

Teaching & Evaluation Scheme:	Anatomy
Semester/Year:	First Year M.B.B.S.
Program Name:	Bachelor of Medicine and Bachelor of Surgery
Effective from Academic Year:	2019-2020
Program Code:	MB01

Course Code	Course Name	Hrs/Week			UA		IA		Total	
		L	P	Total	Max	Min	Max	Min	Max	Min
1AN101	Anatomy-I	3	-	3	100	40	-	-	200	100
1AN102	Anatomy-II	3	-	3	100	40	-	-		
1AN103	Anatomy Practical	-	10	10	80	-	-	-	100	50
1AN104	Anatomy Viva	-	-	-	20	-	-	-		
1AN105	Anatomy IA Theory	-	-	-	-	-	100	40	200	100
1AN106	Anatomy IA Practical	-	-	-	-	-	100	40		

Syllabus

A. GENERAL ANATOMY

Topic: Anatomical terminology (AN1.1)

- Normal anatomical position
- Planes of the body
- Terms used for relations and comparison
- Terms used for movements of the body

Topic: General features of bones and Joints (AN1.2, AN2.1 to AN2.6)

- Composition of bone and bone marrow
- Parts, blood and nerve supply of a long bone
- Laws of ossification*
- Special features of a sesamoid bone*
- Types of cartilage with its structure and distribution in body
- Joints with subtypes and examples
- Nerve supply of joints and Hilton's law

Topic: General features of Muscle (AN3.1 to AN3.3)

- Classification of muscle tissue according to structure and action
- Parts of skeletal muscle
- Differences between tendons and aponeuroses with examples
- Shunt and spurt muscles*

Topic: General features of skin and fascia (AN4.1 to AN4.5)

- Types of skin and dermatomes in body*
- Structure and function of skin
- Superficial fascia along with fat distribution in body
- Modifications of deep fascia with its functions
- Principles of skin incisions*

Topic: General features of the cardiovascular system (AN5.1 to AN5.8)

- Differences between blood vascular and lymphatic system
- Differences between pulmonary and systemic circulation
- General differences between arteries and veins
- Functional differences between elastic, muscular arteries and arterioles
- Concept of portal system with examples
- Concept of anastomoses and collateral circulation with significance of end-arteries
- Functions of meta-arterioles, precapillary sphincters, arterio-venous anastomoses*
- Definition of thrombosis, infarction and aneurysm*

Topic: General Features of lymphatic system (AN6.1 to AN6.3)

- Components and functions of the lymphatic system*
- Structure of lymph capillaries and mechanism of lymph circulation*
- Concept of lymphoedema and spread of tumors via lymphatics and venous system*

Topic: Introduction to the nervous system (AN7.1 to AN7.8)

- General plan of nervous system with components of central, peripheral and autonomic nervous systems
- Components of nervous tissue and their functions
- Parts of a neuron
- Classification of neurons based on structure and function
- Structure of a typical spinal nerve
- Principles of sensory and motor innervation of muscles*
- Concept of loss of innervation of a muscle with its applied anatomy
- Type of synapses*
- Differences between sympathetic and spinal ganglia*

B. GENERAL HISTOLOGY

Topic: Epithelium (AN65.1 to AN65.2)

- Identification of epithelium under the microscope
- Correlation of structure and function of epithelia
- Ultrastructure of epithelium*

Topic: Connective tissue histology (AN66.1 to AN66.2)

- ☐ Types of connective tissue with functional correlation
- ☐ Ultrastructure of connective tissue*

Topic: Muscle histology (AN67.1 to AN67.3)

- ☐ Classification of muscle
- ☐ Structure-function correlation of muscle
- ☐ Ultrastructure of muscle tissue*

Topic: Nervous tissue histology (AN68.1 to AN68.3)

- ☐ Description and identification of unipolar and multipolar neurons, ganglia, peripheral nerve
- ☐ Structure-function correlation of neuron
- ☐ Ultrastructure of nervous tissue*

Topic: Blood vessels – histology (AN69.1 to AN69.3)

- ☐ Identification of elastic and muscular blood vessels, capillaries under the microscope
- ☐ Types and structure-function correlation of blood vessels
- ☐ Ultrastructure of blood vessels*

Topic: Glands and Lymphoid tissue (AN70.1 to AN70.2)

- ☐ Identification of exocrine glands under the microscope
- ☐ Differentiation between serous, mucous and mixed acini
- ☐ Identification of lymphoid tissue under the microscope
- ☐ Microanatomy of lymph node, spleen, thymus, tonsil and correlation of structure with function

Topic: Bone and Cartilage (AN71.1 to AN71.2)

- ☐ Identification of bone under the microscope
- ☐ Types and structure-function correlation of bone
- ☐ Identification of cartilage under the microscope
- ☐ Types and structure function correlation of cartilage

Topic: Integumentary System (AN72.1)

- ☐ Identification of skin and its appendages under the microscope
- ☐ Correlation of structure and function

C. GENETICS

Topic: Chromosomes (AN73.1 to AN73.3)

- ☐ Structure of chromosomes with classification
- ☐ Technique of karyotyping with its applications
- ☐ Lyon's hypothesis

Topic: Patterns of Inheritance (AN74.1 to AN74.4)

- ☐ Various modes of inheritance with examples
- ☐ Pedigree charts for the various types of inheritance
- ☐ Examples of diseases of each mode of inheritance
- ☐ Multifactorial inheritance with examples
- ☐ Genetic basis and clinical features of achondroplasia, cystic fibrosis, vitamin D resistant rickets, haemophilia, Duchenne's muscular dystrophy and sickle cell anaemia*

Topic: Principle of Genetics, Chromosomal Aberrations and Clinical Genetics (AN75.1 to AN75.5)

- Structural and numerical chromosomal aberrations
- Mosaics and chimeras with examples
- Genetic basis and clinical features of Prader Willi syndrome, Edward syndrome and Patau syndrome*
- Genetic basis of variation: polymorphism and mutation
- Principles of genetic counselling

D. GENERAL EMBRYOLOGY

Topic: Introduction to embryology (AN76.1 TO AN76.2)

- Stages of human life
- Terms - phylogeny, ontogeny, trimester, viability

Topic: Gametogenesis and fertilization (AN77.1 to AN77.6)

- Uterine changes occurring during the menstrual cycle
- Synchrony between the ovarian and menstrual cycles
- Spermatogenesis and oogenesis

- Stages and consequences of fertilization
- Anatomical principles underlying contraception
- Teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”*

Topic: Second week of development (AN78.1 to AN78.5)

- Cleavage and formation of blastocyst
- Development of trophoblast
- Process of implantation and common abnormal sites of implantation
- Formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate
- Abortion, decidual reaction, pregnancy tests

Topic: 3rd to 8th week of development (AN79.1 to AN79.6)

- Formation and fate of the primitive streak
- Formation and fate of notochord
- Process of neurulation
- Development of somites and intra-embryonic coelom
- Embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects
- Diagnosis of pregnancy in first trimester*
- Role of teratogens, alpha-fetoprotein*

Topic: Fetal membranes (AN80.1 to AN80.7)

- Formation, functions and fate of chorion, amnion, yolk sac, allantois and decidua
- Formation and structure of umbilical cord
- Formation of placenta, its physiological functions, foeto-maternal circulation and placental barrier
- Embryological basis of twinning in monozygotic and dizygotic twins
- Role of placental hormones in uterine growth and parturition

- Embryological basis of estimation of fetal age*
- Types of umbilical cord attachments*

Topic: Prenatal Diagnosis (AN81.1 to AN81.3)

- Methods of prenatal diagnosis
- Indications, process and disadvantages of amniocentesis
- Indications, process and disadvantages of chorion villus biopsy

E. UPPER LIMB

Topic: Features of individual bones (Upper Limb) (AN8.1 to AN8.6)

- Clavicle, scapula, humerus, radius, ulna - side determination, anatomical position and important features
- Joints formed by the given bone
- Peculiarities of clavicle
- Muscle group attachments on above bones
- Identification and naming of bones in articulated hand
- Parts of metacarpals and phalanges
- Peculiarities of pisiform
- Scaphoid fracture and basis of avascular necrosis*

Topic: Pectoral region (AN9.1 to AN 9.3)

- Pectoralis major, pectoralis minor - attachment, nerve supply and action
- Breast - location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy
- Development of breast*

Topic: Axilla, Shoulder and Scapular region (AN 10.1 to AN10.13)

- Axilla - boundaries and contents
- Axillary artery and tributaries of vein - origin, extent, course, parts, relations and branches
- Brachial plexus - formation, branches, relations, area of supply of branches, course and relations of terminal branches
- Axillary lymph nodes - anatomical groups and areas of drainage
- Variations in formation of brachial plexus
- Erb's palsy and Klumpke's paralysis - anatomical basis and clinical features*
- Enlarged axillary lymph nodes – anatomical basis*
- Latissimus dorsi and trapezius- location, attachment, nerve supply and actions
- Arterial anastomosis around the scapula*
- Boundaries of triangle of auscultation*
- Deltoid and rotator cuff muscles
- Serratus anterior - attachment and actions
- Shoulder joint - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy
- Anatomical basis of injury to axillary nerve during intramuscular injections*

Topic: Arm and Cubital fossa (AN11.1 to AN11.6)

- Muscle groups of upper arm
- Biceps and triceps brachii

- Important nerves and vessels in arm - origin, course, relations, branches (or tributaries), termination
- Venepuncture of cubital veins - anatomical basis
- Saturday night paralysis - anatomical basis
- Cubital fossa - boundaries and contents
- Anastomosis around elbow joint*

Topic: Forearm and hand (AN12.1 to AN12.15)

- Ventral forearm - muscle groups with attachments, nerve supply and actions
- Nerves and vessels of forearm - origin, course, relations, branches (or tributaries), termination
- Flexor retinaculum - identification and attachments
- Anatomical basis of carpal tunnel syndrome
- Small muscles of hand
- Movements of thumb and muscles involved
- Blood vessels and nerves in hand - course and branches
- Anatomical basis of claw hand
- Fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths
- Infection of fascial spaces of palm*
- Dorsal forearm - muscle groups, attachments, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm
- Wrist drop - anatomical basis
- Compartments deep to extensor retinaculum
- Extensor expansion – identification and formation

Topic: General Features, joints, radiographs and surface marking (AN13.1 to AN13.8)

- Fascia of upper limb and compartments
- Veins of upper limb
- Lymphatic drainage of upper limb
- Dermatomes of upper limb*
- Elbow joint, proximal and distal radio-ulnar joints, wrist joint and first carpometacarpal joint - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply
- Sternoclavicular joint, acromioclavicular joint, carpometacarpal joints and metacarpophalangeal joints*
- Bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand
- Bony landmarks of upper limb - jugular notch, sternal angle, acromial angle, spine of the scapula, vertebral level of the medial end, inferior angle of the scapula
- Surface projection of cephalic and basilic vein
- Palpation of brachial artery and radial artery
- Testing of muscles: trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, brachioradialis
- Development of upper limb*

F. THORAX

Topic: Thoracic cage (AN21.1 to AN21.11)

- Salient features of sternum, typical rib, 1st rib and typical thoracic vertebra
- Features of 2nd, 11th and 12th ribs*
- Features of 1st, 11th and 12th thoracic vertebrae*
- Boundaries of thoracic inlet, cavity and outlet
- Extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles
- Course, relations and branches of a typical intercostal nerve
- Origin, course and branches / tributaries of anterior, posterior intercostal vessels and internal thoracic vessels
- Origin, course, relations and branches of atypical intercostal nerve, superior intercostal artery and subcostal artery*
- Type, articular surfaces and movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints
- Mechanics and types of respiration
- Costochondral and interchondral joints*
- Boundaries and contents of the superior, anterior, middle and posterior mediastinum

Topic: Heart and Pericardium (AN22.1 to AN22.7)

- Pericardium - subdivisions, sinuses, blood supply and nerve supply
- External and internal features of each chamber of the heart
- Origin, course and branches of coronary arteries
- Anatomical basis of ischaemic heart disease
- Formation, course, tributaries and termination of coronary sinus
- Fibrous skeleton of heart
- Position and arterial supply of the conducting system of heart

Topic: Mediastinum (AN23.1 to AN23.7)

- Oesophagus - external appearance, relations, blood supply, nerve supply, lymphatic drainage and applied anatomy
- Thoracic duct - extent, relations, tributaries and applied anatomy
- Origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins
- Branches and relations of arch of aorta and descending thoracic aorta
- Location and extent of thoracic sympathetic chain
- Description of splanchnic nerves*
- Right lymphatic duct – extent, relations and applied anatomy

Topic: Lungs and Trachea (AN24.1 to AN24.6, AN25.1 to AN25.6)

- Pleura – extent, recesses with their applied anatomy, blood supply, lymphatic drainage and nerve supply
- Lungs – side determination, external features including root and clinical correlates
- Description of bronchopulmonary segments
- Phrenic nerve - formation and distribution
- Blood supply, lymphatic drainage and nerve supply of lungs
- Extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea*

Topic: Radiological anatomy of thorax (AN25.7 and AN25.8)

- Identification of structures seen on a plain x-ray chest (PA view)
- Identification of and description in brief of a barium swallow*

Topic: Surface marking of thorax (AN25.9)

- Demonstrate surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart borders, apex beat and surface projection of valves of heart

Topic: Histology of thorax (AN25.1)

- Identification, drawing and labelling of a slide of trachea and lung

Topic: Embryology of thorax (AN25.2 to AN25.6)

- Development of pleura, lung and heart
- Fetal circulation and changes occurring at birth
- Embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy and 4) tracheo-oesophageal fistula
- Developmental basis of common cardiac congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta
- Development of aortic arch arteries, superior vena cava, inferior vena cava and coronary sinus*

G. ABDOMEN AND PELVIS

Topic: Anterior abdominal wall (AN44.1 to AN44.7)

- Planes (transpyloric, transtuberular, subcostal, lateral vertical), regions and quadrants of abdomen
- Anterior abdominal wall – fascia, blood vessels and nerves
- Rectus sheath – formation, contents, linea alba and linea semilunaris
- Inguinal canal - extent, boundaries, contents of inguinal canal, Hesselbach's triangle
- Anatomical basis of inguinal hernia
- Attachments of muscles of anterior abdominal wall
- Common abdominal incisions*
- Umbilicus - position, dermatome and applied aspects*

Topic: Posterior abdominal wall (AN45.1 to AN45.3)

- Thoracolumbar fascia
- Lumbar plexus – root value, formation and branches
- Other nerve plexuses of posterior abdominal wall*
- Major subgroups of back muscles, nerve supply and action*

Topic: Male external genitalia (AN46.1 to AN46.5)

- Testes - coverings, internal structure, side determination, blood supply, nerves supply and lymphatic drainage
- Descent of testis with its applied anatomy
- Parts of epididymis
- Penis - parts, components, blood supply and lymphatic drainage
- Anatomical basis of varicocoele*

- Anatomical basis of phimosis and circumcision*
- Spermatic cord and its contents

Topic: Abdominal cavity (AN47.1 to AN47.14)

- Greater and lesser sac - boundaries and recesses
- Naming and identification of peritoneal folds and pouches
- Anatomical basis of ascites, peritonitis and subphrenic abscess*
- Spleen - anatomical position, external features, peritoneal and visceral relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Anatomical basis of splenic notch, accessory spleens and Kehr's sign*
- Coeliac trunk- origin, course, important relations and branches
- Abdominal part of oesophagus - anatomical position, blood supply, nerve supply, lymphatic drainage and applied aspects
- Stomach - anatomical position, external features, peritoneal and visceral relations, blood supply, nerve supply, lymphatic drainage and applied anatomy
- Anatomical basis of lymphatic spread in carcinoma stomach and different types of vagotomy*
- Mesentery – extent, borders, contents, relations and applied aspects
- Small Intestine - parts, macroscopic difference between jejunum and ileum, nerve supply and lymphatic drainage
- Superior mesenteric artery - origin, course, termination, important relations and branches
- Large intestine - features, extent, peritoneal and other relations
- Caecum - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Vermiform appendix - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Inferior mesenteric artery - origin, course, important relations and branches
- Duodenum - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Pancreas - anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Liver and extrahepatic biliary apparatus - anatomical position, external features, important peritoneal relations and visceral relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- Clinical importance of Calot's triangle*
- Anatomical basis of site of needle puncture in liver biopsy, referred pain in cholecystitis and obstructive jaundice*
- Portal vein – formation, course, relations, tributaries and sites of porta-systemic anastomoses
- Anatomical basis of haematemesis and caput medusae in portal hypertension
- Kidneys - anatomical position, side determination, coverings, external features, important visceral relations, blood supply,

- nerve supply, lymphatic drainage and applied anatomy
- ☐ Anatomical basis of radiating pain of kidney to groin*
- ☐ Ureter – extent, parts, course, relations, constrictions, blood supply, nerve supply, lymphatic drainage and applied aspects
- ☐ Suprarenal gland - anatomical position, coverings, external features, important visceral and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects
- ☐ Thoraco-abdominal diaphragm – attachments, major and minor openings, nerve supply and actions
- ☐ Thoraco-abdominal diaphragm - abnormal openings and diaphragmatic hernia*
- ☐ Abdominal aorta - origin, course, important relations and branches
- ☐ Inferior vena cava - formation, course, relations and tributaries

Topic: Pelvic wall and viscera (AN48.1 to AN48.8)

- ☐ Muscles of pelvic diaphragm
- ☐ Position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of important male and female pelvic viscera
- ☐ Origin, course, important relations and branches of internal iliac artery
- ☐ Branches of sacral plexus
- ☐ Anatomical basis of suprapubic cystostomy, urinary obstruction in benign prostatic hypertrophy, retroverted uterus, prolapse uterus, internal and external haemorrhoids, anal fistula, vasectomy, tubal pregnancy and tubal ligation*
- ☐ Neurological basis of automatic bladder*
- ☐ Lobes involved in benign prostatic hypertrophy and prostate cancer*
- ☐ Structures palpable during vaginal and rectal examination*

Topic: Perineum (AN49.1 to AN49.5)

- ☐ Boundaries and contents of superficial and deep perineal pouch
- ☐ Perineal body - identification and description
- ☐ Perineal membrane in male and female
- ☐ Ischiorectal fossa - boundaries, contents and applied anatomy
- ☐ Anatomical basis of perineal tear, episiotomy, perianal abscess and anal fissure*

Topic: Vertebral column (AN50.1 to AN50.4)

- ☐ Curvatures of the vertebral column
- ☐ Type, articular ends, ligaments and movements of intervertebral joints, sacroiliac joints and pubic symphysis
- ☐ Site, direction of the needle and structures pierced during lumbar puncture
- ☐ Anatomical basis of scoliosis, lordosis, prolapsed disc, spondylolisthesis and spina bifida*

Topic: Sectional Anatomy of Abdomen and Pelvis (AN51.1, AN51.2)

- ☐ Cross-sections at T8, T10 and L1 (transpyloric plane) levels
- ☐ Midsagittal section of male and female pelvis

Topic: Histology and embryology (AN52.1 to AN52.8)

- ☐ Microstructure of oesophagus, cardiooesophageal

- junction*, fundus of stomach, pylorus of stomach
- Microstructure of duodenum, jejunum, ileum
- Microstructure of colon, appendix
- Microstructure of liver, gallbladder, pancreas
- Microstructure of kidney, ureter, suprarenal gland
- Microstructure of testis, epididymis, vas deferens, penis, prostate gland
- Microstructure of ovary, uterus, uterine tube, cervix*, placenta, umbilical cord, corpus luteum*
- Development of anterior abdominal wall*
- Development and congenital anomalies of diaphragm
- Development and congenital anomalies of foregut
- Development and congenital anomalies of midgut
- Development and congenital anomalies of hindgut
- Development of urinary system
- Development of male reproductive system
- Development of female reproductive system

Topic: Osteology (AN53.1 to AN53.4)

- Lumbar vertebrae - anatomical position, salient features, articulations and attachments of muscle groups
- Sacrum and coccyx - anatomical position, salient features, articulations and attachments of muscle groups
- Bony pelvis - anatomical position, boundaries of pelvic inlet, pelvic cavity and pelvic outlet,
- True and false pelvis with sex differences
- Clinical importance - sacralization of lumbar vertebra, lumbarization of 1st sacral vertebra, types of bony pelvis*

Topic: Radiological anatomy (AN 54.1 to AN54.3)

- Features of plain X ray abdomen
- Contrast X ray - barium swallow, barium meal, barium enema
- Cholecystography
- Intravenous pyelography
- Hysterosalpingography
- ERCP*
- CT abdomen*
- MRI abdomen and pelvis*
- Abdominal arteriography*

Topic: Surface marking (AN 55.1 and AN55.2)

- Regions and planes of abdomen
- Superficial inguinal ring
- Deep inguinal ring
- McBurney's point
- Renal angle
- Murphy's point
- Surface projections of - stomach, liver, fundus of gall bladder, spleen, duodenum, pancreas, ileocaecal junction, kidneys and root of mesentery, abdominal aorta and inferior vena cava

H. LOWER LIMB

Topic: Features of individual bones (lower limb) (AN 14.1 – 14.4)

- Hip bone, femur, patella, tibia, fibula - side determination, anatomical position and important features
- Joints formed by the given bone
- Muscle group attachments on above bones
- Importance of ossification of lower end of femur and upper end of tibia
- Identification and naming of bones in articulated foot with individual muscle attachments*

Topic: Front & Medial Side of Thigh (AN15.1 to AN15.6)

- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh
- Major muscles with their attachment, nerve supply and actions
- Femoral triangle - boundaries and contents
- Anatomical basis of psoas abscess & femoral hernia*
- Adductor canal – boundaries and contents

Topic: Gluteal region & Back of thigh (AN16.1 to AN16.6)

- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region
- Major muscles with their attachment, nerve supply and actions
- Anatomical basis of sciatic nerve injury during gluteal intramuscular injections
- Anatomical basis of Trendelenburg sign
- Hamstring group of muscles with their attachment, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh
- Popliteal fossa - boundaries, roof, floor, contents and relations

Topic: Hip joint (AN17.1 to AN17.3)

- Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint
- Anatomical basis of complications of fracture neck of femur*
- Dislocation of hip joint and surgical hip replacement*

Topic: Knee joint, Antero-lateral compartment of leg & Dorsum of foot (AN18.1 to AN18.7)

- Major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterolateral compartment of leg
- Anatomical basis of foot drop
- Type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the knee joint
- Anatomical basis of locking and unlocking of the knee joint

- Anatomical basis of knee joint injuries*
- Anatomical basis of osteoarthritis*

Topic: Back of leg & Sole (AN19.1 to AN19.7)

- Major muscles of back of leg with their attachment, nerve supply and actions
- Origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg
- Concept of “peripheral heart”
- Sole - layers, muscles, vessels and nerves
- Anatomical basis of rupture of calcaneal tendon*
- Factors maintaining arches of the foot and their importance
- Anatomical basis of flat foot and club foot*
- Anatomical basis of metatarsalgia and plantar fasciitis*

Topic: General features, joints, radiographs & surface marking (AN 20.1 – 20.10)

- Tibiofibular and ankle joints - type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply
- Subtalar and transverse tarsal joints*
- Fascia lata, venous drainage, lymphatic drainage, retinacula and dermatomes of lower limb
- Anatomical basis of enlarged inguinal lymphnodes*
- Anatomical basis of varicose veins and deep vein thrombosis
- Bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb
- Important bony landmarks of lower limb - vertebral level of highest point on iliac crest, anterior and posterior superior iliac spines, iliac tuberosity, pubic tubercle, ischial tuberosity, adductor tubercle, tibial tuberosity, head of fibula, medial and lateral malleoli, condyles of femur and tibia, sustentaculum tali, tuberosity of fifth metatarsal and tuberosity of the navicular
- Palpation of arterial pulses in a simulated environment - femoral, popliteal, anterior tibial, posterior tibial and dorsalis pedis
- Surface marking - mid inguinal point, saphenous opening, great and small saphenous veins, femoral nerve, sciatic, tibial, common peroneal and deep peroneal nerve
- Basic concept of development of lower limb*

I. HEAD AND NECK

Topic: Skull osteology (AN26.1 to AN26.7)

- Anatomical position of skull
- Identification and naming of individual skull bones
- Features of norma frontalis, verticalis, occipitalis, lateralis and basalis
- Cranial cavity - subdivisions, foramina and structures passing through them
- Morphological features of mandible
- Features of typical and atypical cervical vertebrae (atlas and axis)
- Concept of membranous ossification*
- Features of the 7th cervical vertebra*

Topic: Scalp (AN27.1 and AN27.2)

- Scalp - layers, blood supply, nerve supply and surgical importance
- Emissary veins and their role in spread of infection from extracranial route to intracranial venous sinuses

Topic: Face and parotid region (AN28.1 to AN28.10)

- Muscles of facial expression and their nerve supply
- Sensory innervation of face
- Origin / formation, course, branches / tributaries of facial vessels
- Branches of facial nerve with distribution
- Cervical lymph nodes and lymphatic drainage of head, face and neck
- Superficial muscles of face, their nerve supply and actions
- Anatomical basis of facial nerve palsy
- Surgical importance of deep facial vein
- Parotid gland - parts, borders, surfaces, contents, relations, nerve supply, course of its duct and surgical importance
- Anatomical basis of Frey's syndrome*

Topic: Posterior triangle of neck (AN29.1 to AN29.4)

- Sternocleidomastoid - attachments, nerve supply, relations and actions
- Anatomical basis of Erb's and Klumpke's palsy
- Anatomical basis of wry neck*
- Attachments of inferior belly of omohyoid, scalenus anterior, scalenus medius and levator scapulae*

Topic: Cranial cavity (AN30.1 to AN30.5)

- Cranial fossae and related structures
- Major foramina with structures passing through them
- Identification and description of dural folds and dural venous sinuses
- Clinical importance of dural venous sinuses
- Effect of pituitary tumours on visual pathway*

Topic: Orbit (AN31.1 to AN31.5)

- Extraocular muscles – demonstration and description
- Nerves and vessels in the orbit - demonstration and description
- Anatomical basis of Horner's syndrome*
- Components of lacrimal apparatus
- Anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus

Topic: Anterior triangle of neck (AN32.1 and AN32.2)

- Boundaries and subdivisions of anterior triangle
- Boundaries and contents of muscular, carotid, digastric and submental triangles

Topic: Temporal and infratemporal region (AN33.1 to AN33.5)

- Temporal and infratemporal fossae - extent, boundaries and contents
- Muscles of mastication - attachments, direction of fibres, nerve supply and actions
- Temporomandibular joint - articulating surface, type and movements
- Clinical significance of pterygoid venous plexus

- Features of dislocation of temporomandibular joint*

Topic: Submandibular region (AN34.1 and AN34.2)

- Submandibular salivary gland - morphology, relations and nerve supply including submandibular ganglion
- Anatomical basis of formation of submandibular stones*

Topic: Deep structures in the neck (AN35.1 to AN35.10)

- Deep cervical fascia - parts, extent, attachments and modifications
- Thyroid gland - location, parts, borders, surfaces, relations and blood supply
- Subclavian artery - origin, parts, course and branches
- Internal jugular and brachiocephalic veins - formation, course, relations, tributaries and termination
- Cervical lymph nodes - extent, drainage and applied anatomy
- Cervical sympathetic chain - extent, formation, relation and branches
- IX, X, XI and XII cranial nerves - course and branches in the neck
- Anatomical basis of clinical features of thyroid swellings*
- Anatomical basis of clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib*
- Fascial spaces of neck*

Topic: Mouth, pharynx and palate (AN36.1 to AN36.5)

- Palatine tonsil - morphology, relations, blood supply and applied anatomy
- Composition of soft palate
- Waldeyer's lymphatic ring - components and functions
- Pyramidal fossa - boundaries and clinical significance*
- Anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess*
- Clinical significance of Killian's dehiscence*

Topic: Cavity of nose (AN37.1 to AN37.3)

- Nasal septum and lateral wall of nose – features, blood supply and nerve supply
- Paranasal sinuses - location and functional anatomy
- Anatomical basis of sinusitis and maxillary sinus tumours*

Topic: Larynx (AN38.1 to AN38.3)

- Larynx - morphology, structure of the walls, nerve supply, blood supply and actions of intrinsic and extrinsic muscles
- Anatomical aspects of laryngitis*
- Anatomical basis of recurrent laryngeal nerve injury*

Topic: Tongue (AN39.1 and AN39.2)

- Tongue - morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles
- Anatomical basis of hypoglossal nerve palsy*

Topic: Organs of hearing and equilibrium (AN40.1 to AN40.5)

- External ear - parts, blood supply and nerve supply
- Middle ear and auditory tube - boundaries, contents, relations

- and functional anatomy
- ☐ Features of internal ear*
- ☐ Anatomical basis of otitis externa and otitis media*
- ☐ Anatomical basis of myringotomy*

Topic: Eyeball (AN41.1 to AN41.3)

- ☐ Eyeball - parts and layers
- ☐ Anatomical aspects of cataract, glaucoma and central retinal artery occlusion*
- ☐ Intraocular muscles - position, nerve supply and actions*

Topic: Back region (AN42.1 to AN42.3)

- ☐ Contents of the vertebral canal
- ☐ Suboccipital triangle - boundaries and contents
- ☐ Semispinalis capitis and splenius capitis - position, direction of fibres, relations, nerve supply and actions*

Topic: Head and neck joints, histology, development, radiography and surface marking (AN43.1 to AN43.9)

- ☐ Atlantooccipital joint and atlantoaxial joint - movements with muscles producing them
- ☐ Microanatomy of pituitary gland, thyroid gland, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea and retina
- ☐ Microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea, organ of Corti and pineal gland*
- ☐ Development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland and eye
- ☐ Testing of muscles of facial expression, extraocular muscles and muscles of mastication,
- ☐ Palpation of arteries - carotid, facial and superficial temporal arteries
- ☐ Location of - hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels
- ☐ Surface marking - thyroid gland, parotid gland and duct, pterion, common carotid artery, internal jugular vein, subclavian vein, external jugular vein, facial artery in the face and accessory nerve
- ☐ Identify the anatomical structures in 1) Plain X-ray skull – AP and lateral view; 2) Plain X-ray cervical spine - AP and lateral view; 3) Plain X-ray of paranasal sinuses
- ☐ Carotid and vertebral angiograms - anatomical route and anatomical structures*

J. NEUROANATOMY

Topic: Meninges and CSF (AN56.1 and AN56.2)

- ☐ Meninges - layers with their extent and modifications
- ☐ Circulation of CSF with its applied anatomy

Topic: Spinal cord (AN57.1 to AN57.5)

- ☐ Spinal cord - external features, extent in child and adult with its clinical

implications

- Transverse section of spinal cord at mid-cervical and mid-thoracic level
- Ascending and descending tracts at mid thoracic level of spinal cord
- Anatomical basis of syringomyelia*

Topic: Medulla oblongata (AN58.1 to AN58.4)

- Medulla oblongata - external features
- Transverse section of medulla oblongata at the level of 1) pyramidal decussation; 2) sensory decussation; 3) inferior olivary nucleus
- Cranial nerve nuclei in medulla oblongata with their functional components
- Anatomical basis and effects of medial and lateral medullary syndrome*

Topic: Pons (AN59.1 to AN59.3)

- Pons - external features
- Transverse section of pons at the upper and lower level
- Cranial nerve nuclei in pons with their functional components

Topic: Cerebellum (AN60.1 to AN60.3)

- Cerebellum - external and internal features
- Connections of cerebellar cortex and intracerebellar nuclei
- Anatomical basis of cerebellar dysfunction*

Topic: Midbrain (AN61.1 to AN61.3)

- Midbrain - external and internal features
- Internal features of midbrain at the level of superior and inferior colliculus
- Anatomical basis and effects of Benedikt's and Weber's syndrome*

Topic: Cranial nerve nuclei and cerebral hemispheres (AN62.1 to AN62.6)

- Cranial nerve nuclei with their functional components
- Cerebral hemispheres – poles, surfaces, sulci, gyri and functional areas
- White matter of cerebrum
- Basal ganglia and limbic lobe - parts and major connections
- Dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus - boundaries, parts, gross relations, major nuclei and connections
- Circle of Willis - formation, branches and major areas of distribution

Topic: Ventricular system (AN63.1 and AN63.2)

- Lateral, 3rd and 4th ventricles - parts, boundaries and features
- Anatomical basis of congenital hydrocephalus*

Topic: Histology and Embryology (AN64.1 to AN64.3)

- Microanatomical features of spinal cord, cerebellum and cerebrum
- Development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemispheres and cerebellum
- Various types of open neural tube defects with their embryological basis*

K. ETHICS IN ANATOMY – AN82.1

- Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue