limb/ Pelvis - from the topic not covered in LAQ& BAQ	1 X 10 = 10 (Lower Limb / Pelvis)	30 (as option - 8)
2	Abdomen	4 X 1 = 4	2 X 3 = 6 - from the topic not covered in LAQ& SAQ	1 X 5 = 5 - from the topic not covered in LAQ& BAQ	1 X 10 = 10 (Abdomen)	25 (as option - 8)
3	Systemic histology Abdomen Pelvis	2 X 1 = 2	1 X 3 = 3 Abdomen/ pelvis - from the topic not covered in LAQ& SAQ	1 X 5 = 5 Abdomen/ Pelvis - from the topic not covered in LAQ& BAQ	-	5 + 5 + 5 = 15
4	Systemic embryology Abdomen Pelvis	2 X 1 = 2	1 X 3 = 3 Abdomen/ Pelvis - from the topic not covered in LAQ& SAQ		-	
5	General Anatomy (GA)	2 X 1 = 2	1 X 3 = 3 - from different topic than SAQ	1 X 5 = 5 - from different topic than BAQ		10 (as option - 8)
6	General Histology (GH)	2 X 1 = 2	1 X 3 = 3 - from different topic than SAQ	1 X 5 = 5 - from different topic than BAQ		10 (as option - 8)
7	General Embryology (GE)	2 X 1 = 2	1 X 3 = 3 - from different topic than SAQ	1 X 5 = 5 - from different topic than BAQ		10 (as option - 8)
			1 extra* question as option from Lower limb/ Pelvis / abdomen / GA / GH / GE (Marks are shown ‘as option’ in respective topic)	1 extra* question as option from Lower limb/ Pelvis / abdomen / GA / GH / GE (Marks are shown ‘as option’ in respective topic)		
			*extra question asked as option should be from different topics for BAQ & SAQ			
	Total	**20**	**20**	**30**	**30**	**100**

2. PRACTICAL EXAMINATION PATTERN

2.1. Total Practical Marks 70 marks

II.1.b Histology	
Spotters	10X 1 = 10 marks
Discussion	10 marks (General Histology – 5 marks; Systemic Histology – 5 marks)
Total	**20 marks**

2.2. Spotters distribution

2.2.b. Histology Spotters distribution (Each Spotter carries 1 mark)	Nos.
General Histology	4
Systemic Histology	6

2.3. TABLE DISCUSSION

Sr. no.	Heading	Marks
1	Soft parts above diaphragm	13
2	Soft parts below diaphragm	12
3	Axial Skeleton	10
4	Radiology	5
5	Surface & living anatomy	5
Total		**45**

2.4. OTHER HEADINGS

Total Marks		**5 marks**
1	Communication Skills	5

2.5. VIVA VOCE EXAMINATION PATTERN

Total Marks		**30 marks**
1	Appendicular skeleton	15 marks
2	Embryology	10 marks
3	Genetics	5 marks
Total		**30 marks**

Eligibility to appear for university exams	
Internal Assessment (Theory + Practical)	50% - Combined theory & practical [Theory - minimum 40% Practical- minimum 40%]
Criteria for pass in university exams	
Theory	50% aggregate (Paper I + II) (Each Paper minimum 40%)
Practical	50%

Format of question paper

Time – 3 hrs. **Preliminary / University examination**

(* Applicable from 2020-21 Batch onwards)

Each subject – 2 papers (I / II) – 100 X 2 = **Total 200 Marks**
Each paper –

- **Section A** – MCQ – 20 X 1 mark = **20 Marks**
  - **10% MCQ i.e. 2 in each paper must be clinical based**
- **Section B** -

Q1. **Answer any 5 out of 6 (BAQ)** **(5X3 marks =15 marks)**
Q2. **Answer any 3 out of 4 (SAQ)** **(3X5 marks =15 marks)**

- 1 SAQ will be clinical application based
- **1 SAQ will be from AETCOM modules (in Paper I)**

Q3. **Answer any 1 out of 2(LAQ)** **(1X10 marks =10marks)**

- LAQ should be structured (With defined marks distribution)

- **Section C** –

Q1. **Answer any 5 out of 6 (BAQ)** **(5X3 marks =15marks)**
Q2. **Answer any 3 out of 4 (SAQ)** **(3X5 marks =15 marks)**
Q3. **Answer any 1 out of 2 (LAQ)** **(1X10 marks =10marks)**

LAQ should be structured (With defined marks distribution)

Practical Examination (Prelim & University) For Anatomy

Sr. No.	Topic	Marks	Total marks
1	Histology Spots (10 spots)	10 X 1	10
2	Histology Slide Discussion (2 slides)	2 X 5	10
3	Soft parts above diaphragm		13
4	Soft parts below diaphragm		12
5	Axial Skeleton		10
6	Radiology		5
7	Surface & living anatomy		5
8	Communication Skills		5
9	Viva –		30
10	Appendicular skeleton	15	
	Embryology	10	
	Genetics	5	
Total			**100**

For formative exams I & II – practical will be **total 50 marks**

Sr. No.	Topic	Marks	Total marks
1.	Histology Spots (5 spots)	5 X 1	5
2.	Histology Slide Discussion (1 slide)	1 X 5	5
3.	Soft part		15
4.	Embryology		5
5.	Radiology + Surface & living anatomy		5
6.	**Viva** – Bones + communication skill (2)	10+2	12
7.	Journal		3
Total			**50**

SPECIFIC MARK DISTRIBUTION IN MCQ PAPER IN ANATOMY

Paper I

Sr. No.	Topic	No. of Questions
1.	Upper Limb	3
2.	Thorax	3
3.	Systemic Histology	2
4.	Systemic Embryology	2
5.	Head, Face & Neck	4
6.	Neuroanatomy	4
7.	Genetics	2
Total		**20**

Paper II

Sr. No.	Topic	No. of Questions
1.	Lower Limb	2
2.	Abdomen	4
3.	Pelvis	4
4.	Systemic Histology	2
5.	Systemic Embryology	2
6.	General Histology	2
7.	General Embryology	2
8.	General Anatomy	2
Total		**20**

10 % of MCQ marks should be from clinically based questions

Subject - **HUMAN ANATOMY (PAPER – I)** Maximum Marks: **100**

Duration – 3 Hours (Section A = 30 Minutes, Section B & C = 2 ½ Hours)

Resolution No. 4.10 of AC-41/2021
effective from 2021-22 onwards and
to be revised as per question paper blue printing format
as per 4.9 of AC-41/2021 in next BOS

SECTION – B

Annexure No. 29A of AC-41/2021

Q.1Answer any 5 out of 6 (SAQ) (5x3 Marks = 15 Marks)

a. List boundaries (2) and contents (1) of axilla
b. Enumerate tributaries of azygos vein
c. Draw a neat labelled diagram of nerve supply of scalp
d. Write any 3 things each, you will do and not do in dissection hall to show your respect for cadaver
e. List features of lateral medullary syndrome with their anatomical basis
f. List any 3 types of modes of inheritance with 1 example of each

Q.2Answer any 3 out of 4 (BAQ) (3x5 Marks = 15 Marks)

A. A 30-year-old7-month pregnant female, slowly developed burning pain in her left thumb, and 1st 2 fingers with exacerbation in night. There is gradual progressive weakness of thenar muscles, with loss of grasping, pinching movements of thumb.
   - What is the name of the condition? (1)
   - Explain the clinical features of this condition with their anatomical basis. (4)

B. Specify development of inter-ventricular septum (4) with its anyone anomaly (1).
C. Write attachments (2), nerve supply (1), action (1) and applied anatomy (1) of Sternocleidomastoid muscle
D. Describe microscopic anatomy of tongue with a neat labelled diagram

Q.3Answer any 1 out of 2 (LAQ) (1x10 Marks = 10 Marks)

A. Describe the mammary gland under the following heads
   a. Grossfeatures – 3
   b. Lymphatic drainage – 2
   c. Arterial supply & venous drainage – 3
   d. Any 2 applied aspects – 2

OR

B. Describe the thyroid gland under following heads
   a. Gross features – 2
   b. Blood supply – 2
   c. Microscopic anatomy – 2
   d. Development – 2
   e. Any 1 applied aspect – 2

SECTION – C

Q.1 Answer any 5 out of 6 (SAQ) (5x3 Marks = 15 Marks)

a. List the extraocular muscles (2) with their nerve supply (1)
b. Enumerate structures forming styloid apparatus
c. What is the extent of external carotid artery? (1) List its branches. (2)
d. Draw and label the diagram of the floor of the IV ventricle
e. List features of Turner syndrome
f. Draw and label the diagram of microscopic anatomy of cornea

Q.2 Answer any 3 out of 4 (BAQ) (3x5 Marks = 15 Marks)

A. Write attachments (2), nerve supply (0.5), action(2) and applied anatomy (0.5) of Deltoid muscle.
B. Explain boundaries of superior mediastinum with diagram (2). List its contents (2) with any 1 applied aspect (1)
C. Describe circle of Willis' as follows – Location (0.5), Formation (1.5), Branches & distribution (2), Any one applied aspect (1)
D. What are pharyngeal arches? (1) List derivatives from cartilage (1), muscle (2), nerve (0.5) and artery of 1st pharyngeal arch (0.5)

Q.3 Answer any 1 out of 2 (LAQ) (1x10 Marks = 10 Marks)

A. Describe arterial supply of heart under the following headings **for each artery** –
Origin (1), Course (2), Branches (3) and Distribution (2).
Also write any 1 applied aspect of arterial supply of heart – (2)

OR

B. Write classification of **white matter** of brain with examples. – 3
Describe **internal capsule** under the following headings –
a) Parts & relations – 2
b) Fibres passing through – 3
c) Applied anatomy – 2

Subject - **HUMAN ANATOMY (PAPER – II)** Maximum Marks: **100**

Duration – 3 Hours (Section A = 30 Minutes, Section B & C = 2 ½ Hours)

SECTION – B

Q.1 **Answer any 5 out of 6 (SAQ)** (5x3 Marks = 15 Marks)

a. Draw neat labelled diagram of blood supply of long bone.
b. What is neural crest? (1) List its derivatives (2)
c. List boundaries (2) and contents (1) of popliteal fossa
d. Draw and label anterior relations of left kidney
e. Explain interior of urinary bladder with a neat labelled diagram
f. List the derivatives of foregut, midgut and hindgut

Q.2**Answer any 3 out of 4 (BAQ)** (3x5 Marks = 15 Marks)

A. Compare microscopic structure of Cardiac and skeletal muscle with diagram
B. 45-year-old alcoholic male came to hospital with complaints of blood in vomiting. On examination he also had dilated tortuous linear swellings radiating from umbilicus.
   A. Name the clinical presentation seen around umbilicus. (1)
   B. What is the common clinical basis leading both the given presentations? (1)
   C. Explain anatomical basis of the both presentations. (3)
C. Describe interior of anal canal with a neat labelled diagram. (4) Write it's any 1 applied aspect. (1)
D. Describe medial longitudinal arch as follows – formation (2), factors maintaining (2) and applied anatomy (1)

Q.3**Answer any 1 out of 2 (LAQ)** (1x10 Marks = 10 Marks)

A. Describe hip joint under following heads
   - Type & bones taking part – 2
   - Relations – 3
   - Movements and muscles – 3
   - Applied anatomy – 2

OR

B. Describe the pancreas under following heads
   - Gross anatomy – 3
   - Blood supply – 2
   - Microscopic anatomy. – 2
   - Ducts – 2
   - Any one applied aspect – 1

SECTION – C

Q.1 **Answer any 5 out of 6 (SAQ)** (5x3 Marks = 15 Marks)

a. List layers of epidermis in thick and thin skin
b. List the structures in the stomach bed
c. Draw neat labelled diagram of microscopic anatomy of duodenum.
d. What is foot drop (1). Explain anatomical basis of its features. (2)
e. Specify the ligaments of spleen with their attachments and contents.
f. List the contents of female superficial perineal pouch

Q.2**Answer any 3 out of 4 (BAQ)** (3x5 Marks = 15 Marks)

A. What is cartilagenous joint? (1) Classify (1) and compare (2) cartilagenous joints with examples (1).
B. What is implantation? (1) Specify its process (3) with any one example of its applied aspect (1)
C. Describe descent of testis (4) with its any 1 applied aspect (1)
D. Write attachments (2), nerve supply (1), action (1) and any one applied aspect (1) of Gluteus maximus muscle

Q.3**Answer any 1 out of 2 (LAQ)** (1x10 Marks = 10 Marks)

A. Describe the uterus under following heads.
- Parts and relations – 4
- Arterial supply – 1
- Supports of uterus – 4
- Any 1 applied aspect – 1

OR

B. Describe the inguinal canal under following heads.
- Boundaries – 4
- Contents – 2
- Any 2 safety mechanisms – 2
- Any one applied aspect – 2

Resolution No. 4.3 of AC=-41/2021: Resolved to approve the booklist for 1st MBBS (CBME) Anatomy with effect from the batch admitted in 2021-22 onwards

~~**Annexure – 5.1**~~

Annexure-22A of AC-41-2021

SR.NO.	NAME OF THE BOOK	EDITION
	GROSS ANATOMY	
1.	BD chaurasia'sHuman Anatomy- vol.1,2,3,4	8th
2.	Vishramsingh'sTextbook of Anatomy- vol. 1,2,3	3rd
3.	Vishramsingh's Textbook of neuroanatomy	4th
4.	BD chaurasia'sGeneral Anatomy	6th
5.	Netter's Human Anatomy Atlas	7th
6.	Grant's Human Anatomy Atlas	13th
7.	Vishramsingh's General Anatomy	
8.	Gray's anatomy for students	
	EMBRYOLOGY	
1.	Textbook of Human Embryology- Yogesh Sontakke	1st
2.	InderbirSingh's Human Embryology	12th
3.	Langman's Medical Embryology	13th
	HISTOLOGY	
1.	Inderbirsingh's Textbook of Human Histology	9th
2.	JP Gunsegaran Textbook of Histology	3rd
3.	Histology text and atlas – Brijesh Kumar	2nd
	GENETICS	
1.	GP Pal Textbook of Medical Genetics	3rd
2.	Human Genetics – S. D. Gangane	4th
	SURFACE ANATOMY AND RADIOLOGY	
1.	Surface and Radiological Anatomy – A. Halim	3rd

Anatomy Textbooks & reference books for MBBS (CBME batch)

REFERENCE

SR.NO.	NAME OF THE BOOK	EDITION
	GROSS ANATOMY	
1.	Gray's Anatomy	41st
2.	Snell's Clinical Anatomy	9th
3.	Neeta Kulkarni's Clinical Anatomy	2nd
4.	A. K. Datta- Essentials of Human Anatomy	9th
	EMBRYOLOGY	
1.	Keith Moore's Clinical Embryology	10th
2.	A. K. Datta- Essentials of Human Embryology	3rd
	HISTOLOGY	
1.	Janqueira's Basic Histology	13th
2.	Difiore's Atlas of Histology	12th
	GENETICS	
1.	Emery's Elements of Medical Genetics	14th

Resolution No. 4.13 of AC-41/2021: Resolved to approve the two books - Communication skills & Early clinical Exposure, as reference books for Medical College Library and departments

1. Communication Skills in Clinical Practice - KR Sethuraman
2. Textbook of Early clinical Exposure Setting and Planning - Dr. Motilal C Tayade

MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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