DEPARTMENT OF ANATOMY

IGMC SHIMLA

Competency Based Under Graduate Curriculum - 2019

Number	COMPETENCY The student should be able to	Objective At the end of the session student should know
AN1.1	Demonstrate normal anatomical position, various planes, relation, comparison, laterality & movement in our body	a) Define and demonstrate various positions and planes b) Anatomical terms used for lower trunk, limbs, joint movements, bony features, blood vessels, nerves, fascia, muscles and clinical anatomy
AN1.2	Describe composition of bone and bone marrow	a) Various classifications of bones b) Structure of bone
AN2.1	Describe parts, blood and nerve supply of a long bone	a) Parts of young bone b) Types of epiphysis c) Blood supply of bone d) Nerve supply of bone
AN2.2	Enumerate laws of ossification	a) Development and ossification of bones with laws of ossification b) Medico legal and anthropological aspects of bones
AN2.3	Enumerate special features of a sesamoid bone	a) Enumerate various sesamoid bones with their features and functions
AN2.4	Describe various types of cartilage with its structure & distribution in body	a) Differences between bones and cartilage b) Characteristics features of cartilage

		c) Types of cartilage and their distribution in body
AN2.5	Describe various joints with subtypes and examples	a) Various classification of joints b) Features and different types of fibrous joints with examples c) Features of primary and secondary cartilaginous joints d) Different types of synovial joints e) Structure and function of typical synovial joint f) Joint positions g) Factors maintaining stability of joints
AN2.6	Explain the concept of nerve supply of joints & Hilton's law	a) Nerve supply of joints and Hilton law
AN3.1	Classify muscle tissue according to structure & action	a) Define muscles b) Differentiate between skeletal, smooth and cardiac muscles c) Fascicular architecture and nomenclature of muscles
AN3.2	Enumerate parts of skeletal muscle and differentiate between tendons and aponeuroses with examples	a) Parts of muscle b) Differentiate between tendon and aponeurosis with examples
AN3.3	Explain Shunt and spurt muscles	a) Explain agonist, antagonist, fixator and synergist muscles
AN4.1	Describe different types of skin & dermatomes in body	a) Differentiate between thick and thin skin b) Types of surface irregularities of skin with papillary ridges in fingerprints c) Define dermatome with clinical correlation
AN4.2	Describe structure & function of skin with its appendages	a) Principal layers of skin with their subtypes

		b) Enumerate functions of skin c) Enumerate appendages, their structure and subtypes with functions
AN4.3	Describe superficial fascia along with fat distribution in body	a) Define distribution, features and functions of superficial fascia b) Types of fat and its distribution in superficial fascia
AN4.4	Describe modifications of deep fascia with its functions	a) Define distribution, features, function and modification of fascia
AN4.5	Explain principles of skin incisions	a) Principles of skin incisions along Langer's lines
AN5.1	Differentiate between blood vascular and lymphatic system	a) Differences between blood vascular system and lymphatic system. b) Comparison of lymph and blood capillaries.
AN5.2	Differentiate between pulmonary and systemic circulation	a) Describe pulmonary and systemic circulation.
AN5.3	List general differences between arteries & veins	a) Characteristic features of arteries and veins b) Differences between arteries and veins. c) Factors helping in venous return.
AN5.4	Explain functional difference between elastic, muscular arteries and arterioles	a) Classify arteries with functions and examples. b) Types of capillaries. c) Differences between capillaries and sinusoids.
AN5.5	Describe portal system giving examples	a) Characteristics and examples of portal circulation.
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries	a) Define anastomosis and types of anastomosis. b) Define collateral circulation. c) Define end arteries with examples

AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses	a) Define and write functions of metarteriole, precapillary sphincters and arteriovenous anastomosis.
AN5.8	Define thrombosis, infarction & aneurysm	a) Definition of thrombosis, embolism, infarction and aneurysm with example.
AN6.1	List the components and functions of the lymphatic system	a) Define lymphatic system and discuss its functions b) Elucidate the components of lymphatic system with their structure and function
AN6.2	Describe structure of lymph capillaries & mechanism of lymph circulation	a) Circulation of lymph b) Structure of lymph capillaries c) Differences between blood and lymph capillaries
AN6.3	Explain the concept of lymphoedema and spread of tumours via lymphatics and venous system	a) Define lymphadenitis, lymphangitis and lymph oedema b) Mechanism of spread of tumours via lymphatics and blood
Topic: Introduction to the nervous system		
AN7.1	Describe general plan of nervous system with components of central, peripheral & autonomic nervous systems	a) Define nervous system and discuss its function b) Anatomical and functional subdivisions of nervous system c) Components of central peripheral and autonomic nervous system and their subdivisions
AN7.2	List components of nervous tissue and their functions	a) Components and functions of nervous tissue b) Types, structure and functions of neurological cells c) Introduction to blood brain barrier
AN7.3	Describe parts of a neuron and classify them based on number of neurites, size & function	a) Describe structure of neuron

		b) Various classification of neurons based on polarity, length of axon and dendrites, functions
AN7.4	Describe structure of a typical spinal nerve	a) Introduction of spinal nerves. b) Structure of typical spinal nerve. c) Distribution of sympathetic fibres through spinal nerves. d) Plexus formation by spinal nerves.
AN7.5	Describe principles of sensory and motor innervation of muscles	a) Define motor point, motor unit, neurovascular junction, motor end plate, sole plate, synaptic cleft, composite and hybrid muscle. b) Types of muscle receptor. c) Sensory and motor nerve supply of muscles
AN7.6	Describe concept of loss of innervation of a muscle with its applied anatomy	a) Define paralysis, spastic and flaccid paralysis in relation to upper motor neuron and lower motor neurons. b) Anatomical basis of organophosphorus poisoning and myasthenia gravis.
AN7.7	Describe various type of synapse	a) Define synapse. b) Structure of synapse. c) Types of synapse d) Mechanism of transmission of synapse.
AN7.8	Describe differences between sympathetic and spinal ganglia	a) Differentiate between sympathetic ganglion and spinal ganglia. b) Difference between nucleus and ganglion.
Topic: Features of individual bones (Upper Limb)		
AN8.1	Identify the given bone, its side, important features & keep it in anatomical position	a) Identification, side determination, anatomical position and important general features of clavicle, scapula, humerus, radius and ulna

AN8.2	Identify & describe joints formed by the given bone	a) Name the joints, type of joints formed by given bones and the movements occurring at the joints. b) Demonstrate the movements at joint.
AN8.3	Enumerate peculiarities of clavicle	a) Enumerate the functions and peculiarities of the clavicle.
AN8.4	Demonstrate important muscle attachment on the given bone	a) Attachments of important muscles on the given bone and applied aspect of the bone.
AN8.5	Identify and name various bones in articulated hand, Specify the parts of metacarpals and phalanges and enumerate the peculiarities of pisiform	a) Identification with important features in the articulated hand, parts of metacarpals and phalanges and peculiarities of pissiform with applied aspect of bones of hand.
AN8.6	Describe scaphoid fracture and explain the anatomical basis of avascular necrosis	a) Blood supply of scaphoid and anatomical basis of avascular necrosis.
Topic: Pectoral region		
AN9.1	Describe attachment, nerve supply & action of pectoralis major and pectoralis minor	a) Origin, insertion, actions and nerve supply of pectoralis major and minor. b) Identification and demonstrate the action of pectoralis major.
AN9.2	Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	a) Location, shape and extent, deep relations, structure, age changes, lymphatic drainage, nerve supply, microanatomy, applied of breast with diagrams. b) Demonstrate the deep relations of breast
AN9.3	Describe development of breast	a) Development of breast with congenital anomalies of breast.
Topic: Axilla, Shoulder and Scapular region		
AN10.1	Identify & describe boundaries and contents of axilla	a) Describe the boundaries with diagrams and enumerate the contents of axilla. b) Demonstrate the boundaries and contents of axilla.

AN10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery & tributaries of vein	a) Identification and description of origin, extent, course, parts, relations and branches of axillary artery with applied aspect and diagrams of axillary artery. b) Formation and tributaries of axillary vein. c) Demonstrate axillary artery and its branches.
AN10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus	a) Roots, trunks, divisions and branches of brachial plexus, area of supply of branches with diagram. b) Demonstrate the brachial plexus.
AN10.4	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage	a) Description of groups of axillary lymph nodes with areas of drainage with diagram and applied aspect. b) Demonstrate the examination of axillary lymph nodes.
AN10.5	Explain variations in formation of brachial plexus	a) Description of prefixed and post fixed brachial plexus.
AN10.6	Explain the anatomical basis of clinical features of Erb's palsy and Klumpke's paralysis	a) Description of Erb's point, cause of injury, nerve roots involved, muscles paralysed, deformity and disability caused by Erb's paralysis. b) Description of cause of injury, nerve roots involved, muscle paralysed, deformity and disability caused by Klumpke's paralysis.
AN10.7	Explain anatomical basis of enlarged axillary lymph nodes	a) Clinical correlation of enlarged axillary lymph nodes.
AN10.8	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi	a) Origin, insertion, nerve supply and actions of trapezius and latissimus dorsi muscles with applied aspects. b) Demonstrate the actions of trapezius and serratus anterior.
AN10.9	Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation	a) Description of arteries forming anastomosis around body of scapula and acromion process and collateral circulation. b) Boundaries of triangle of auscultation and its applied importance.

AN10.10	Describe and identify the deltoid and rotator cuff muscles	a) Description of origin, insertion, nerve supply, action, applied aspect of deltoid and demonstration of its action. b) Description of muscles forming rotator cuff, functions of rotator cuff and applied aspect.
AN10.11	Describe & demonstrate attachment of serratus anterior with its action	a) Origin, insertion, nerve supply, action and applied importance of serratus anterior. b) Demonstrate action of serratus anterior.
AN10.12	Describe and demonstrate shoulder joint for– type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved, blood supply, nerve supply and applied anatomy	a) Description of shoulder joint for type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, muscles involved in movements, blood supply, nerve supply and applied anatomy of shoulder joint with diagram. b) Demonstration of movements at shoulder joint.
AN10.13	Explain anatomical basis of Injury to axillary nerve during intramuscular injections	a) Description of origin, course, branches and applied aspect of axillary nerve with diagram.
Topic: Arm & Cubital fossa		
AN11.1	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii	a) Enumerate the contents of anterior and posterior compartments of arm. b) Origin, insertion, nerve supply and actions of biceps and triceps muscles. c) Demonstrate biceps and triceps.
AN11.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm	a) Description of origin, root value, course, relations and branches of musculocutaneous nerve. b) Origin, course, relations and branches and applied aspect of brachial artery. c) Demonstrate musculocutaneous nerve and brachial artery.

AN11.3	Describe the anatomical basis of Venepuncture of cubital veins	a) Description of median cubital vein and anatomical basis of venepuncture. b) Demonstration of median cubital vein.
AN11.4	Describe the anatomical basis of Saturday night paralysis	a) Description of radial nerve and anatomical basis of Saturday night palsy. b) Demonstration of radial nerve.
AN11.5	Identify & describe boundaries and contents of cubital fossa	a) Description of boundaries, contents, applied of cubital fossa with diagrams. b) Demonstration of boundaries and contents of cubital fossa.
AN11.6	Describe the anastomosis around the elbow joint	a) Description of arteries forming anastomosis around elbow joint with diagrams.
Topic: Forearm & hand		
AN12.1	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	a) Describe origin, insertion, nerve supply and actions of muscles of front of forearm. b) Demonstrate the common flexor origin and muscles of front of forearm.
AN12.2	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm	a) Description of ulnar and median nerve in forearm with applied and diagrams. b) Demonstrate ulnar nerve and median nerve in forearm.
AN12.3	Identify & describe flexor retinaculum with its attachments	a) Description of flexor retinaculum with attachments and structures passing superficial and deep to it with diagrams. b) Demonstration of flexor retinaculum.

AN12.4	Explain anatomical basis of carpal tunnel syndrome	a) Description of causes and characteristic clinical features of carpal tunnel syndrome.
AN12.5	Identify & describe small muscles of hand. Also describe movements of thumb and muscles involved	a) Description of intrinsic muscles of hand. b) Description of movements of thumb and muscle producing them. c) Demonstrate movements of thumb and small joints of hand.
AN12.6	Describe & demonstrate movements of thumb and muscles involved	a) Description of intrinsic muscles of hand. b) Description of movements of thumb and muscle producing them. c) Demonstrate movements of thumb and small joints of hand.
AN12.7	Identify & describe course and branches of important blood vessels and nerves in hand	a) Description of ulnar nerve and median nerve in hand. b) Description of radial artery and ulnar artery in hand and formation of superficial and deep palmar artery in hand with diagrams and applied. c) Demonstrate radial artery, ulnar artery, ulnar nerve and median nerve in hand.
AN12.8	Describe anatomical basis of Claw hand	a) Description of anatomical basis of claw hand.
AN12.9	Identify & describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	a) Description of fibrous flexor sheath, ulnar bursa, radial bursa, digital synovial sheath with applied and diagrams. b) Demonstrate fibrous flexor sheath, ulnar bursa, radial bursa and digital synovial sheath.
AN12.10	Explain infection of fascial spaces of palm	a) Enumerate the various fascial spaces of hand with description of their shape, location, extent, communications and boundaries, drainage and applied with diagrams.

AN12.11	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	a) Description of muscles of dorsal forearm. b) Demonstration of common extensor origin and muscles of back of forearm
AN12.12	Identify & describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	a) Description of posterior interosseous nerve and artery. b) Demonstration of posterior interosseous nerve and artery.
AN12.13	Describe the anatomical basis of Wrist drop	a) Description of anatomical basis of wrist drop.
AN12.14	Identify & describe compartments deep to extensor retinaculum	a) Description of attachments and compartments deep to extensor retinaculum with diagrams. b) Demonstration of extensor retinaculum.
AN12.15	Identify & describe extensor expansion formation	a) Description of dorsal digital expansion with diagrams and applied. b) Demonstration of dorsal digital expansion.
Topic: General Features, Joints, radiographs & surface marking		
AN13.1	Describe and explain Fascia of upper limb and compartments, veins of upper limb and its lymphatic drainage	a) Description of fascial compartments of upper limb, cutaneous nerves, veins and lymphatic drainage of upper limb with diagrams and applied.
AN13.2	Describe dermatomes of upper limb	a) Define dermatome, embryological basis and important features of dermatome with diagrams.
AN13.3	Identify & describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radio-ulnar joints, wrist joint & first carpometacarpal joint	a) Description of elbow joint, proximal and distal radioulnar joints, wrist joint, first carpometacarpal joint in relation to type, articular surface, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply, applied and diagrams. b) Demonstration of movements at joints.

AN13.4	Describe Sternoclavicular joint, Acromioclavicular joint, Carpometacarpal joints & Metacarpophalangeal joint	a) Description of sternoclavicular, acromioclavicular, carpometacarpal and metacarpophalangeal joints.
AN13.5	Identify the bones and joints of upper limb seen in anteroposterior and lateral view radiographs of shoulder region, arm, elbow, forearm and hand	a) Demonstrate bones and joints of upper limb in radiograph (AP and lateral view).
AN13.6	Identify & demonstrate important 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	a) Description of important landmarks of upper limb (jugular notch, sternal angle, acromion angle, spine of scapula and vertebral level of inferior angle of scapula). b) Demonstration of important landmarks of upper limb.
AN13.7	Identify & demonstrate surface projection of: Cephalic and basilic vein, Palpation of Brachial artery, Radial artery, Testing of muscles: Trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps brachii, Brachioradialis	a) Description of surface marking of cephalic and basilica vein, clinical testing of muscles (trapezius, pectoralis major, serratus anterior, latissimus dorsi, deltoid, biceps and brachioradialis). b) Demonstrate surface marking of basilic and cephalic veins. c) Demonstrate clinical testing of muscles. d) Demonstrate palpation of radial and brachial artery.
AN13.8	Describe development of upper limb	a) Description of development of upper limb with congenital anomalies.
Features of individual bones (Lower Limb)		
AN14.1	Identify the given bone, its side, important features & keep it in anatomical position	a) Identification, anatomical position, side determination, important general and special features of a given bone (hip bone, femur, tibia and fibula).

AN14.2	Identify & describe joints formed by the given bone	a) Name the joint, its type and demonstrate movements at the joint formed by hip bone, femur, tibia and fibula.
AN14.3	Describe the importance of ossification of lower end of femur & upper end of tibia	a) Explain medico legal importance of lower end of femur and upper end of tibia based on its ossification.
AN14.4	Identify and name various bones in the articulated foot with individual muscle attachment	a) Identify and name the various bones in articulated foot with important muscle attachment, various joints formed and type of joint.
Topic: Front & Medial side of thigh		
AN15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	a) Description of origin, course, relations, branches/tributaries of femoral nerve, femoral artery, femoral vein with diagrams and applied importance. b) Demonstrate femoral vessels, femoral nerve with branches/tributaries.
AN15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions	a) Enumerate muscles of front of thigh with description of origin, insertion action and nerve supply. b) Demonstrate muscles of front of thigh.
AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	a) Description of boundaries, floor, roof and contents of femoral triangle with diagrams, applied importance. b) Description of formation, compartment, contents and clinical importance of femoral sheath with diagrams and applied importance. c) Demonstrate boundaries and contents of femoral triangle.
AN15.4	Explain anatomical basis of Psoas abscess & Femoral hernia	a) Description of anatomical basis of psoas abscess and femoral hernia.
AN15.5	Describe and demonstrate adductor canal with its content	a) Description of adductor canal boundaries and contents with well labelled diagrams and applied.

		b) Dissection of adductor canal.
Topic: Gluteal region & back of thigh		
AN16.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region	a) Dissection of structures under cover of gluteus maximus. b) Description of origin, insertion, nerve supply of glutei muscles with applied importance. c) List structures passing through greater and lesser sciatic notch. d) Explain functional significance of cruciate and trochanteric anastomosis. e) Demonstrate structure lying on ischial spine.
AN16.2	Describe anatomical basis of sciatic nerve injury during gluteal intramuscular injections	a) Description of origin, course, function and applied importance of sciatic nerve and explain how to prevent damage to sciatic nerve while giving intramuscular injection.
AN16.3	Explain the anatomical basis of Trendelenburg sign	a) Explain anatomical basis of Trendelenburg's sign and lurching gait.
AN16.4	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions	a) Description of origin, insertion, nerve supply and actions of hamstring muscles. b) Dissection of hamstring group of muscles.
AN16.5	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh	a) Description of origin, course, relation branches of sciatic nerve in the back of thigh. b) Clinical importance of anastomosis on the back of thigh. c) Demonstrate sciatic nerve with its branches.
AN16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa	a) Description of boundaries, roof, floor and contents of popliteal fossa with well labelled diagrams.

		b) Description of origin, course, branches and clinical importance of common peroneal nerve and tibial nerve. c) Dissection of boundaries and contents of popliteal fossa.
Topic: Hip Joint		
AN17.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply, bursae around the hip joint	a) Description of type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood supply, nerve supply, bursae around hip joint, structures responsible for stability with well labelled diagrams and applied importance. b) Demonstrate movements at hip joint.
AN17.2	Describe anatomical basis of complications of fracture neck of femur	a) Explain anatomical basis of complications of fracture neck of femur.
AN17.3	Describe dislocation of hip joint and surgical hip replacement	a) Describe dislocation of hip joint and surgical hip replacement.
Topic: Knee joint, Anterolateral compartment of leg & dorsum of foot		
AN18.1	Describe and demonstrate major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions	a) Describe muscles of anterolateral compartment of leg with origin, insertion, nerve supply and action. b) Dissection of anterolateral compartment of leg.
AN18.2	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior compartment of leg	a) Describe anterior tibial artery and deep peroneal nerve with origin, course, relations, branches and applied. b) Explain dorsalis pedis artery. c) Dissection of anterior compartment.
AN18.3	Explain the anatomical basis of foot drop	a) Explain anatomical basis of foot drop.
AN18.4	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations,	a) Describe type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles

	movements and muscles involved, blood and nerve supply, bursae around the knee joint	involved, blood supply, nerve supply, bursae around knee joint and diagram. b) Demonstration of movements at knee joint.
AN18.5	Explain the anatomical basis of locking and unlocking of the knee joint	a) Explain anatomical basis of locking and unlocking of knee joint.
AN18.6	Describe knee joint injuries with its applied anatomy	a) Identify the factors responsible for stability of knee joint, describe knee injuries and explain anatomical basis of tests to access the integrity of cruciate ligaments.
AN18.7	Explain anatomical basis of Osteoarthritis	a) Explain anatomical basis of osteoarthritis.
Topic: Back of Leg & Sole		
AN19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	a) Describe muscles of back of leg with origin, insertion, nerve supply and actions. b) Dissection of superficial and deep muscles of back of leg.
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	a) Describe origin, course, termination and branches of posterior tibial artery, peroneal artery and tibial nerve. b) Dissection of back of leg.
AN19.3	Explain the concept of “Peripheral heart”	a) Explain the concept of peripheral heart/calf pump, another action of soleus.
AN19.4	Explain the anatomical basis of rupture of calcaneal tendon	a) Describe anatomical basis of rupture of tendocalcaneus.
AN19.5	Describe factors maintaining importance arches of the foot with its importance	a) List and classify the arches of foot. b) Describe arches of foot with bony pillars, ligaments, muscular factors maintain them.

AN19.6	Explain the anatomical basis of Flat foot & Club foot	a) Explain anatomical basis of club foot/congenital talipes equinovarus/flat foot and pes cavus.
AN19.7	Explain the anatomical basis of Metatarsalgia & Plantar fasciitis	a) Describe plantar aponeurosis. b) Explain anatomical basis of metatarsalgia and plantar fasciitis.
Topic: General Features, Joints, radiographs & surface marking		
AN20.1	Describe and demonstrate the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood and nerve supply of tibiofibular and ankle joint	a) Describe type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements and muscles involved, blood supply, nerve supply and applied of tibiofibular joints and ankle joint with diagrams. b) Demonstrate movements at ankle joint.
AN20.2	Describe the subtalar and transverse tarsal joints	a) Describe anatomy of subtalar and tarsal joint. b) Explain movement of inversion and eversion. c) Summarise muscles responsible for these movements.
AN20.3	Describe and demonstrate Fascia lata, Venous drainage, Lymphatic drainage, Retinacula & Dermatomes of lower limb	a) Explain fascia lata and modifications of deep fascia. b) Draw well labelled diagrams showing cutaneous nerves and dermatomes of lower limb.
AN20.4	Explain anatomical basis of enlarged inguinal lymph nodes	a) Describe superficial and deep inguinal lymph node with area of lymphatic drainage. b) Explain anatomical basis of enlarged lymph nodes and relation to infection and tumour spread.
AN20.5	Explain anatomical basis of varicose veins and deep vein thrombosis	a) Discuss perforators and anatomical basis of varicose

		veins. b) Explain deep vein thrombosis.
AN20.6	Identify the bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb	a) Identify bones and joints of lower limb seen in AP and Lateral view of x-ray hip, knee, ankle and foot. b) To recognize common abnormalities on x-ray.
AN20.7	Identify & demonstrate important bony landmarks of lower limb: -Vertebral levels of highest point of iliac crest, posterior superior iliac spines, iliac tubercle, 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, tuberosity of the navicular	a) Identify and demonstrate important bony landmarks of lower limb and vertebral levels of highest point of iliac crest, posterior superior iliac spine, iliac tubercle, pubic tubercle, ischial tuberosity, adductor tubercle, tibial tuberosity, head of fibula, medial and lateral malleoli, condyles of tibia, femur, sustentaculum tali, tuberosity of 5th metatarsal and tuberosity of navicular.
AN20.8	Identify & demonstrate palpation of femoral, popliteal, post tibial, anti tibial & dorsalis pedis blood vessels in a simulated environment	a) Demonstrate palpation of femoral, popliteal, posterior tibial, anterior tibial and dorsalis pedis artery.
AN20.9	Identify & demonstrate Palpation of vessels (femoral, popliteal,dorsalis pedis,post tibial), Mid inguinal point, Surface projection of: femoral nerve, Saphenous opening, Sciatic, tibial, common peroneal & deep peroneal nerve, Great and small saphenous veins	a) Demonstrate surface marking of femoral nerve, saphenous opening, sciatic nerve, tibial nerve, common peroneal nerve, great and small saphenous vein.
AN20.10	Describe basic concept of development of lower limb	a) Explain basic concept of development of lower limb.

Topic: Thoracic cage		
AN21.1	Identify and describe the salient features of sternum, typical rib, Ist rib and typical thoracic vertebra	1) Identify and describe parts of sternum in anatomical position and name its attachments 2) Describe anatomical events occurring at sternal angle and structures lying behind manubrium sterni 3) Enumerate classification of ribs with general features of a typical rib 4) Describe the special features of 1st rib 5) Describe the characteristic features of typical thoracic vertebrae 6) Explain anatomical basis of sternal puncture, cervical rib and rib fractures
AN21.2	Identify & describe the features of 2nd, 11th and 12th ribs, 1st, 11th and 12th thoracic vertebrae	1) Explain and identify the distinguishing features and attachments of 2nd, 11th and 12th rib 2) Describe special features of 1st, 11th and 12th thoracic vertebrae
AN21.3	Describe & demonstrate the boundaries of thoracic inlet, cavity and outlet	1) Describe the boundaries of superior thoracic aperture and enumerate the structures passing through it with appropriate diagrams 2) Explain anatomical basis of thoracic inlet syndrome 3) Demonstrate superior thoracic aperture and cavity in a skeleton

AN21.4	Describe & demonstrate extent, attachments, direction of fibres, nerve supply and actions of intercostal muscles	1) Describe and demonstrate the extent, attachment, direction of fibres, nerve supply and action of intercostal muscles with diagrams as required
AN21.5	Describe & demonstrate origin, course, relations and branches of a typical intercostal nerve	1) Describe the classification of intercostal nerves 2) Explain the origin, course, relations and branches of atypical intercostal nerve. Add diagrams as required 3) Explain the anatomical basis of root/girdle pain and intercostal nerve blocks
AN21.6	Mention origin, course and branches/ tributaries of: 1) anterior & posterior intercostal vessels 2) internal thoracic vessels	1) Explain the origin, course, relations, termination and relations of anterior and posterior intercostal vessels 2) Describe the origin, course and branches of internal thoracic artery 3) Give the anatomical basis of internal thoracic artery graft
AN21.7	Mention the origin, course, relations and branches of 1) atypical intercostal nerve 2) superior intercostal artery, subcostal artery	1) Enumerate atypical intercostal nerves 2) Explain the anatomical basis of cardiac pain referred to medial side of arm in coronary artery diseases 3) Describe the origin and course of superior intercostal artery and subcostal artery
AN21.8	Describe & demonstrate type, articular surfaces & movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints	1) Describe and demonstrate types of joints, articulating surfaces and movements of manubriosternal, costovertebral, costotransverse and xiphisternal joints
AN21.9	Describe & demonstrate mechanics and types of respiration	1) Demonstrate and explain the mechanism of respiration

		2) Name the muscles acting during different types of respiration
AN21.10	Describe costochondral and interchondral joints	1) Describe the type and location of costochondral and interchondral joints
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	1) Define mediastinum and describe the boundaries, major contents and divisions of mediastinum 2) Describe the boundaries and content of superior, anterior, middle and posterior mediastinum, with diagrams as required 3) Describe the anatomical basis of mediastinal syndrome and mediastinal shift
Topic: Heart & Pericardium		
AN22.1	Describe & demonstrate subdivisions, sinuses in pericardium, blood supply and nerve supply of pericardium	1) Describe the subdivisions, blood supply and nerve supply of pericardium 2) Explain the transverse and oblique sinus of pericardium with clinical importance and diagrams 3) Give the anatomical basis of cardiac tamponade
AN22.2	Describe & demonstrate external and internal features of each chamber of heart	1) Demonstrate and explain the border and surfaces of the heart by holding in anatomical position 2) Describe and show the external and internal features of right and left atrium and right and left ventricle adding diagrams as necessary 3) Explain about the atrioventricular and semilunar valves of the heart

		4) Describe cardiac shadow in chest radiograph
AN22.3	Describe & demonstrate origin, course and branches of coronary arteries	1) Enumerate the origin and branches of coronary arteries 2) Describe the course of right and left coronary arteries, with diagrams as required 3) Enumerate the sites of coronary artery occlusion
AN22.4	Describe anatomical basis of ischaemic heart disease	1) Describe the anatomical basis of ischaemic heart disease 2) Explain the anatomical basis of coronary bypass surgery and coronary angioplasty
AN22.5	Describe & demonstrate the formation, course, tributaries and termination of coronary sinus	1) Describe the formation, course and tributaries of coronary sinus
AN22.6	Describe the fibrous skeleton of heart	1) Describe the fibrous skeleton of the heart and its functional significance
AN22.7	Mention the parts, position and arterial supply of the conducting system of heart	1) Describe the components, position and arterial supply of conducting system of heart 2) Give anatomical basis of conducting system defects
Topic: Mediastinum		
AN23.1	Describe & demonstrate the external appearance, relations, blood supply, nerve supply,lymphatic drainage and applied anatomy of oesophagus	1) Describe the oesophagus under the heading of parts, constrictions, relations, nerve supply, blood supply and lymphatic drainage of oesophagus adding diagrams as required 2) Explain the clinic anatomical basis of achalasia cardia, trachea oesophageal fistula and dysphagia

		3) Demonstrate oesophagus in radiological studies like barium swallow
AN23.2	Describe & demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	1) Describe the thoracic duct as its formation, course, tributaries, termination and relations with diagrams 2) Explain the anatomical basis of injury and obstruction of thoracic duct
AN23.3	Describe & demonstrate origin, course, relations, tributaries and termination of superior venacava, azygos, hemiazygos and accessory hemiazygos veins	1) Describe the Superior vena cava in terms of formation, course, termination and tributaries. 2) Explain the clinical aspect of obstruction of Superior vena cava and development of collateral pathways 3) Describe the azygous, hemiazygous and accessory hemizygous as their formation, course, termination and tributaries
AN23.4	Mention the extent, branches and relations of arch of aorta & descending thoracic aorta	1) Describe the arch of aorta in terms of its course, relations and branches 2) Enumerate the branches of descending thoracic aorta
AN23.5	Identify & Mention the location and extent of thoracic sympathetic chain	1) Identify and describe thoracic sympathetic chain 2) Give the anatomical basis of thoracoabdominal sympathectomy
AN23.6	Describe the splanchnic nerves	1) Describe the splanchnic nerves
AN23.7	Mention the extent, relations and applied anatomy of lymphatic duct	1) Mention the extent, relations and applied anatomy of lymphatic duct

Topic: Lungs & Trachea		
AN24.1	Mention the blood supply, lymphatic drainage and nerve supply of pleura, extent of pleura and describe the pleural recesses and their applied anatomy	1) Describe the pleura as its layers, subdivisions, recesses and nerve supply 2) Enumerate differences between parietal and visceral pleura 3) Enumerate sites with diagrams, where pleura extends beyond the thoracic cage 4) Give the anatomical basis of pleural effusion, pneumothorax, paracentesis thoracis and referred pain of pleura
AN24.2	Identify side, external features and relations of structures which form root of lung & bronchial tree and their clinical correlate	1) Briefly describe the comparison of right and left lung 2) Describe, including diagrammatically, the relations of strutures forming root of both lungs 3) Give anatomical basis of azygous lobe, Pancoast syndrome, Metastasis of bronchogenic carcinoma, postural drainage of lung abscess 4) Describe bronchial tree, adding a diagram 5) Demonstrate lung in anatomical position showing borders and surfaces
AN24.3	Describe a bronchopulmonary segment	1) Describe bronchopulmonary segments, adding diagram, with clinical significance
AN24.4	Identify phrenic nerve & describe its formation & distribution	1) Identify phrenic nerve, describe its formation and distribution 2) Explain the anatomical basis of diaphragmatic paralysis

AN24.5	Mention the blood supply, lymphatic drainage and nerve supply of lungs	1) Describe the blood supply, lymphatic drainage and nerve supply of lungs
AN24.6	Describe the extent, length, relations, blood supply, lymphatic drainage and nerve supply of trachea	1) Identify and describe the trachea as its extent, length, relations, course, vascular supply, lymphatic drainage and nerve supply 2) Identify tracheal shadow in a chest radiograph 3) Describe the importance of carina 4) Describe anatomical basis of trachea oesophageal fistula
Topic: Thorax		
AN25.1	Identify, draw and label a slide of trachea and lung	1) Identify and draw the microscopic structure of trachea 2) Identify and draw the microscopic structure of lungs 3) Name the different cells present in the lung and trachea and describe their function
AN25.2	Describe development of pleura, lung & heart	1) Describe the development of pleura and lungs. Add diagrams as required 2) Describe the development of heart with diagrams as needed 3) Describe the various congenital anomalies associated with the development of heart with their clinical implications
AN25.3	Describe fetal circulation and changes occurring at birth	1) Describe fetal circulation 2) Explain changes in circulation occurring at birth

AN25.4	Describe embryological basis of: 1) atrial septal defect, 2) ventricular septal defect, 3) Fallot's tetralogy & 4) tracheo-oesophageal fistula	1) Explain anatomical/ embryological basis of Atrial septal defect, Ventricular septal defect, Fallots tetralogy and Tracheoesophageal fistula. Add diagrams as needed
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	1) Give embryological explanation for Transposition of great vessels, Dextrocardia, Patent ductus arteriosus and Coarctation of aorta
AN25.6	Mention development of aortic arch arteries, SVC, IVC and coronary sinus	1) Describe the development of Aortic arch arteries, Superior vena cava and Coronary sinus, adding diagrams as required 2) Describe the congenital anomalies associated with development of these structures
AN25.7	Identify structures seen on a plain x-ray chest (PA view)	1) Identify structures visible on a normal plain chest X ray PA view
AN25.8	Identify and describe in brief a barium swallow	1) Identify barium swallow X ray 2) Name the structures visible on a barium swallow with their clinical importance
AN25.9	Demonstrate surface marking of lines of pleural reflection, lung borders and fissures, trachea, heart borders, apex beat & surface projection of valves of heart	1) Demonstrate surface marking of pleura, lung- borders and fissures, trachea, heart – borders, apex beat and surface projection of valves of heart
Topic: Skull osteology		
AN26.1	Demonstrate anatomical position of skull, Identify and locate individual skull bones in skull	a) Demonstrate anatomical position skull b) Demonstrate and Identify the major skull bones

AN26.2	Describe the features of norma frontalis, verticalis, occipitalis, lateralis and basalis	a) Demonstrate general and special features of Norma frontalis, Norma Verticalis, Norma Occipitalis b) Demonstrate general and special features of Norma lateralis and Norma Basalis
AN26.3	Describe cranial cavity, its subdivisions, foramina and structures passing through them	a) Describe cranial cavity with its subdivision, boundaries, foramina and structures passing through foramina
AN26.4	Describe morphological features of mandible	a) Describe morphological features of mandible
AN26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)	a) Demonstrate general and special features of typical cervical vertebrae b) Demonstrate general and special features of atlas and axis
AN26.6	Explain the concept of bones that ossify in membrane	a) Discuss the development of Bone (membranour ossification)
AN26.7	Describe the features of the 7^{th} cervical vertebra	a) Demonstrate the general and special features of C7 vertebra
Topic: Scalp		
AN27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	a) Describe the layers of scalp along with their applied anatomy b) Describe blood supply and nerve supply of scalp with its surgical importance

AN27.2	Describe emissary veins with its role in spread of infection from extracranial route to intracranial venous sinuses	a) Describe emissary veins and it's applied b) Name emissary bins of scalp and it's communication
Topic: Face & parotid region		
AN28.1	Describe & demonstrate muscles of facial expression and their nerve supply	a) Enumerate characteristic features of muscles of facial expression b) Describe muscles of facial expression with origin and insertion, nerve supply and action
AN28.2	Describe sensory innervation of face	a) Describe sensory innervation of face
AN28.3	Describe & demonstrate origin /formation, course, branches /tributaries of facial vessels	a) Describe and demonstrate features, course, branches of facial artery b) Describe formation of facial vein and its tributaries
AN28.4	Describe & demonstrate branches of facial nerve with distribution	a) Describe and demonstrate branches of facial nerve and its distribution
AN28.5	Describe cervical lymph nodes and lymphatic drainage of head, face and neck	a) Describe cervical lymph node and lymphatic drainage of head & neck
AN28.6	Identify superficial muscles of face, their nerve supply and actions	a) Identify the muscles of Superficial fascia of face and explain their actions
AN28.7	Explain the anatomical basis of facial nerve palsy	a) Anatomical Basis of facial nerve palsy
AN28.8	Explain surgical importance of deep facial vein	a) Describe Surgical Importance of Deep facial vein b) Explain Dangerous area of face

AN28.9	Describe & demonstrate the parts, borders, surfaces, contents, relations and nerve supply of parotid gland with course of its duct and surgical importance	a) Identify parts, borders, surfaces and relations of parotid b) Discuss nerve supply with surgical importance c) Identify and discuss the parotid duct
AN28.10	Explain the anatomical basis of Frey's syndrome	a) Explain the anatomical basis of Frey's Syndrome
Topic: Posterior triangle of neck		
AN29.1	Describe & demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	a) Describe origin, insertion, action and nerve supply of sternocleidomastoid b) Identify the muscle and its relations
AN29.2	Explain anatomical basis of Erb's & Klumpke's palsy	a) Explain anatomical basis and signs and symptoms of Erb's paralysis b) Explain anatomical basis and disability in Klumpke's paralysis
AN29.3	Explain anatomical basis of wry neck	a) Explain anatomical basis and types of wry neck
AN29.4	Describe & demonstrate attachments of 1) inferior belly of omohyoid, 2)scalenus anterior, 3) scalenus medius & 4) levator scapulae	a) Describe and demonstrate attachment of inferior belly of omohyoid b) Describe and demonstrate attachment of Scalenus Anterior c) Describe and demonstrate attachment of Scalenus Medius d) Describe and demonstrate attachment of Levator Scapulae
Topic: Cranial cavity		

AN30.1	Describe the cranial fossae & identify related structures	a) Discuss and demonstrate boundaries of anterior, middle and posterior cranial fossa b) Identify general features of cranial fossae
AN30.2	Describe & identify major foramina with structures passing through them	a) Describe and demonstrate the major foramina's along with structures passing through them
AN30.3	Describe & identify dural folds & dural venous sinuses	a) Describe and identify the Dural folds and Dural venous sinuses
AN30.4	Describe clinical importance of dural venous sinuses	a) Discuss clinical importance of Dural venous sinuses
AN30.5	Explain effect of pituitary tumours on visual pathway	a) Discuss visual pathway b) Explain effect of pituitary tumour on visual pathway
Topic: Orbit		
AN31.1	Describe & identify extra ocular muscles of eyeball	a) Describe and identify extra ocular muscles of eyeball with their action b)
AN31.2	Describe & demonstrate nerves and vessels in the orbit	a) Discuss oculomotor, trochlear and abducens nerve b) Describe and identify nerves and vessels of orbit
AN31.3	Describe anatomical basis of Horner's syndrome	a) Explain anatomical basis of Horner's syndrome
AN31.4	Enumerate components of lacrimal apparatus	a) Enumerate the components of lacrimal apparatus
AN31.5	Explain the anatomical basis of oculomotor, trochlear and abducent nerve palsies along with strabismus	a) Discuss anatomical basis of strabismus with respect to these nerves

Topic: Anterior Triangle		
AN32.1	Describe boundaries and subdivisions of anterior triangle	a) Describe boundaries and subdivisions of anterior triangle
AN32.2	Describe & demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	a) Describe and demonstrate boundaries and contents of muscular triangle, carotid triangle, digastric triangle and submental triangle
Topic: Temporal and Infratemporal regions		
AN33.1	Describe & demonstrate extent, boundaries and contents of temporal and infratemporal fossae	a) Describe and identify contents, boundaries and extent of temporal fossa b) Describe and identify contents, boundaries and extent of infra-temporal fossa
AN33.2	Describe & demonstrate attachments, direction of fibres, nerve supply and actions of muscles of mastication	a) Describe attachment, direction of fibers, nerve supply and action of muscles of mastication b) Demonstration of attachment, direction of fibers, nerve supply and action of muscles of mastication
AN33.3	Describe & demonstrate articulating surface, type & movements of temporomandibular joint	a) Describe articulating surfaces, movements and type of temporomandibular joint b) Demonstrate articulating surfaces, movements and type of temporomandibular joint
AN33.4	Explain the clinical significance of pterygoid venous plexus	a) Describe pterygoid venous plexus and explain its clinical significance

AN33.5	Describe the features of dislocation of temporomandibular joint	a) Discuss features of dislocation of temporomandibular joint
Topic: Submandibular region		
AN34.1	Describe & demonstrate the morphology, relations and nerve supply of submandibular salivary gland & submandibular ganglion	a) Describe morphology, relation, nerve supply of submandibular gland b) Demonstrate the parts and relation of submandibular gland c) Discuss location, connection, branches of submandibular ganglion
AN34.2	Describe the basis of formation of submandibular stones	a) Discuss submandibular duct and explain basis of formation of submandibular stone
Topic: Deep structures in the neck		
AN35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	a) Describe the parts, extent, attachment, modification and applied anatomy of deep cervical fascia
AN35.2	Describe & demonstrate location, parts, borders, surfaces, relations & blood supply of thyroid gland	a) Describe location, parts, border, capsule, surfaces and blood supply of thyroid gland b) Identify location, parts, border, capsule, surfaces and blood supply of thyroid gland
AN35.3	Demonstrate & describe the origin, parts, course & branches subclavian artery	a) Describe the origin, course, branches of subclavian artery b) Demonstrate the origin, course, branches of subclavian artery

AN35.4	Describe & demonstrate origin, course, relations, tributaries and termination of internal jugular & brachiocephalic veins	a) Describe and demonstrate formation, course, relation and tributaries of internal jugular vein and brachiocephalic vein
AN35.5	Describe and demonstrate extent, drainage & applied anatomy of cervical lymph nodes	a) Discuss the classification and general plan of location of lymph nodes in the region of head and neck b) Describe the areas drained by the cervical lymph nodes and their applied anatomy c) Identify the cervical lymph nodes
AN35.6	Describe and demonstrate the extent, formation, relation & branches of cervical sympathetic chain	a) Describe the features, formation, relation and branches of cervical sympathetic chain b) Identify the superior cervical ganglion, middle cervical ganglion and inferior cervical ganglion
AN35.7	Describe the course and branches of IX, X, XI & XII nerve in the neck	a) Describe course, branches, distribution and applied anatomy of ninth cranial nerve in the neck b) Describe course, branches, distribution and applied anatomy of tenth cranial nerve in the neck c) Describe course, branches, distribution and applied anatomy of eleventh cranial nerve in the neck d) Describe course, branches, distribution and applied anatomy of XII cranial nerve in the neck e) Demonstrate IX, X, XI and XII cranial nerves in the neck with their branches
AN35.8	Describe the anatomically relevant clinical features of Thyroid swellings	a) Discuss vertical disposition of pretracheal fascia enclosing thyroid gland

AN35.9	Describe the clinical features of compression of subclavian artery and lower trunk of brachial plexus by cervical rib	a) Describe cervical rib b) Discuss clinical features of compression of subclavian artery and lower trunk of brachial plexus
AN35.10	Describe the fascial spaces of neck	a) Discuss site, function, boundaries and clinical anatomy of retropharyngeal and lateral pharyngeal spaces
Topic: Mouth, Pharynx & Palate		
AN36.1	Describe the 1) morphology, relations, blood supply and applied anatomy of palatine tonsil 2) composition of soft palate	a) Describe external features, relation, blood supply and applied anatomy of palatine tonsil b) Describe structure of soft palate
AN36.2	Describe the components and functions of Waldeyer's lymphatic ring	a) Describe formation and functions of Waldeyer's ring b) Describe it's applied anatomy
AN36.3	Describe the boundaries and clinical significance of pyriform fossa	a) Describe the boundaries and clinical significance of piriform fossa
AN36.4	Describe the anatomical basis of tonsillitis, tonsillectomy, adenoids and peri-tonsillar abscess	a) Explain anatomical basis of peritonsilar abscess, tonsillitis and tonsillectomy b) Describe Adenoids with their signs and symptoms
AN36.5	Describe the clinical significance of Killian's dehiscence	a) Describe constrictor muscles of pharynx with their nerve supply b) Explain anatomical basis of Killian's dehiscence
Topic: Cavity of Nose		

AN37.1	Describe & demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	a) Discuss the formation, features, blood supply and nerve supply of nasal septum b) Discuss formation, features, blood supply and nerve supply of lateral wall of nose c) Identify the nasal septum and features on lateral wall of nose
AN37.2	Describe location and functional anatomy of paranasal sinuses	a) Describe the location and functional anatomy of all paranasal sinuses
AN37.3	Describe anatomical basis of sinusitis & maxillary sinus tumours	a) Describe maxillary sinus and explain the anatomical basis of sinusitis and maxillary sinus tumours
Topic: Larynx		
AN38.1	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	a) Discuss cartilages, membranes and ligaments of larynx b) Discuss laryngeal cavity with its nerve supply and blood supply c) Discuss actions of extrinsic and intrinsic muscles of larynx d) Identify cartilages, membranes and muscles of larynx
AN38.2	Describe the anatomical aspects of laryngitis	a) Describe anatomical basis of laryngitis
AN38.3	Describe anatomical basis of recurrent laryngeal nerve injury	a) Explain anatomical basis of recurrent laryngeal nerve injury and functional consequences of its injury
Topic: Tongue		

AN39.1	Describe & demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	a) Describe external features of tongue, nerve supply with its embryological basis b) Describe its blood supply and lymphatic drainage c) Discuss the attachment and actions of extrinsic and intrinsic muscles of the tongue d) Identify the muscles of the tongue
AN39.2	Explain the anatomical basis of hypoglossal nerve palsy	a) Explain hypoglossal nerve palsy with its anatomical basis
Topic: Organs of hearing and equilibrium		
AN40.1	Describe & identify the parts, blood supply and nerve supply of external ear	a) Describe parts, nerve supply, blood supply of external ear b) Identify parts of external ear
AN40.2	Describe & demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	a) Describe boundaries, contents, relations and functional anatomy of middle ear b) Describe parts, blood supply, nerve supply and functional anatomy of auditory tube c) Demonstrate anatomy of ear
AN40.3	Describe the features of internal ear	a) Describe the components of internal ear
AN40.4	Explain anatomical basis of otitis externa and otitis media	a) Explain anatomical basis of otitis externa and otitis media
AN40.5	Explain anatomical basis of myringotomy	a) Explain structure and parts of tympanic membrane and its correlation with myringotomy
Topic: Eyeball		
AN41.1	Describe & demonstrate parts and layers of eyeball	a) Describe different parts and layers of eyeball

		b) Demonstrate anatomy of eyeball
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central retinal artery occlusion	a) Explain anatomical basis of cataract, glaucoma's and central retinal artery occlusion
AN41.3	Describe the position, nerve supply and actions of intraocular muscles	a) Describe intra-ocular muscles with respect to position, nerve supply and actions
Topic: Back Region		
AN42.1	Describe the contents of the vertebral canal	a) Describe and identify the contents of vertebral canal
AN42.2	Describe & demonstrate the boundaries and contents of Suboccipital triangle	a) Discuss the attachments of muscles forming boundaries and contents of sub-occipital triangle b) Identify the muscles and contents of sub-occipital triangle
AN42.3	Describe the position, direction of fibres, relations, nerve supply, actions of semispinalis capitis and splenius capitis	a) Describe attachments, direction of fibers, relations, nerve supply, action of splenius capitis and semi-spinalis capitis muscles
Topic: Head & neck Joints, Histology, Development, Radiography & Surface marking		
AN43.1	Describe & demonstrate the movements with muscles producing the movements of atlantooccipital joint & atlantoaxial joint	a) Discuss pre-vertebral muscles and para-vertebral muscles b) Discuss the type and muscles producing movement at Atlanto-occipital and Atlanto-axial joints c) Demonstrate the movements at these joints
AN43.2	Identify, describe and draw the microanatomy of pituitary gland, thyroid, parathyroid gland, tongue, salivary glands, tonsil, epiglottis, cornea, retina	a) Discuss micro-anatomy of pituitary, thyroid, parathyroid, tongue, salivary gland, tonsil, cornea and retina

		b) Identify and draw the micro-anatomy of pituitary, thyroid, parathyroid, tongue, salivary gland, tonsil, cornea and retina
AN43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclero-corneal junction, optic nerve, cochlea- organ of corti, pineal gland	a) Describe micro-anatomy of olfactory epithelium, eye lid, lip, optic nerve, sclera-corneal junction, cochlea, organ of corti and pineal gland b) Identify and draw micro-anatomy of olfactory epithelium, eye lid, lip, optic nerve, sclera-corneal junction, cochlea, organ of corti and pineal gland
AN43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland & eye	a) Discuss the development and explain the developmental basis of congenital anomalies of face, palate, tongue, brachial apparatus, pituitary gland, thyroid gland and eye
AN43.5	Demonstrate- 1) Testing of muscles of facial expression, extraocular muscles, muscles of mastication, 2) Palpation of carotid arteries, facial artery, superficial temporal artery, 3) Location of internal and external jugular veins, 4) Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral levels	a) Demonstrate testing of muscles of fascial expression, muscles of mastication and extra-ocular muscles b) Demonstrate Palpation of carotid arteries, facial arteries and superficial temporal arteries c) Demonstrate Location of internal and external jugular vein d) Demonstrate Location of hyoid bone, thyroid cartilage and cricoid cartilage with their vertebral level
AN43.6	Demonstrate surface projection of- Thyroid gland, Parotid gland and duct, Pterion, Common carotid artery, Internal jugular vein, Subclavian vein, External jugular vein, Facial artery in the face & accessory nerve	a) Demonstrate surface projection of thyroid gland, parotid gland and duct, pterion, common carotid artery, internal jugular vein, subclavian vein, external jugular vein, facial artery and accessory nerve

AN43.7	Identify the anatomical structures in 1) Plain x-ray skull, 2) AP view and lateral view 3) Plain x-ray cervical spine-AP and lateral view 4) Plain x- ray of paranasal sinuses	a) Identify structures seen in plain X-ray skull in both AP and lateral views b) Identify the structures seen in plain X-ray cervical spine in both AP and lateral views c) Identify the structures seen in plain X-ray paranasal sinuses in both AP and lateral views
AN43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram	a) Describe carotid angiography and vertebral angiography
AN43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram	a) Identify the anatomical structures in carotid and vertebral angiography
Topic: Anterior abdominal wall		
AN44.1	Describe & demonstrate the Planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions & Quadrants of abdomen	a) Describe transpyloric, trans tubercular, subcoastal, midclavicular/ lateral vertical planes b) Demonstrate soft tissue landmarks- umbilicus, linea semilunaris, linea alba and groin. c) Demonstrate bony landmarks- xyphoid process, coastal margins, subcoastal angles, iliac crest, tubercle of iliac crest, posterior superior iliac spine. d) Describe 9 regions of abdomen and demonstrate the position of organs in these quadrants- liver, stomach, spleen, duodenum, small and large intestine, pelvic cavity.
AN44.2	Describe & identify the Fascia, nerves & blood vessels of anterior abdominal wall	a) Enumerate and identify layers of abdominal wall b) Describe umbilicus and its significance

		c) Identify campers and Scarpa's fascia d) Draw and label diagram showing cutaneous nerves, arteries, veins and lymphatics on anterior abdominal wall. e) Describe root value and course of deep nerves f) Describe origin and course of deep arteries
AN44.3	Describe the formation of rectus sheath and its contents	a) describe the features, formation (new concept), contents and functions of rectus sheath. b) Draw diagram showing formation of rectus sheath c) Draw diagram showing contents of rectus sheath.
AN44.4	Describe & demonstrate extent, boundaries, contents of Inguinal canal including Hesselbach's triangle.	a) describe inguinal canal- definition, direction, length, extent, boundaries, contents and mechanism to maintain integrity. b) Diagram showing boundaries of Hasselbach's triangle c) Diagram showing boundaries and contents of inguinal canal d) Identify spermatic cord, superficial and deep inguinal rings, inferior epigastric artery.
AN44.5	Explain the anatomical basis of inguinal hernia.	a) define abdominal hernia b) describe inguinal hernia, its types, clinical features and test to differentiate the types (ring test), coverings of direct and indirect inguinal hernias. c) Draw a diagram showing coverings of inguinal hernias.
AN44.6	Describe & demonstrate attachments of muscles of anterior abdominal wall	a) Describe attachments, direction of fibers, nerve supply and action of muscles of anterolateral abdominal wall.

		b) Identify muscles and aponeurosis. c) Demonstrate formation and attachment of inguinal ligament, conjoint tendon, arcuate line, superficial and deep inguinal rings. d) Describe and identify fascia transversalis and tendinous intersections.
AN44.7	Enumerate common Abdominal incisions	a) Describe the sites of abdominal incisions, the layers of abdominal wall encountered, their advantages and drawbacks. b) Draw a diagram showing various abdominal incision.
Topic: Posterior abdominal wall		
AN45.1	Describe Thoracolumbar fascia	a) Describe the extent and attachment of anterior, posterior and middle layer of thoraco lumbar fascia. b) Draw a diagram showing transverse disposition of thoracolumbar fascia.
AN45.2	Describe & demonstrate Lumbar plexus for its root value, formation & branches	a) describe formation of lumbar plexus, its root value, course and distribution of branches. b) Draw a diagram of lumbar plexus showing its roots, divisions and branches.
AN45.3	Mention the major subgroups of back muscles, nerve supply and action	a) Describe and identify the attachment, nerve supply and action of Psoas major, Iliacus and Quadratus lumborum muscle. b) Draw a diagram showing attachments of muscle of posterior abdominal wall.

		c) Describe clinic-anatomical basis of spread of pus in Psoas abscess.
Topic: Male external genitalia		
AN46.1	Describe & demonstrate coverings, internal structure, side determination, blood supply, nerve supply, lymphatic drainage & descent of testis with its applied anatomy	a) Describe external features, coverings, internal structure, blood supply, nerve supply, lymphatic drainage and descend of testis. b) Draw a diagram showing T.S of testis and epididymis. c) Identify and determine the side of testis. d) Describe cryptorchidism, ectopic testis and hydrocele.
AN46.2	Describe parts of Epididymis	a) Describe parts of epididymis.
AN46.3	Describe Penis under following headings: (parts, components, blood supply and lymphatic drainage)	a) Describe parts, structure, blood supply, nerve supply and lymphatic drainage of penis. b) Draw T.S. through body of penis.
AN46.4	Explain the anatomical basis of Varicocoele	a) Describe clinic-anatomical basis of varicocoel
AN46.5	Explain the anatomical basis of Phimosis & Circumcision	a) Describe anatomical basis of phimosis and circumcision.
Topic: Abdominal cavity		
AN47.1	Describe & identify boundaries and recesses of Lesser & Greater sac	a) Describe boundaries and subdivisions of lesser sac with its clinical aspects. b) Describe, draw a diagram and identify foramen of Winslow.

		c) Describe, draw a diagram and identify boundaries and communications of Morrison's pouch, right and left paracolic gutter. d) Draw diagrams of horizontal section through infracolic and supracolic compartments of abdomen. e) Describe clinical importance of hepatorenal and rectouterine pouches.
AN47.2	Name & identify various peritoneal folds & pouches with its explanation .	a) Describe attachments, contents and functions of peritoneal folds. b) Describe embryological basis of peritoneal folds. c) Enumerate intraperitoneal and retroperitoneal organs. d) Describe process of zygosis. e) Draw diagram of sagittal section through abdomen to show reflection of peritoneum in male and female showing vesico uterine and recto uterine pouches. f) Draw diagram showing structures crossed by root of mesentery. g) Draw diagram of horizontal section through male and female pelvis.
AN47.3	Explain anatomical basis of Ascites & Peritonitis	a) Describe anatomical basis of ascites and peritonitis. b) Describe procedure, site and precautions for paracentesis abdomen.
AN47.4	Explain anatomical basis of Subphrenic abscess	a) Enumerate and identify subphrenic spaces. b) Describe anatomical basis of spread of pus in subphrenic abscess.

AN47.5	Describe & demonstrate major viscera of abdomen under following headings (anatomical position, external and internal features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and applied aspects)	a) Describe the abdominal viscera (stomach, spleen, pancreas, liver, gall bladder, kidney and suprarenal gland) under following heads – location, shape, position, size/capacity, external features, interior, peritoneal and visceral relations, blood supply, nerve supply and lymphatic drainage. b) Demonstrate the features of viscera by holding in anatomical position. c) Describe gastric triangle and Traube's space. d) Describe anatomical basis of peptic ulcer, gastric pain in epigastrium and spread of gastric carcinoma. e) Diagrams showing parts of stomach, stomach bed, interior of stomach, arterial supply, venous drainage, lymphatic drainage and nerve supply. f) Describe relevant features of small intestine. g) Enumerate 3 cardinal features of large intestine h) Differentiate between small and large intestine i) Differentiate between jejunum and ileum j) Describe size, site, parts and relations of duodenum k) Draw diagram showing interior of 2nd part of duodenum l) Describe features of Meckels diverticulum m) Enumerate parts of large intestine, their length and peritoneal relations. n) Describe features, size, site, relation, blood supply and nerve supply of Caecum. o) Draw diagram showing caecal bed.

		p) Describe shape, size, parts, positions, appendicular orifice, peritoneal relations, blood supply, nerve supply and lymphatic drainage of Appendix. q) Draw diagram showing various positions of Appendix. r) Explain the anatomical basis of duodenal ulcer, diverticula, sites of pain in appendicitis, poas test and obturator test. s) Draw diagram showing visceral relations of spleen. t) Describe ducts of pancreas. u) Describe anatomical basis of referred pain of pancreatitis, obstructive jaundice in carcinoma head of pancreas, pseudo cyst of pancreas. v) Describe lobes of liver and hepatic segments. w) Enumerate bare areas of liver, identify ligaments attached to the liver. x) Draw diagram showing relations of inferior surface of liver. y) Enumerate components of extra hepatic biliary apparatus. z) Describe sphincter choledochus and sphincter of Oddi. aa) Describe coverings of kidney. bb) Draw diagram showing anterior and posterior relations of right and left kidney. cc) Draw diagram of T.S. through lumbar region showing covering of kidney. dd) Draw diagram of coronal section showing naked eye structure of kidney. ee) Draw diagram showing structure of nephron. ff) Draw diagram showing arrangement of arteries in kidney.

		gg) Explain anatomical basis of spread of pus in perinephric abscess, floating kidney, danger of opening pleural cavity in exposure of kidney, renal angle. hh) Describe size, course, normal constrictions, relation, blood supply and nerve supply of ureter. ii) Explain anatomical basis of referred ureteric pain, impaction of ureteric stone and sites of injury to ureter.
AN47.6	Explain the anatomical basis of Splenic notch, Accessory spleens, Kehr's sign, Different types of vagotomy, Liver biopsy (site of needle puncture), Referred pain in cholecystitis, Obstructive jaundice, Referred pain around umbilicus, Radiating pain of kidney to groin & Lymphatic spread in carcinoma stomach	a) Describe development of spleen and anatomical basis of its notched superior border. b) Describe structures developing from dorsal mesogastrium and accessory spleen. c) Describe and Draw diagram showing nerve supply of stomach and explain anatomical basis of total, selective and highly selective vagotomy. d) Draw diagram showing site and structure pierced in liver biopsy. e) Describe nerve supply of gall bladder and anatomical basis of referred pain in Cholecystitis. f) Describe obstructive jaundice and Courvoisier's law. g) Describe viscera supplied by T10 nerve and anatomical basis of referred pain around umbilicus. h) Describe anatomical basis of spread of gastric carcinoma through lymphatics. i) Explain anatomical basis of referred pain of kidney to groin.

AN47.7	Mention the clinical importance of Calot's triangle	a) Draw diagram showing boundaries, contents and relations of Calot's triangle. b) Describe surgical importance of Calot's triangle.
AN47.8	Describe & identify the formation, course relations and tributaries of Portal vein, Inferior vena cava & Renal vein	a) Describe formation, course, termination, relations, tributaries of portal vein, IVC and renal vein. b) Identify portal vein, renal vein and IVC. c) Draw diagrams showing formation and tributaries of portal vein.
AN47.9	Describe & identify the origin, course, important relations and branches of Abdominal aorta, Coeliac trunk, Superior mesenteric, Inferior mesenteric & Common iliac artery	a) Describe origin, course, important relations and branches of abdominal aorta, coeliac trunk, superior mesenteric, inferior mesenteric and common iliac arteries. b) Draw diagram showing ventral and lateral branches of abdominal aorta with their level of origin. c) Draw diagrams showing arteries arising from Coeliac trunk, branches of SMA and IMA. d) Draw diagram showing marginal artery of Drummond, Sudeck point and Arc of Riolan.
AN47.10	Enumerate the sites of portosystemic anastomosis	a) Enumerate and draw diagram showing sites of portocaval anastomosis.
AN47.11	Explain the anatomic basis of hematemesis& caput medusae in portal hypertension	a) describe clinical conditions (oesophageal varices, caput medusa, hemorrhoids) associated with portal hypertension with respect to portocaval anastomosis.

AN47.12	Describe important nerve plexuses of posterior abdominal wall	a) describe location, fibers and branches of coeliac and superior hypogastric plexuses. b) Describe lumbar sympathetic chain. c) Identify branches of lumbar plexus on posterior abdominal wall.
AN47.13	Describe & demonstrate the attachments, openings, nerve supply & action of the thoracoabdominal diaphragm	a) Describe thoraco abdominal diaphragm- definition, attachment, openings, relations, nerve supply and actions. b) Draw diagram showing of diaphragm showing crura, medial and lateral arcuate ligaments, muscle fibres and openings. c) Enumerate large openings, their vertebral levels and structures passing through them.
AN47.14	Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	a) Describe development of diaphragm and sites of abnormal openings. b) Describe congenital and acquired diaphragmatic hernia.
Topic: Pelvic wall and viscera		
AN48.1	Describe & identify the muscles of Pelvic diaphragm	a) Describe attachments, nerve supply and actions of levator ani and coccygeous. b) Identify openings and structures passing through pelvic diaphragm in male and female. c) Describe evolution of pelvic diaphragm.
AN48.2	Describe & demonstrate the (position, features, important peritoneal and	a) Describe the viscera- urinary bladder, prostate, ovaries, uterus, rectum and anal canal under following headings i) position, ii) features (external and internal), iii) capsule

	other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of) important male & female pelvic viscera	iv) peritoneal and visceral relations, v) blood supply and nerve supply. b) Identify and demonstrate features of urinary bladder, ovaries, uterine tube, uterus and rectum. c) Describe ligaments of urinary bladder and uterus along with supports of uterus. d) Draw diagram of posterior view of male urinary bladder with its relations to genital ducts and glands. e) Draw diagram of interior of urinary bladder. f) Describe extent, shape, parts and sphincters of urethra in male and female. g) Draw diagram showing parts of male urethra and their shape. h) Explain extravasation of urine in rupture of urethra. i) Describe the changes with age in prostate and uterus. j) Describe forensic importance of secretions of seminal vesicle. k) Describe length, course and relations of ejaculatory duct and vas deferens l) Identify ovarian fossa, its boundaries and mesoovarium. m) Describe size, parts, course, relations, blood supply, nerve supply and lymphatic drainage of uterine tubes. n) Draw a diagram of uterus and broad ligament showing parts and contents of broad ligament. o) Describe length, extent, direction, relations, interior, musculature, related surgical spaces, blood supply, nerve supply and lymphatic drainage of anal canal.

AN48.3	Describe & demonstrate the origin, course, important relations and branches of internal iliac artery	a) Describe origin, course, relations and branches of internal iliac artery. b) Identify internal iliac artery and its branches in pelvis.
AN48.4	Describe the branches of sacral plexus	a) Describe formation, relations and branches of lumbosacral and coccygeal plexus. b) Draw a diagram showing lumbosacral and coccygeal plexus.
AN48.5	Explain the anatomical basis of suprapubic cystostomy, Urinary obstruction in benign prostatic hypertrophy, Retroverted uterus, Prolapse uterus, Internal and external haemorrhoids, Anal fistula, Vasectomy, Tubal pregnancy & Tubal ligation	a) Explain the anatomical basis of suprapubic cystostomy, BPH, retroverted uterus, prolapse uterus, hemorrhoids, anal fistula, vasectomy, tubectomy, laparoscopic sterilization and tubal pregnancy.
AN48.6	Describe the neurological basis of Automatic bladder	a) Explain anatomical basis of neurogenic automatic bladder
AN48.7	Mention the lobes involved in benign prostatic hypertrophy & prostatic cancer	a) Explain anatomical basis of BPH and prostatic carcinoma.
AN48.8	Mention the structures palpable during vaginal & rectal examination	a) Describe the structure encountered in male and female on per rectal and per vaginal examination. b) Draw a diagram showing sagittal section of male and female pelvis.
Topic: Perineum		
AN49.1	Describe & demonstrate the superficial & deep perineal pouch (boundaries and contents)	a) Draw a diagram showing boundaries and contents of superficial and deep perineal pouches in male and female.

		b) Identify structures in superficial and deep perineal pouches in male and female.
AN49.2	Describe & identify Perineal body	a) Describe locations and enumerate muscles forming perineal body. b) Identify perineal body. c) Draw a diagram showing muscles forming perineal body.
AN49.3	Describe & demonstrate Perineal membrane in male & female	a) Draw a diagram showing attachments and structures piercing perineal memberane in male and female.
AN49.4	Describe & demonstrate boundaries, content & applied anatomy of Ischiorectal fossa	a) Describe ischiorectal fossa- size, boundaries, recesses, spaces or canal, contents and clinical aspect. b) Draw a diagram of coronal section through ischiorectal fossa showing boundaries and content.
AN49.5	Explain the anatomical basis of Perineal tear, Episiotomy, Perianal abscess and Anal fissure	a) Explain the anatomical basis of perineal tear, episiotomy, perianal abscess and anal fissure.
Topic: Vertebral column		
AN50.1	Describe the curvatures of the vertebral column	a) Draw diagram showing curvatures of vertebral column.
AN50.2	Describe & demonstrate the type, articular ends, ligaments and movements of Intervertebral joints, Sacroiliac joints & Pubic symphysis	a) Describe type, articular surfaces, ligaments and movements of intervertebral, sacroiliac, sacrococcygeal, intercoccygeal joints and pubic symphysis. b) Describe the structure of intervertebral disc. c) Demonstrate these joints in bony pelvis.

AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	a) Describe site, position of patient, direction of needle and structure pierced in lumbar puncture.
AN50.4	Explain the anatomical basis of Scoliosis, Lordosis, Prolapsed disc, Spondylolisthesis & Spina bifida	a) Explain the anatomical basis of scoliosis, lordosis, prolapsed intervertebral disc, spondyolysthesis and spina bifida.
Topic: Sectional Anatomy		
AN51.1	Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)	a) Describe & identify the cross-section at the level of T8, T10 and L1 (transpyloric plane)
AN51.2	Describe & identify the midsagittal section of male and female pelvis	a) Describe & identify the midsagittal section of male and female pelvis
Topic: Histology & Embryology		
AN52.1	Describe & identify the microanatomical features of Gastro-intestinal system: Oesophagus, Fundus of stomach, Pylorus of stomach, Duodenum, Jejunum, Ileum, Large intestine, Appendix, Liver, Gall bladder, Pancreas & Suprarenal gland	a) Enumerate layers of GIT. b) Identify slides and draw diagram showing microanatomy of oesophagus, fundus of stomach, pylorus of stomach, duodenum, jejunum, ileum, large intestine, appendix, liver, gall bladder, pancreas and suprarenal gland.
AN52.2	Describe & identify the microanatomical features of: Urinary system: Kidney, Ureter & Urinary bladder Male Reproductive System: Testis, Epididymis,Vas deferens, Prostate & penis	a) Identify slide and draw diagram showing microanatomy of kidney, ureter, urinary bladder, testis, epididymis, vas deferens, prostate, penis, ovary, uterus, uterine tube, cervix, placenta and umblical cord.

	Female reproductive system: Ovary, Uterus, Uterine tube, Cervix, Placenta & Umbilical cord	
AN52.3	Describe & identify the microanatomical features of Cardiooesophageal junction, Corpus luteum	a) Identify slide and draw diagram showing microanatomy of cardio-oesophageal junction and corpus luteum.
AN52.4	Describe the development of anterior abdominal wall	a) Describe the development of anterior abdominal wall
AN52.5	Describe the development and congenital anomalies of Diaphragm	a) Describe the components forming diaphragm – septum transversum, pleuro peritoneal membranes, ventral and dorsal mesentery of oesophagus and mesoderm of body wall. b) Describe congenital anomalies of diaphragm.
AN52.6	Describe the development and congenital anomalies of: Foregut, Midgut & Hindgut	a) Enumerate derivatives of foregut, midgut and hindgut. b) Describe the development of oesophagus, stomach, duodenum, jejunum, ileum, caecum, appendix, ascending colon, transverse colon, descending colon, rectum and anal canal. c) Describe physiological umbilical hernia, rotation and fixation of gut. d) Explain embryological basis of congenital anomalies of gut- congenital obstruction, fistula, duplication, diverticula, vitelo intestinal duct anomalies, errors of rotation, congenital umbilical hernia, errors of fixation and situs inversus.
AN52.7	Describe the development of Urinary system	a) Describe development of kidney, ascent and rotation of kidney.

		b) Explain the congenital anomalies of kidney- agenesis, hypoplasia, duplication, anomalies of shape, position and rotation, congenital polycystic kidney, aberrant renal arteries. c) Describe the development of ureter, urinary bladder and explain their congenital anomalies- ectopia vesicae, hour glass pattern. d) Describe the development of female and male urethra and explain the congenital anomalies- hypospadias and epispadias.
AN52.8	Describe the development of male & female reproductive system	a) Describe development of prostate. b) Describe development of uterus and uterine tubes and explain their congenital anomalies- uterus didelphys, uterus bicornis, arcuate uterus, subseptate uterus. c) Describe development of vagina and explain their congenital anomalies- septate vagina, recto-vaginal and vesical-vaginal fistula. d) Describe development of male and female external genitalia. e) Describe development of testis- duct system of testis, descent of testis and vestigial structures associated with these. f) Describe development of ovary- descent of ovary and fate of mesonephric duct and tubules in male and females.
Topic: Osteology		

AN53.1	Identify & hold the bone in the anatomical position, Describe the salient features, articulations & demonstrate the attachments of muscle groups	a) Identify and hold the hip bone, lumbar vertebrae and sacrum in anatomical position. Demonstrate its general features, attachments and joints formed by it.
AN53.2	Demonstrate the anatomical position of bony pelvis & show boundaries of pelvic inlet, pelvic cavity, pelvic outlet	a) Hold the pelvis in anatomical position, demonstrate boundaries and dimensions of pelvic inlet, cavity and outlet.
AN53.3	Define true pelvis and false pelvis and demonstrate sex determination in male & female bony pelvis	a) Enumerate and demonstrate differences between male and female bony pelvis. b) Describe true and false pelvis.
AN53.4	Explain and demonstrate clinical importance of bones of abdominopelvic region (sacralization of lumbar vertebra, Lumbarization of 1st sacral vertebra, types of bony pelvis & Coccyx)	a) Explain clinical importance of lumbarization of 1st sacral vertebrae, sacralization of lumbar vertebrae, types of bony pelvis and coccyx.
Topic: Radiodiagnosis		
AN54.1	Describe & identify features of plain X ray abdomen	a) Identify bony and soft tissue shadows in plain xray abdomen.
AN54.2	Describe & identify the special radiographs of abdominopelvic region (contrast X ray Barium swallow, Barium meal, Barium enema, Cholecystography, Intravenous pyelography & Hysterosalpingography)	a) Describe the indication, procedure and principle of contrast radiological technique- barium swallow, barium meal, barium follow through, barium enema, cholecystography, IVP and HSG. b) Identify the structure delineated by these on x-rays.
AN54.3	Describe role of ERCP, CT abdomen, MRI, Arteriography in	a) Describe indication, procedure and importance of ERCP, CT abdomen, MRI and arteriography

	radiodiagnosis of abdomen	b) Identify abdominal viscera on CT abdomen and MRI. c) Identify abdominal arteries on contrast CT abdomen.
Topic: Surface marking		
AN55.1	Demonstrate the surface marking of; Regions and planes of abdomen, Superficial inguinal ring, Deep inguinal ring , McBurney's point, Renal Angle & Murphy's point	a) Mark the planes of abdomen and position of superficial inguinal ring, deep inguinal ring, McBurney's point, renal angle and Murphy's point
AN55.2	Demonstrate the surface projections of: Stomach, Liver, Fundus of gall bladder, Spleen, Duodenum, Pancreas, Ileocaecal junction, Kidneys & Root of mesentery	a) Mark the surface projection of abdominal viscera-stomach, liver, fundus of gall bladder, spleen, duodenum, pancreas, ileocaecal junction, kidney and root of mesentery.
Topic: Meninges & CSF		
AN56.1	Describe & identify various layers of meninges with its extent & modifications	a) Describe layers, folds, blood supply and applied anatomy of duramater. b) Describe Arachnoid matter with its processes and applied importance. c) Describe extensions and applied importance of Subarachnoid space. d) Describe Piamater along with their processes. e) Identify all the layers of meninges with its extent and modifications.
AN56.2	Describe circulation of CSF with its applied anatomy	a) Discuss production, circulation and absorption of CSF with its applied anatomy.
Topic: Spinal Cord		

AN57.1	Identify external features of spinal cord	a) Identify the external features of Spinal Cord. b) Discuss and identify modification of Spinal Pia mater and its clinical importance.
AN57.2	Describe extent of spinal cord in child & adult with its clinical implication	a) Describe extent of spinal cord in child & adult with its clinical implication.
AN57.3	Draw & label transverse section of spinal cord at mid-cervical & mid- thoracic level	a) Draw & label transverse section of spinal cord at mid-cervical & midthoracic level.
AN57.4	Enumerate ascending & descending tracts at mid thoracic level of spinal cord	a) Enumerate ascending & descending tracts at mid thoracic level of spinal cord.
AN57.5	Describe anatomical basis of syringomyelia	a) Explain anatomical basis of syringomyelia
Topic: Medulla Oblongata		
AN58.1	Identify external features of medulla oblongata	a) Identify the external features on the anterior and posterior aspect of medulla oblongata.
AN58.2	Describe transverse section of medulla oblongata at the level of 1) pyramidal decussation, 2) sensory decussation 3) ION	a) Discuss, Draw and label transverse section of medulla oblongata at the level of pyramidal decussation. b) Discuss, Draw and label and transverse section of medulla oblongata at level of sensory decussation. c) Discuss, Draw and label and transverse section of medulla oblongata at level of inferior olivary nucleus.
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional	a) Enumerate cranial nerve nuclei along with their functional group in medulla oblongata

	group	b) Identify the point of emergence of these nerves in Medulla oblongata
AN58.4	Describe anatomical basis & effects of medial & lateral medullary syndrome	a) Explain the anatomical basis and clinical manifestation of medial & lateral medullary syndrome
Topic: Pons		
AN59.1	Identify external features of pons	a) Identify the external features on the dorsal and ventral aspect of Pons.
AN59.2	Draw & label transverse section of pons at the upper and lower level	a) Draw & label transverse section of pons at the upper and lower level.
AN59.3	Enumerate cranial nerve nuclei in pons with their functional group	a) Enumerate cranial nerve nuclei along with their functional group in Pons b) Identify the point of emergence of these nerves in Pons
Topic: Cerebellum		
AN60.1	Describe & demonstrate external & internal features of cerebellum	a) Describe and identify the parts, surfaces, lobes, notches, fissures and peduncles of cerebellum. b) Describe and identify the internal features of cerebellum. c) Draw and label sagittal section of vermis of the cerebellum.
AN60.2	Describe connections of cerebellar cortex and intracerebellar nuclei	a) Describe chief connection of the intra cerebellar nuclei and their function. b) Discuss the connection of cerebellar cortex.

AN60.3	Describe anatomical basis of cerebellar dysfunction	a) What are signs and symptoms produced by lesions of Archaecerebellum. b) Describe dysfunctions produced by lesions of Paleocerebellum. c) Describe dysfunctions produced by lesions of Neocerebellum.
Topic: Midbrain		
AN61.1	Identify external & internal features of midbrain	a) Identify the external features on ventral and dorsal aspect of midbrain. b) Describe internal structure of midbrain.
AN61.2	Describe internal features of midbrain at the level of superior & inferior colliculus	a) Describe arrangement of structures forming crus cereberi. b) Identify the red nucleus at the level of superior colliculus. c) Discuss grey matter at the level of inferior colliculus.
AN61.3	Describe anatomical basis & effects of Benedikt's and Weber's syndrome	a) Describe cause and signs and symptoms of Weber's syndrome. b) Describe cause and signs and symptoms of Benedict's syndrome.
Topic: Cranial nerve nuclei & Cerebral hemispheres		
AN62.1	Enumerate cranial nerve nuclei with its functional component	a) Enumerate the cranial nerve nuclei, function, location and functional component.
AN62.2	Describe & demonstrate surfaces, sulci, gyri, poles, & functional areas of cerebral hemisphere	a) Identify and describe borders, surfaces, lobes, poles of cerebral hemisphere.

		b) Describe sulci, gyri and functional area of superolateral surface of cerebral hemispheres. c) Describe sulci, gyri and functional area of medial surface of cerebral hemispheres. d) Describe sulci, gyri and functional area of inferior surface of cerebral hemispheres.
AN62.3	Describe the white matter of cerebrum	a) Classify the white matter with examples b) Describe and Identify parts, fibers, blood supply and applied of Internal capsule
AN62.4	Enumerate parts & major connections of basal ganglia & limbic lobe	a) Describe, identify, parts of Basal ganglia. b) Describe major connections of Basal ganglia. c) Enumerate parts of limbic lobe. d) Describe connections of limbic system.
AN62.5	Describe boundaries, parts, gross relations, major nuclei and connections of dorsal thalamus, hypothalamus, epithalamus, metathalamus and subthalamus	a) Name and identify divisions and subdivisions of diencephalon. b) Describe external features of thalamus. c) Describe major nuclei of thalamus with connections. d) Describe and identify boundaries of hypothalamus. e) Describe subdivisions of hypothalamus along with nuclei with connections.
AN62.6	Describe & identify formation, branches & major areas of distribution of circle of Willis	a) Describe, identify, formation, braches, major areas of distribution of circle of Willis.
Topic: Ventricular System		

AN63.1	Describe & demonstrate parts, boundaries & features of IIIrd, IVth & lateral ventricle	a) Describe and demonstrate features, boundaries and recesses of third ventricle. b) Describe and demonstrate features, boundaries and recesses of fourth ventricle. c) Describe and demonstrate features, boundaries and recesses of lateral ventricle.
AN63.2	Describe anatomical basis of congenital hydrocephalus	a) Describe types and explain anatomical basis of hydrocephalus.
Topic: Histology & Embryology		
AN64.1	Describe & identify the microanatomical features of Spinal cord, Cerebellum & Cerebrum	a) Describe the classification of nervous tissue. b) Identify and draw the microscopic structure of spinal cord, cerebral cortex and cerebellar cortex as observed under the microscope c) Differentiate the distribution of grey matter and white matter in the spinal cord, cerebellum, cerebrum d) Enumerate the layers and arrangement of cells in the microscopic sections of cerebral cortex and cerebellar cortex correctly with their functional correlation
AN64.2	Describe the development of neural tube, spinal cord, medulla oblongata, pons, midbrain, cerebral hemisphere & cerebellum	a) Describe the formation of neural tube and its subdivisions. b) Describe the formation of various layers in the wall of neural tube and their reorganization in various subdivisions of neural tube c) Describe the formation of Neural crest cells and list the structures derived from them d) Describe the formation of spinal cord, its extent during different phases of development, formation of grey and

		white matter, functional components of nerve cells of spinal cord e) Describe the development and subdivisions of Brain stem and labelled diagram showing the functional components of its nuclei f) Describe the development of Cerebral Hemisphere & Cerebellum
AN64.3	Describe various types of open neural tube defects with its embryological basis	a) Classify the Neural tube defects b) Provide the embryological basis for various neural tube defects
Topic: Epithelium histology		
AN65.1	Identify epithelium under the microscope & describe the various types that correlate to its function	a) Describe the structure of simple, stratified, pseudostratified and transitional epithelium b) Draw a neat labelled histological picture of simple columnar epithelium, simple cuboidal epithelium and simple squamous epithelium c) Draw a neat labelled histological picture of stratified squamous epithelium, pseudostratified columnar epithelium and transitional epithelium
AN65.2	Describe the ultrastructure of epithelium	a) Describe the ultrastructure of epithelium
Topic: Connective tissue histology		
AN66.1	Describe & identify various types of connective tissue with functional correlation	a) Describe connective tissue and the cells and extra cellular matrix in it b) Describe different types of connective tissue with examples
AN66.2	Describe the ultrastructure of connective tissue	a) Describe the ultrastructure of connective tissue
Topic: Muscle histology		

AN67.1	Describe & identify various types of muscle under the microscope	a) Differentiate the histology of skeletal muscle, cardiac muscle and smooth muscle
AN67.2	Classify muscle and describe the structure-function correlation of the same	a) Classify muscles with examples b) Identify and Draw a neat labelled histological picture of skeletal muscle, cardiac muscle and smooth muscle
AN67.3	Describe the ultrastructure of muscular tissue	a) Describe the ultramicroscopic structure of skeletal muscle.
Topic: Nervous tissue histology		
AN68.1	Describe & Identify multipolar & unipolar neuron, ganglia, peripheral nerve	a) Discuss the basis for classification of neurons, types of neurons and draw the different types of neurons b) Describe the structure and identify the unipolar and multipolar neurons, dorsal root ganglion and sympathetic ganglion in microscopic sections of nervous tissue and labelled diagrams. c) Classification and description of neuroglia and identification of their location in nervous tissue in a H&E stained section or a special stained section
AN68.2	Describe the structure-function correlation of neuron	a) Describe the structure-function correlation of neuron
AN68.3	Describe the ultrastructure of nervous tissue	a) Describe the ultrastructure of nervous tissue
Topic: Blood Vessels		
AN69.1	Identify elastic & muscular blood vessels, capillaries under the microscope	a) Describe the structure of elastic artery, muscular artery, large and medium sized vein and their labelled histological diagrams.
AN69.2	Describe the various types and structure-function correlation of blood vessel	a) Enumerate the classification of blood vessels, differences in their structure and their functional correlation
AN69.3	Describe the ultrastructure of blood vessels	a) Describe the ultrastructure of blood vessels
Topic: Glands & Lymphoid tissue		

AN70.1	Identify exocrine gland under the microscope & distinguish between serous, mucous and mixed acini	a) Define gland and differentiate between exocrine and endocrine gland. b) Classify exocrine glands and describe the histological features of Serous Acini, Mucous Acini and Mixed acini with example. c) Draw a neat labelled diagram of. Serous Acini Mucous Acini and Mixed acini.
AN70.2	Identify the lymphoid tissue under the microscope & describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the structure with function	a) List the primary and secondary lymphoid organs and differentiate between them b) Describe the histological features and labelled diagrams of lymph node, spleen, thymus and tonsil. c) Identify lymph node, spleen, thymus and tonsil under the microscope correctly.
Topic: Bone & Cartilage		
AN71.1	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same	a) Differentiate between compact and cancellous bone along with examples. b) Identify compact and cancellous bone under microscope and draw labelled diagrams. c) Describe intramembranous and intracartilagenous ossification. d) Describe growth of a long bone and structure of epiphyseal plate.
AN71.2	Identify cartilage under the microscope & describe various types and structure- function correlation of the same	a) Differentiate between elastic, hyaline and fibrocartilage along with examples. b) Identify elastic, hyaline and fibrocartilage under microscope and draw labelled diagrams.
Topic: Integumentary System		

AN72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	a) Describe the layers of the skin with its functional significance b) Differentiate between thick skin and thin skin and draw their labelled diagrams c) List the appendages of integumentary system d) Correlate the functions of the integumentary system with different layers
Topic: Chromosomes		
AN73.1	Describe the structure of chromosomes with classification	a) Describe chromatid, structure of chromosome and its structural classification
AN73.2	Describe technique of karyotyping with its applications	a) Should describe preparation of karyotyping and its uses b) Describe technique of karyotyping (G-banding) with its applications c) Describe Fluorescence in situ hybridization (FISH) technique with its applications.
AN73.3	Describe the Lyon's hypothesis	a) Describe the Lyon's hypothesis and its features
Topic: Patterns of Inheritance		
AN74.1	Describe the various modes of inheritance with examples	a) Describe the various modes of inheritance and their characteristics b) Mention examples for each mode of inheritance
AN74.2	Draw pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance	a) Describe the basic pedigree structure & notations used b) Draw the pedigree charts for the various types of inheritance & give examples of diseases of each mode of inheritance
AN74.3	Describe multifactorial inheritance with examples	a) Describe multifactorial inheritance with examples
AN74.4	Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant	a) Describe the genetic basis & clinical features of Achondroplasia, Cystic Fibrosis, Vitamin D resistant

	rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia	rickets, Haemophilia, Duchene's muscular dystrophy & Sickle cell anaemia
Topic: Principle of Genetics, Chromosomal Aberrations & Clinical Genetics		
AN75.1	Describe the structural and numerical chromosomal aberrations	a) Describe the structural and numerical chromosomal aberrations with examples
AN75.2	Explain the terms mosaics and chimeras with example	a) Should explain the terms mosaics and chimeras with example
AN75.3	Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome	a) Describe the genetic basis & clinical features of Prader Willi syndrome, Edward syndrome & Patau syndrome
AN75.4	Describe genetic basis of variation: polymorphism and mutation	a) Describe genetic basis of variation: polymorphism and mutation
AN75.5	Describe the principles of genetic counselling	a) Describe the principles of genetic counselling and its benefits
Topic: Introduction to embryology		
AN76.1	Describe the stages of human life	a) Describe the stages of human life
AN76.2	Explain the terms- phylogeny, ontogeny, trimester, viability	a) Should explain the terms- phylogeny, ontogeny, trimester, viability
Topic: Gametogenesis and fertilization		
AN77.1	Describe the uterine changes occurring during the menstrual cycle	a) Define menstrual cycle b) Enumerate the phases of the menstrual cycle and changes occurring in each phase with diagrams.
AN77.2	Describe the synchrony between the ovarian and menstrual cycles	a) Define ovarian cycle b) Enumerate the phases of the ovarian cycle and changes occurring in each phase with diagrams. c) Define ovulation with sequence of events and factors responsible for ovulation

		d) Describe the hormonal control of ovarian and uterine cycles with appropriate diagrams e) Correlate the phases of the menstrual cycle with the various phases of ovarian cycle with diagram
AN77.3	Describe spermatogenesis and oogenesis along with diagrams	a) Define spermatogenesis with its stages b) Define spermiogenesis and changes occurring during spermiogenesis c) Describe and draw labelled diagram depicting the structure of the normal human sperm d) Define oogenesis with process of oogenesis before and after birth. e) Enumerate the differences between spermatogenesis and oogenesis f) Draw a labelled diagram depicting structure of an ovum during ovulation
AN77.4	Describe the stages and consequences of fertilisation	a) Define fertilization with its stages and diagrams. b) Enlist the effects of fertilization
AN77.5	Enumerate and describe the anatomical principles underlying contraception	a) Enumerate the techniques of permanent contraception b) Enumerate the techniques of temporary contraception c) Explain the anatomical basis of barrier techniques of contraception in both the sexes d) Describe the effects of contraceptive hormonal pills on phases of the ovarian cycle
AN77.6	Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of “sex-ratio”.	a) Define teratology with its principles and classification of teratogens with example b) Distinguish malformation, disruption, deformation and dysplasia c) Define infertility

		d) Explain the anatomical basis of male infertility e) Explain the anatomical basis of female infertility f) Enlist the assisted reproductive techniques g) Define in vitro fertilization and describe its steps h) List the reasons for using in vitro fertilization i) Explain the techniques and principles of IVF j) Explain surrogate motherhood k) Discuss the social significance of sex ratio
Topic: Second week of development		
AN78.1	Describe cleavage and formation of blastocyst	a) Describe cleavage and formation of blastocyst
AN78.2	Describe the development of trophoblast	a) Describe the development of trophoblast
AN78.3	Describe the process of implantation & common abnormal sites of implantation	a) Describe the process of implantation & common abnormal sites of implantation
AN78.4	Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate	a) Describe the formation of extra-embryonic mesoderm and coelom, bilaminar disc and prochordal plate
AN78.5	Describe in brief abortion; decidual reaction, pregnancy test	a) Describe in brief abortion; decidual reaction, pregnancy test
Topic: 3rd to 8th week of development		
AN79.1	Describe the formation & fate of the primitive streak	a) Describe the formation & fate of the primitive streak
AN79.2	Describe formation & fate of notochord	a) Describe formation & fate of notochord
AN79.3	Describe the process of neurulation	a) Describe the process of neurulation
AN79.4	Describe the development of somites and intra-embryonic coelom	a) Describe the development of somites and intra-embryonic coelom
AN79.5	Explain embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects	a) Explain embryological basis of congenital malformations, nucleus pulposus, sacrococcygeal teratomas, neural tube defects

AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alpha-fetoprotein	a) Describe the diagnosis of pregnancy in first trimester b) Describe role of teratogens and alpha-fetoprotein in first trimester
Topic: Fetal membranes		
AN80.1	Describe formation, functions & fate of-chorion: amnion; yolk sac; allantois & decidua	a) Describe formation of chorion, amnion, yolk sac, allantois and decidua b) Enumerate the function and fate of chorion, amnion, yolk sac, allantois and decidua.
AN80.2	Describe formation & structure of umbilical cord	a) Describe formation of umbilical cord. b) Enumerate the contents, function and applied of Umblical cord.
AN80.3	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier	a) Describe development of placenta and formation of chorionic villi. b) Describe the structure of a full term placenta and its congenital anomalies. c) Enumerate the physiological functions of Placenta. d) Describe and draw labelled diagram of placental barrier. e) Describe the foeto placental circulation.
AN80.4	Describe embryological basis of twinning in monozygotic & dizygotic twins	a) Describe the embryologic basis of monozygotic and dizygotic twins. b) List out the difference between monozygotic and dizygotic twins. c) Describe the congenital anomalies associated with twinning.
AN80.5	Describe role of placental hormones in uterine growth & parturition	a) List the various placental hormones and enumerate its function
AN80.6	Explain embryological basis of estimation of fetal age.	a) Differentiate embryonic and foetal period.

		b) Describe key developmental events during embryonic and foetal period. c) Describe the criteria for estimation of gestational age in days and weeks. d) Describe the milestones in each trimester of pregnancy.
AN80.7	Describe various types of umbilical cord attachments	a) Describe the different types of umbilical cord attachment to placenta.
Topic: Prenatal Diagnosis		
AN81.1	Describe various methods of prenatal diagnosis	Describe various methods of prenatal diagnosis
AN81.2	Describe indications, process and disadvantages of amniocentesis	Describe indications, process and disadvantages of amniocentesis
AN81.3	Describe indications, process and disadvantages of chorion villus biopsy	Describe indications, process and disadvantages of chorion villus biopsy
Topic: Ethics in Anatomy		
AN 82.1	Demonstrate respect and follow the correct procedure when handling cadavers and other biologic tissue	Demonstrate respect and follow universal precautions when handling cadavers and other biologic tissue