

## GENERAL ANATOMY

S. no	Topic	Must know	Should know	May know
1.	Anatomical Terminology	Anatomical positions & planes, Terms in relation to limbs, cavity, embryology & joint movements	Extremities compartments, terms describing muscles, aponeurosis, raphe	
2.	Skin	Type, structure, Dermatomes, Axial lines	Tensor lines, flexor lines, papillary ridges Appendages	Langer's lines, Body surface area-Rule of 9
3.	Subcutaneous tissue	Superficial & Deep fascia Modifications of deep fascia- aponeurosis, retinaculum etc	Panniculus carnosus, Structural & functional correlation of superficial & deep fascia	Scalp, skin of Sole & palm
4.	Muscles	Types, features, attachment, nomenclature, Blood & nerve supply, Neuromuscular junction Action - Prime movers, Fixators, Antagonists, Synergists & Tendon	Power of muscles, Range of contraction, Active & passive insufficiency, shunt & sport muscles	Body lever systems, hypertrophy, atrophy, hyperplasia, Kinesiology
5.	Cartilage	Types, Structure & Distribution- hyaline, elastic & fibrocartilage, blood & nerve supply	Nutrition, synthesis, growth, regeneration	Injuries & grafts
6.	Bone	Classifications- morphological, structural, developmental & microscopic, Bones- parts, functions & structure, types of epiphysis, Blood & nerve supply, Bone ossifications- Laws concepts	Bone growth & remodelling, Medicolegal significance of bones, Nutrition assessment, nutrient foramen	Fracture, deformities, effect of injuries, stress, strain, radiation & hormone on bone growth
7.	Joints	Structure & classification,	Hilton's law, Range of movements, Kinesiology, types of	Dislocation Subluxation, reduction,

		Synovial, cartilaginous & fibrous, Bursa, synovial membrane, Compound & Complex joint, Subtypes of joints- Blood & nerve supply.	movements, Joint position- Loose & close-packed	arthritis, bursitis etc
8.	Blood Vessels & Lymphatic system	Arteries, veins- structure & distribution, capillary, Sinusoids, caval, azygos, paravertebral, emissary veins, anastomosis, End arteries, vasa vasorum, Lymphatic system lymphoid organs	lymphocytes- functions Infarction, Ischemia, embolism, collateral circulations, lymphatic obstruction	Arteriosclerosis, lymphoid organs, lymph nodes enlargement & clinical relevance
9.	Nerves	Classifications, structure & functions of nervous system, neuron & neuroglia, Synapses, Cranial & Spinal nerves, Autonomic nervous system & ganglia	Functional correlation, Dermatome, referred pain, superficial & deep reflexes.	Radiculopathy, Neuronal injuries- type & regeneration.

### Upper Limb

Sno	Topic	Must know	Should know	May know
1	Pectoral region, Mammary gland	Sternal angle, structure of Mammary gland muscles of pectoral region, lymph nodes, clavipectoral fascia,	Dermatome, Supraclavicular nerves, Lymph nodes in carcinoma / breast, Peau d orange, retraction of nipple.	Congenital anomalies of breast, milk line, Krukenberg tumour.
2	Axilla	Boundaries, Contents of axilla, lymph nodes, Brachial plexus & injuries- winging of scapula, Erb's & Klumpke's paralysis.	Axillary sheath, Axillary artery & its branches, Anastomosis, thoraco-dorsal nerve.	Intercostal brachial nerve, Cervical rib syndrome.
3	Back	Muscles of Back, Muscles underlying trapezius- rhomboideus & levator scapulae.	Accessory nerve, Dorsal scapular nerve, Triangle of auscultation,	Dorsal rami of spinal nerves, Branches of thyrocervical trunk supplying back,

			anastomosis around scapula.	
4	Scapular region	Musculo-tendinous cuff, Deltoid, Axillary nerve, Shoulder dislocation	Quadrangular , triangular spaces, their contents, Branches of third part of axillary artery.	Cutaneous supply of shoulder region, Intramuscular injection.
5	Shoulder joint	Classification & structure, Intracapsular tendon of long head of biceps, ligament support, Axillary nerve damage, Shoulder dislocation.	Rotator cuff, Glenoid labrum, Relations of joint, Bursae around shoulder joint, frozen shoulder.	Impingement syndrome, Bursitis around shoulder joint, Bankart's lesion.
6	Front of arm & Cubital region	Muscles of flexor compartment , boundaries of cubital region, Brachial artery, Musculocutaneous Nerve, Median, radial & Ulnar nerve.	Anastomosis around elbow joint, Median cubital vein, superficial veins in cubital region, Intravenous injections	Median & ulnar nerve, entrapment , tourniquet application.
7	Back of arm	Triceps , radial nerve in spiral groove, Saturday night palsy, crutch palsy, wrist drop.	Profunda brachii vessels.	Posterior cutaneous nerve of forearm, branches of profunda brachii artery.
8	Front of forearm & Hand	Muscles of forearm, lumbricals & interossei, radial & ulnar artery, Median radial & ulnar nerve in forearm, palmar Aponeurosis, thenar & hypothenar muscles.	Evolution of thumb & mechanism of grip flexor, retinaculum, palmar spaces, superficial & deep palmar arch, Synovial sheaths of flexor tendons, Carpal tunnel syndrome, claw hand, ape thumb deformity	Vincula longa, brevia, cutaneous veins & nerves of forearm, Surgical incisions of hand, Dupuytren's contracture.
9	Back of forearm & dorsum of hand	Muscles of forearm, Dorsal digital expansion, posterior interosseus nerve, anatomical snuff box- boundaries & contents, wrist drop.	Superficial branch of radial nerve.	Extensor retinaculum, posterior interosseus artery.

10	Elbow joint & radioulnar joint	Classification, structure, Relations & movements, interosseous membrane, lateral & medial epicondylitis.	Ligaments of joints, blood & nerve supply, carrying angle.	Cubitus valgus, fracture & dislocation-pulled elbow, Golfer's elbow, Student's elbow, fractures-Monteggia, Galeazzi
11	Wrist & joints of hand	Classification, structure & movements, first carpometacarpal joint	Scaphoid fracture and complications, dislocation of carpal-lunate- complications	Fracture dislocation wrist joint & carpal-collum's, Barton's fracture.

### Lower Limb

S.No	Topic	Must Know	Should Know	May Know
1	Femoral Sheath	Continuity of layers of anterior abdominal wall with front of thigh, deep fascia & Inguinal ligament, formation & contents, femoral sheath, femoral canal, femoral hernia & Saphenous opening.	Repair of femoral hernia, Differential diagnosis of Hernias, Saphenous Varices Psoas abscess.	Femoral artery & vein catheterization, Abnormal obturator artery.
2	Femoral Triangle & Adductor Canal	Boundaries & Contents, Superficial & Deep Inguinal Lymph Nodes. femoral Artery, Vein, Great Saphenous Vein, Lat. Cutaneous N of thigh, Cruciate & Trochanteric anastomosis.	Profunda femoris artery Stab injuries at- Adductor Canal Femoral shaft Fractures.	Branches of Profunda femoris, Meralgia parasthetica.
3.	Femoral Artery	Course & branches,	Palpation of femoral artery, I.V. injection in femoral vein.	Retrograde catheterisation / coronary angiography.
4.	Femoral & Obturator Nerves	Branches course & motor distribution of Saphenous Nerve, Obturator Nerve & femoral nerve.	Articular branches Hilton's Law, Referred pain, Accessory, Obturator Nerve, Articular branches.	Spastic paraplegia, Obturator hernia.
5.	Gluteal Region	Structures under Gluteus Maximus in relation to Piriformis, Structure	Pudendal block Trendelenberg Sign.	Intermuscular injections, site, procedure & complications.

		passing through greater & lesser sciatic foramina. Sciatic Nerve branches, distribution IM injections, Sciatica.		
7.	Popliteal Fossa	Boundaries & contents & Popliteal artery, Course, & branches. Anastomosis around knee joint.	Palpation of Common Peroneal Nerve/ Popliteal Pulse, foot drop.	Popliteal Cysts and aneurysm, Bursae around knee joint, house maid knee, clergy men's knee etc.
8.	Hip Joint	Relations Capsule & ligaments, Synovial membrane, Movements & group of Muscles, Nerve supply (SK), femoral neck fractures, Dislocations.	Anatomical basis of Trendelenberg sign. of surgical approaches.	Arthroscopy, Prosthesis, Congenital dislocation of hip, normal and abnormal gait at hip joint, Trendelenburg's Test.
9.	Knee Joint	Relations Capsules & ligaments, Movement & muscles, Producing then Locking & Unlocking Meniscal tear & Crucial ligament. Housemaid knee Baker's cyst.	Fracture dislocations Factors for stability of joint replacement.	Patellar dislocations/ fractures
10.	Ankle & Subtalar Joints	Movements, Axis, Muscles responsible for movements	Functional relevance of movements.	Fracture dislocations, Midtarsal & subtalar Joints.
11.	Arches of Foot	Skeletal frame work of foot, Components, factors for maintenance of arches & movement at joints	Flat foot, Morton's Metatarsalgia, CTEV, Pes cavus, Pes planus.	Gout, Metatarsalgia, March fractures/dancer's foot.
12.	Sole	Plantar aponeurosis Arrangement of muscles in layers Plantar arterial arch Cutaneous innervation.	Calcaneal spur Radiological identification - skeleton of foot.	Plantar Fascitis.
13.	Venous Drainage of Lower Limb	Great Saphenous & Small saphenous vein, course & tributaries	Trendelenberg test Perthe's test.	Treatment of varicose vein, Great

		Perforating vein, Positions, & communications Varicose vein Venesection, Coronary bypass.		Saphenous Veinous graft.
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## THORAX

S.No	Topics	Must Know	Should Know	May Know
1.	Intercostal Spaces	Muscles, Intercostal Nerve & vessels, Lymphatic's, Intercostal Nerve Block, Pleural Tap.	Atypical Intercostal nerves & Vessels, Herpes Zoster.	Innermost intercostals Branches of intercostals Nerve & vessels Notching of ribs.
2.	Pleura	Parietal & Visceral pleura, Lines of pleural reflection, Pleural recesses Blood & Nerve Supply ,Pleural effusion, pleural pleurisy & pleural tap.	Pulmonary ligament Lymphatic drainage.	Intercostal chest tube drainage, Pneumothorax .
3.	Lungs Trachea & Bronchi	Anatomical position Fissures & lobes, Relations of mediastinal surface, Trachea, Inferior, carina, Root of lung, Arrangement of structures within hilum , bronchopulmonary segments & Importance.	Azygos lobe Palpation of trachea bronchopulmonary segments in Right & Left lungs, Foreign body in trachea/bronchoscopy, sites of auscultations, lung abscess, Postural drainage .	Mendelson's syndrome Pan coast tumor Segmental pulmonary resection
4.	Mediastinum	Divisions, Boundaries & contents of each division.		Mediastinal syndrome Mediastinitis.
5.	Pericardium & Heart	Pericardium division position of heart, Dextrocardia, Chambers of heart orientation, Echocardiography, blood & Nerve supply, Referred pain.	Pericarditis , paracentesis Pericardial tamponade.	Pericardial recesses.

6.	Right Atrium	External & Internal features interatrial septum ASD .	SA Node AV Node	Triangle of Koch Torus aorticus.
7.	Blood Supply of Heart	Rt. Coronary artery & Lt. Coronary artery, Origin, Course Termination, Branches & Dominance. Coronary atherosclerosis Ischaemic Heart Disease (IHD), Angina pectoris Referred pain Heart block.	Anastomosis & collateral circulation, Peculiarities of coronary arteries Veins of heart Coronary angiography Percutaneous transluminal coronary balloon angioplasty (PTCA).	Triple vessels disease of Heart.
8.	Arch Of Aorta	Course, Relations, Branches, Coarction of Aorta, PDA, Aneurysm.	Radiological appearance Aortic knuckle, Anomalies of Aortic arch, Variation of branches, Aortic isthmus, Aortic spindle.	Aortic window.
9.	Ventricles & Conducting System	Orifices & valves Arterial supply, Conducting system, VSD, Fallot's tetralogy.	Cyanotic heart diseases	
10.	Azygos System of Veins	Azygos Vein Formation, Course Relations, Tributaries.	Hemi-azygos & Accessory azygos Vein.	SVC/IVC Obstruction.
11.	Mechanism of Respiration	Joints of thorax: Costovertebral & costotransverse joints, Ligaments, Movements & axes, Pump handle Movement, Bucket handle & piston handle movement, Accessory muscles of respiration.	Emphysema Asthma Kyphosis & Scoliosis	
12.	Thoracic Duct	Formation, Course Termination, Areas of drainage.	Chylothorax.	
13.	Oesophagus	Course & relations Normal curvatures and constrictions, Blood supply.	Oesophagoscopy .	Achalasia cardia & Sphincters.

## Abdomen

S. No	Topic	Must Know	Should Know	May Know
1.	Anterior Abdominal Wall	Regions/Quadrants Landmarks, Joints, Superficial fascia & Muscles, Dermatomes, Blood Vessels, Porto-caval obstruction, Lymphatic Drainage, Superficial & deep inguinal rings, Renal angle, Murphy's point.	Holden's line Attachment of the muscles, Striae gravidarum & albicantes Extravasation of urine Abdominal incisions.	Langer's lines Suspensory ligament of penis.
2.	Rectus Sheath	Formation, Arcuate line, Contents, Linea alba & Linea semilunaris.	Functional aspects of rectus sheath, Divarication of recti, Meckel's diverticulum.	Umbilical hernia Incisional hernia Faecal fistula Urinary fistula.
3.	Inguinal Canal	Descent of testis & processus vaginalis Topography boundaries, extent & contents of Indirect & direct inguinal hernia.	Mechanism of inguinal canal, Anatomical consideration of hernia repair.	Canal of Nuck.
4.	Testis & Spermatic Cord	Coverings of spermatic cord/ testis, contents in males & females Spermatic cord vis-à-vis hernia sac in direct and indirect inguinal hernias Tunics of testis Blood & Nerve supply, lymphatic drainage, Hydrocele, Vasectomy, Cremaster flex, Scrotum-nerve supply.	Varicocele Undescended testis Ectopic testis.	Torsion of testis Appendix of testis Appendix of epididymis.
5.	Peritoneum	Vertical & horizontal disposition of peritoneum, Lesser & greater sac Hepatorenal pouch & Pouch of Douglas. Nerve supply of peritoneum and referred pain.	Peritoneal recesses & bands, Functions of peritoneum, Ascitis Peritoneal fossae- lesser sac, duodenal fossae, intersigmoidal recess.	Peritoneal recesses and bands.



6.	Stomach	Relations & Stomach bed Blood supply, Lymphatic drainage, Nervous supply, Gastric ulcer & vagotomy.	Peptic ulcers, Prepyloric vein of Mayo, gastric canal, Endoscopy, Barium meal.	Ca stomach Trosier's sign Traube's space Congenital anomalies.
7.	Duodenum	Relations/Opening of bile & pancreatic duct, Blood supply, Duodenal ulcer & duodenal cap Difference between small & large intestine.	Ligament of Treitz Endoscopy & Endoscopic retrograde cholangiopancreatography (ERCP).	Prepyloric vein of Mayo, Supraduodenal artery of Willkie, Retroduodenal artery.
8.	Caecum, Appendix & Colon	Relations. Blood supply, Interior Difference from large intestine, Gross features including relations Blood supply, Positions.	Shapes of caecum Clinical relevance of positions of appendix Burney's point Appendicitis.	Recesses around caecum, Lump in right iliac fossa, Appendicitis vs salpingitis/oophoritis Anatomical basis of surgical incisions.
9	Liver	Relations, Blood supply Lobes of liver/vascular segments. Lymphatic drainage.	Surgical lobes. Hepatitis, Ca liver.	Liver resection & transplantation.
10.	Extrahepatic Biliary Apparatus	Gross features, Blood supply of Gall Bladder, CBD-Parts & relations, gallstones, Calot's triangle.	Sphincter of Oddi Cholecystography Endoscopic retrograde cholangiopancreatography (ERCP)	Hartmann's pouch Phrygian cap.
11.	Pancreas	Relations, Blood supply, lymphatic drainage, Duct system, Sphincter of Oddi, Duodenal papillae.	Splenectomy vis-à-vis tail pancreas. Pancreatitis.	Pancreatic cysts & CA head pancreas.
12.	Portal Vein	Formation & tributaries, Porto-caval anastomosis, sites, haemorrhoids & esophageal varices caput medusae.	Porto-caval-shunt.	Laminar blood flow.
13.	Kidneys	Relations, Coverings Blood supply, Vascular segments, Coronal section with internal feature.	Morrison's parallelogram, Horseshoe Kidney, Lt. Renal vein, Renal angle, Exposure of kidney from back, Pyelography.	Floating kidney Aberrant renal artery Renal transplant Lithotripsy.

14.	Ureters	Relations, extent, course constrictions, Blood supply&lymphatic drainageUrolithiasis &ureteric colic.	Congenital anomalies , relations in male/female.	Anomalies of the ureter.
15.	Diaphragm	Attachment, openings Nerve supply&Function.	Diaphragmatic hernia Trauma .	Foramen of Bochdalek Phrenic crush.
16.	Abdominal Aorta & Inferior Vena Cava	Extent, course , tributaries&termination of IVC Relations, branches & distribution of abdominal aorta.	Porto-caval, anastomosis Thoraco-epigastric Vein block of IVC.	Spread of carcinoma through systemic veins to vertebral venous plexus.
17.				
18.	Perineum	Subdivisions Colle's fascia & perineal membrane urogenital diaphragm Perineal pouches, Nerve supply.	Rupture of urethra & extravasation of urine Perineal tear.	Episiotomy.
19.	Ischi-ooanal Fossa	Location, boundaries & contents .Pudendal canal.	Inferior rectal vessels& pudendal nerve, Fistula in ano &Goodsall's rule.	Hiatus of Schwalbe.
20.	Urinary Bladder	relations in male/ female, Nerve & blood supply, Lymphatic drainage.	suprapubic cystostomy neurogenic bladder.	Ectopiavesicae patent urachus cystoscopy.
21.	Prostate, Male Urethra Seminal Vesicle	Relation internal structure, blood supply& Age changes	Capsule vis-a- via prostatectomy benign prostatic hyperplasia, perrectal examination urethralcatheterization	TURP- transurethral resection of prostate Ca- prostate&spread.
22.	Ovary, Uterus & Adnexa	Relation, flexures& Position, tubectomy Blood supply, Lymph drainage, Supports of uterus, Nerve supply and referred pain of ovary.	Rectouterine pouch&vesicouterine pouch prolapse of uterus hysterectomy Rectouterine fistula.	Uterine anomalies recurrent abortions in retroverted uterus.
23.	Sigmoid Colon & Rectum	Relations/Internal feature, Blood supply & venous/Lymphatic drainage, Per rectal examination Fascia of Denonviller's Hemorrhoids.	Hirschsprung's disease, prolapse of rectum, Imperforated anus.	Ca-rectum Proctoscopy.
24.	Anal Canal	Relations; ano rectal junction Internal feature - white line&Pectinate line /anal columns.	Internal&external hemorrhoids porto-caval anastomosis	Goodsall's rule Embryological & surgical anal canal Imperforate anus.

		Internal & external sphincters , nerve/Blood supply including venous, drainage Puborectalis-anorectal ring.	fissure –in –ano fistula-in-ano perianal abscesses vis-a vis ischio anal abscess.	
25.	Pelvic Diaphragm	Components/relationsActions,Nerve supply, sacral plexus and lumbosacral trunk Internal iliac artery.	Tear of levatorani in childbirth /episiotomy.Branches of external and internal iliac arteries	Role of levatorani in child birth Urinary stress in continence.

## Head & Neck

S. No	Topic	Must Know	Should Know	May Know
1.	Scalp	Layers,lymphatic drainage, sebaceouscysts, Closed&Open wounds Emissary veins-black eye safety valve haematoma.	Cephalohaematoma Caput succedanum.	Surgical scalp.
2.	Cervical Fascia	investing layer ,Pretracheal&Prevertebral layer, prevertebral & carotid sheath.	axillary sheath facial spacesligament of berry.	Cold abscess other abscess.
3.	Posterior Triangle	Boundaries, Subdivision-occipital , supraclavicular, content ,compression of subclavian artery to stop bleeding in upper limb wry neck.	air embolism	Phrenic crush accessory phrenic nerve.
4.	Orbit	extrinsic muscles movement of eyeball	Squint	Eye muscles testing
5.	Lacrimal Apparatus	Lacrimal gland& Nasolacrimal duct.	Parts of lacrimal gland and relation to levatorpalpabraesuperioris, flow of lacrimalfluid.,nerve supply, sphenopalatine ganglia	Artificial tears.
6.	Thyroid Gland	Border relation capsules,blood Supply, andvenous drainageGoiter&Thyroidectomy.	pyramidal lobe levatorglandulaethyroidligament of berry, Venous plexus ,thyroid artery twigs from	Synthesis of throxine and its regulation.

			oesophageal and tracheal branches ,vein of kocher congenital malformation.	
7.	Parotid	Relation /Structure embedded in parotid gland Capsule parotid duct size lumen ,opening blood supply, nerve supply, applied anatomy-swelling parotidectomy, parotid abcess.	paraotid space-structure in depth of parotid space development parotid tumor.	Parotidectomy, frey's syndrome
8.	Temporal And Infratemporal Region	BoundariesContents,sup erfeicial-petrygoid venous plexues,sphenomndibular ligament,maxillary artery deep mandibular nerve Chorda tympani , otic ganglion, Origin, insertion and actions of muscles,Mandibular nerve- course, relations and branches.	Branches of maxillary artery, Chorda tympani otic ganglion-mandibular injury laryngeal N block.	Spine of sphenoid.
9.	Jugular Veins	FormationCourse,Tributaries.	Queckenstedt;s test Jugular venous pressure.	Anterior and oblique Jugular veins.
10.	Temporomandibular Joint	Capsules and ligaments Articular disc Blood supply,Nerve supplyMovements,Dislocation o TMJ.	Sequence of movements for opening of mouthTreatment of dislocation.	Stability of TM joint.
11.	Tongue	Muscles a extrinsic,intrinsic,Blood supply-arterial /venous,Nerve supply lymphatic drainage, Applied anatomy,Tongue pulled anteriorly to prevent choking pulled anteriorly to prevent bleeding paralysis of XII nerve.	Falling back of tongue,causes& consequences	Carcinoma tongue operation Alternate taste pathway.
12.	Submandibular Region	Submandibular &sublingual glands, RelationsWharton's duct	Sialolithiasis Tumors.	Surgical approach.

		Blood supply-lingual artery,Nerve supply lingual,9 <sup>th</sup> ,12 <sup>th</sup> nerve Submandibular ganglion.		
13.	Pharynx	Relations,Musculature Stylopharyngeus Palatopharyngeus Salpingopharyngeus Constrictors Blood supply- Nerve supply-motor, sensory, Interior (Oropharynx,Nasopharynx and Laryngopharynx piriform fossa).	origin ,insertion and part of constrictors structure passing through gaps.	Anatomy of Space of Morgagni Killian Jamison space Pharyngeal Diverticulum.
14.	Palate	introduction and function Muscle of soft palate blood supply-nerve supply-motor & sensory anatomy:cleftplate.	Degluttition Gag reflex .	Passavant's ridge.
15.	Palatine Tonsil	Relations and surfaces Blood supply, nerve supply, tonsillitis , tonsillectomy.	Waldeyer's ring Adenoids.	
16.	Larynx	Cartilages ligament&Muscle,Vocal cords& Vestibular folds,Bloodsupply.lymphatic drainage nerve supply, functional consideration, Tracheostomy Damage to recurrent Laryngeal nerve	Age related changes and laryngeal carcinoma voice changes,Origin, insertion,direction of muscle fibers and action of intrinsic muscle	Mechanism of sound production
17	Middle Ear	Boundaries & contents.	Connection and opening .	otitis media infection of middle ear in children meningitis.
18	Hypoglossal Nerve	CourseIntraneural Extracranial&Branches- nerve testing.	location & function of nucleus.	thrombosis of anterior spinal artery care of XII Nerve During Operation And Lingual Artery.
19	Glossopharyngeal Nerve	CourseIntraneural Intracranial, Extracranial&branches.	position of nuclei.	eagle's syndrome.

20	Facial Nerve	functional component nuclei, course ,intracranial extracranial&branches.	position of nuclei.	Supranuclear lesion nuclear lesion infranuclearlesion.
21	Oculomotor Nerve	functional component NucleiCourse Intracranial,Extracranin alandBrancheslightbrefl ex,accommodationrefle x,Argyll Robertson `s supil.	positionand component of nucleus.	weber`s syndrome.
22.	Abducent& Trochelear	functional Component Nuclei, course- intraneural ,intracranial&extracrani al, muscle supplied by the nerves.	position of nuclei.	paralysis of muscle supplies – squint/diplopia.
23.	Dural Venous Sinuses	diffrence between veins andsinusesclassification flow of blood in sinuses cavernous sinuses- Situation,Formation Extent,SizeRelationTribu tariesdangerous area of face thrombosis of cavernous sinues.	Pulsating exophtalmos	Queckenstedt`s test.
24	Anterior Triangle of The Neck	Boundaries and subdivisions Carotid triangleboundaries and content carotid arteries Trachea extant and relationOesophagusexte nt and relation.	sites of constrictions parathyroids.	Adam`s apple& relations
25	Hypophysis Cerebri	parts ,location ,relation blood supply, microscopic structure anddevelopment.	hormones secreted tumoures of the pituitary.	Hypophysectomy approaches.
26.	Joints of The Head & Neck	atlanto occipital,atlanto axial, ligament .	Joints between the vertebral bodies.	Spondylosis.

## Neuroanatomy

S no	Topics	Must know	Should know	May know
1-	Introduction to neuroanatomy	Overview of brain,brain stem & spinal cord,divisions of nervous system, cellular organization, neurons,	Nerve degeneration & regeneration, stretch reflex, muscles atrophy, hypertrophy, tendon jerks,reflex arc.	Peripheral neuropathy, entrapment syndromes overview,

		cranial & spinal nerves, nerve plexus, autonomic & somatic ganglia, Dermatome.		radiculopathy, abnormalities of muscle tones, grading of muscle power.
2-	spinal cord	Spinal meninges, structure, nerve cell groups of gray column, ascending & descending tracts, blood supply.	Spinal segments, spinal enlargement, Lumbar puncture, spinal reflex, Brown-Sequard syndrome, Conus medullaris syndrome, cauda equina syndrome.	Spastic & flaccid paralysis, lesion localization, syringomyelia, tabes dorsalis.
3	Brain stem	Features of midbrain, pons & medulla, Internal structures- nerve cell groups of gray matter, ascending & descending tracts.	Blood supply of brain stem, Wallenberg syndrome, medial medullary syndrome, Millard-Gubler syndrome, medial longitudinal fasciculus.	Cerebello-pontine angle syndrome, Medial longitudinal fasciculus syndrome, Weber's, Benedikt's syndrome, Argyll Robertson pupil.
4	Cranial nerve nuclei	Functional components & distributions, somatic & visceral afferent & efferent nuclei.	Nucleus ambiguus, motor, spinal, sensory & mesencephalic nuclei of trigeminal nerve, nuclei of vagus nerve, EW nucleus, nucleus of tractus solitarius, Bell's Palsy.	Lesions of cranial nuclei & nerves, associated paralysis & syndromes, Trigeminal neuralgia, upper & lower motor type of palsy of 7 <sup>th</sup> , 12 <sup>th</sup> nerves etc.
5	Cerebellum & fourth ventricle	features, division & subdivisions, internal structures- grey matter- nerve cell groups, white matter- connections of cerebellum.	Cerebellar peduncles, Fourth ventricle- features, boundaries & floor blood supply, truncal ataxia, Romberg's sign.	Cerebellar syndrome- tremors, intention tremors, dysarthria, dysmetria, dysidiadochokinesia, nystagmus.
6	Diencephalon & third ventricle	External features of thalamus, thalamic nuclei in different parts, connections & functions, hypothalamus- nuclei & connections & functions, third ventricle- communications.	Solitariothalamic tracts, connections of metathalamus (lateral & medial geniculate bodies), Hypothalmo-hypophyseal portal system, recess of ventricles, Choroid plexus.	Recent memory, exteroceptive senses, thalamic syndrome, epithalamus, Diabetes insipidus, hydrocephalus, hypothalamic syndrome.
7	Cerebrum	External features- surfaces & borders,	Structure of cerebral cortex, sulci & gyri-	Hemiplegia & hemiparesis, motor

		Sulci&Gyri-central ,lateral calcarine&parieto-occipital,collateralsulcus ,lobes,functional areas-speech,sensory, motor,visual& auditory areas	Cingulate sulcus,paracentrallobule,cuneus, gustatory area, vestibular area, association areas,Brodmann classification	& sensory aphasia,agnosia,astereognosis,hemianopia, cerebral dominance, frontal eye field.
8	Basal Nuclei	Corpus striatum-caudate nucleus & lentiform nucleus, internal capsule, connections & functions, functions of basal nuclei, parkinsonism disease.	Amygdala,subthalamic nuclei, functions, Ballismus, Hemiballismus, chorea & athetosis, blood supply .	Clastrum, chorea-sydenham's chorea & Huntington's chorea.
9	White matter & lateral ventricle	Association, commissural & projection fibres, Corpus callosum- features, parts & functions, Internal capsule- parts, constituent fibres, blood supply of internal capsule, Lateral ventricle.	Corticofugal & corticopetal fibres, lateral ventricle- parts, boundaries, horns of lateral ventricle- choroid plexus & fissure.	Habenular commissure, cerebral haemorrhage, hemiplegia, ventricular system , ventriculography, CT & MRI imaging of ventricular system.
10	Blood supply of brain	Circle of Willis formation & its functional significance, vertebral & carotid system- branches	Arterial supply of cerebrum & occlusions of cerebral arteries, venous drainage of cerebrum, Blood brain barrier.	Blood –CSF barrier, Cerebral aneurysm, subarachnoid haemorrhage, cerebral angiography, subdural haemorrhage.
12	Meninges & CSF	Meninges-dura mater, pia mater & arachnoid mater, folds of duramater, Dural venous sinuses, extra dural & subarachnoid space- extensions & haemorrhage CSF production ,circulation & absorption.	Blood & nerve supply of duramater, cavernous sinus thrombosis, cisterna magna & cisternal puncture, functions of CSF, hydrocephalus.	Exophthalmos, arachnoid granulations, Virchow-Robin's space, Froin's syndrome, clinical features of hydrocephalus, Queckenstedt's test.
13	Pathways	Visual ,olfactory, auditory & gustatory Pathways, Pyramidal & extrapyramidal tracts, spinothalamic tracts, dorsal column medial lemniscus pathway.	Lesions of motor & sensory tracts at various levels, spinocerebellar pathways.	Argyll Robertson pupil, hemianopia, deafness, Babinski's sign, Examination of motor & sensory system.



## Histology

S. No	Topics	Must Know	Should Know	May Know
1.	Introduction & Microscopy	Relevance of histology to Medicine Light microscope Magnification/resolution Setting up of a microscope Steps in paraffin block making, H& E staining.	Properties of light and electrons, Principles of microscopy, Factors influencing, magnification & resolution, Special stains for connective tissue, muscle and nerve tissue.	Wave theory of light Various kinds of microscopes Differences between light & electron microscopes Neuroanatomical stains Golgi staining methods.
2.	Microtomy	Parts of a rotary microtome, Steps in paraffin section cutting.	Freezing microtome.	Cryotome and cryostat methods, Sample preparations for biological specimens for transmission and electron microscopy
3.	Animal Cell	Cell organelle & Cell Division.	Euchromatin and heterochromatin Chemical nature of DNA & RNA Distribution of the primary tissues in the body systems.	Lysosomal storage diseases, Lipid peroxidation and free radicals in biological tissues.
4.	Epithelial Tissue I	Different types of epithelial tissues and their locations.	Cell junction Junctional complexes Nutrition of epithelial and connective tissues Surface modification of cell membranes (Cilia and microvilli) Cell types: Fg Goblet cells, APUD cells Renewal, Nerve supply.	Ultrastructure Metaplasia and hyperplasia.
5.	Epithelial Tissue-ii	Glandular epithelium: mucous, serous and mixed glands.		Ultra structure.

6.	Connective Tissue-I	Components: matrix/ground substance, cells and fibres Loose areolar, elastic, collagenous, reticular (Cell types & varieties of fibres) Identification of connective tissue types.	Nutrition of connective tissue.	
7.	Connective Tissue-II	Cartilage : hyaline, Elastic and Fibro, Cell types and distribution.	Nutrition of cartilage.	Chondromas Chondrosarcomas Ultra structure.
8.	Connective Tissue-III	Bone :compact and cancellous, Cell types.	Growth interstitial and appositional Support and protection of bone, nutrition of developing bone, callus formation and fracture repair.	Osteomalacia, osteoporosis, osteosarcoma. Ultra structure
9.	Connective Tissue IV- Lymphoid/ Immune System	Distribution: Lymphatic nodule: solitary and aggregate- Lymph node Spleen.	Open & closed circulation in the spleen.	
10.	Connective Tissue (Lymphoid/ Immune System)	T and B Lymphocytes Thymus, Tonsil.	Blood Thymus barrier Tonsillitis.	Organ transplantation Graft rejection, Autoimmune disease.
11.	Connective Tissue-V Bone Marrow	Reticulin framework Developing blood cells Blood sinusoids.	Bone marrow transplants.	
12.	Muscle Tissue	Types of their microanatomy T tubules and muscle triads, Motor end-plate Myoneural junction.	Red, white and intermediate muscle fibres, Nutrition.	Hyperplasia and hypertrophy Rigor mortis and myasthenia gravis Ultra structure.
13.	Nerve Tissue	Structure of neuron and neuroglia, Identification of neurons and neuroglia, Peripheral nerve, Structure of myelin and myelin sheath, Nodes of Ranvier Ganglia: Sensory (DRG): Motor (Systemic).	Meissner's pacinian corpuscles, Types & ultrastructure of synapse.	Ultrastructure Age changes in neurons.
14.	Blood Vessels	Basic structure of blood vessel: tunica intima, media and adventia,	Types of capillaries Diapedesis, Blood-Brain Barrier,	Atherosclerosis Aneurysms & Infarcts

		Arteries(Large, Medium and Small)and Capillaries Veins & Sinusoids.	Thermoregulation	Disorders of Clotting and Bleeding mechanisms.
15.	Skin	Skin types & structure Cutaneous receptors Appendages of the skin(hair follicles, sebaceous and sweat glands, nails).	Renewal of the epidermis, keratinisation.	Psoriasis Vitiligo Albinism Malignant melanoma Acne, Lichen planus.

## Embryology

S. No	Topic	Must Know	Should Know	May Know
1.	Introduction	Prenatal-Zygote, pre-embryonic, Embryonic & Foetal, Terms of references-Cranial, Rostral, Caudal Dorsal, Ventral, Medial, Lateral	Ontogeny, Trimester; Viability, Abortion, Miscarriage, MTP, Concepts, Abortion	Ontogeny in relation to Phylogeny.
2.	Gametogenesis	Menstrual cycle, Ovarian cycle, LMP & EDD, Oogenesis & ovulation, Ovum, Spermatogenesis, Spermiogenesis, normal Sperm parameters Capacitiation, Germ cell transport and fertilization, Acrosome reaction, Zona reaction	Abnormal gametogenesis Abnormal germ cells Morphology Conception, Contraception Sex determination	Abnormalities during mitosis & meiosis Fertility & sterility- investigations Sex selection Surrogate motherhood.
3.	First Two Week	Fertilization, Implantation, Decidua and decidual reaction, Cleavage, Blastocyst Bilaminar & trilaminar discs, Amniotic membrane, Yolk sac, connecting stalk, chorion, Prochordal plate Extraembryonic mesoderm Primary chorionic villi and placentation, Oral & buccopharyngeal membranes.	Mosaicism, Spontaneous abortion, Abnormal implantation, Chorionic gonadotrophins Pregnancy test.	Pregnancy loss abnormal implantation consequences.
4.	Third Week	Gastrulation; Primitive streak notochord, Neuralation-Neural tube & its fate,	Nucleus pulposus Sacrococcygeal teratoma	Signs of pregnancy during the first trimester

		Neural crest, Neural tube defects-spina bifida, meningomyelocele, Anencephaly, Development of somites Intraembryonic coelome, CVS, Foetal membranes, Chorionic villi, Amnion, Yolk sac, Allantois Intraembryonic, mesoderm & its subdivisions, Derivatives of the germ layer, Pharyngeal arches.		Frame of body- poles, Axes, Symmetry Dilatation & curettage procedure Serum markers – alpha fetoprotein, hcG, estrogen
5.	Foetal Membranes	Formation, functions and fate of foetal membranes Placenta-types: types of cord attachments, physiological functions, fetomaternal circulation, Twinning: Monozygotic and dizygotic.	Role of placental hormones Uterine growth Parturition Multiple pregnancies.	Abnormal multiple pregnancies, Trophoblastic, tumours: Haemolytic disease of the new born, Erythroblastosis foetalis Teratogenicity.
6.	The Foetal Period	Foetal growth Maternal-foetal correlation (Pregnancy changes in mother).	Estimation of foetal age, Concept of prematurity, Body segments-proportion, Tissue differentiation and function.	large and small babies Chorionic villus biopsy & Amniocentesis methods of foetal monitoring
7.	Congenital Malformations	Causative factors Mechanisms	genetic basis of malformations, Critical period of development Teratogens.	
8.	Body Cavities Mesenteries & The Diaphragm	Subdivision of the coelomic cavity Related parts: cardiogenic area, septum transversum Somatopleura, splanchnopleura Mesenteries: formation, functions & fate, Diaphragm	Enumeration of congenital anomalies Diaphragmatic hernias.	Clinical presentation, Respiratory distress syndrome Herniation.
9.	Musculoskeletal System	Limb buds Fate, Rotation of the limb buds.	Congenital anomalies Amelia, Phocomelia etc.	
10.	Cardiovascular System	Angiogenesis Heart loop and formation of the chambers of the heart, septa & valves	Enumeration of veins, abnormalities	Clinical features Recent development:

		Turncusarteriosus & fate Intraembryonic vessels, Foetal circulation & changes at birth ASDs. VSDs, PDA ,Fallots tetralogy .	Correlation with gross anatomy & anomalies, Lymphatic system normal & anomalies arterial system Major veins	prosthetic valves, grafting, Surgical correction.
11.	Digestive (Alimentary) System	Body cavities & serous membrane,Foregut & its derivatives: omental bursa,Midgut-Derivatives,rotation of the gut, Meckel's diverticulum; Liver &extahepatic biliary system ,Pancreas, Spleen Portal vein,Hindgut, Cloaca and its derivatives	Malformations- Congenital hypertrophic pyloric stenosis,Atresia,Omph alocoele,Hernia, Malformations; Fistulae, situsinversus, Non-rotation, reversed & mixed rotation.	Clinical presentation in premature births and neonatal period.
12.	Respiratory System	Tracheobronchial diverticulum,Developmen t of larynx, trachea, bronchi &lungs,Tracheo-oesophageal fistula.	Associated anomalies.	Respiratory distress syndrome.
13.	Urogenital System	Kidneys, ureter urinary bladder, Cloaca-urinary bladder and urethra Suprarenal gland, Gonads-testis & ovary,Descent ofgonads,Mesonephric duct and paramesonephric systems, Uterine tube, uterus ,vagina&External genitalia.	congenital anomalies/ causes Ambiguous genitalia & hermaphroditism Remnants and vestiges of the ducts & tubules.	Clinical presentation & visualization in the living Hernia,hydrocele.
14.	Face & Pharyngeal Apparatus	Pharyngeal arches. Pouches/ cleft: derivatives and fate Development of face, oral cavity, palate& associated anomalies. First arch syndrome.	Common anomalies and syndromes of pharyngeal arches.	Congenital malformations
15.	Nervous System	Neural tube and brain vesicles, Ventricular system, Neural crest and its derivatives, Hypophysiscerebri, Peripheral nervous system: somatic and automaticNeurobiotaxis,	Congenital associated disorders- hirschsprung's disease.	Sequence of myelination Genetic &teratogenic factors neural tube defects.

		Functional components spina bifida, Anencephaly, hydrocephalus.		
16.	Organs Of Special Senses	Eye: Embryologic source of each component and the adnexa, Ear: Internal ear-membranous/bony labyrinth, Middle & External ear.	Common anomalies of the eye: Retinal detachment; Congenital glaucoma, Colobomairidis, Congenital cataract .	Genetics and teratology especially Rubella, Toxoplasmosis – Torch infections
17.	Integumentary System	Skin, pilo-sebaceous unit, Tooth as modified dermal papillae, Nail , sweat glands, mammary glands .	Associated Congenital anomalies – supernumerary breast, amastia, athelia etc.	Genetics and teratology Clinical syndromes.

### Genetics

S. No	Topic	Must Know	Should Know	May Know
1.	Introduction	Clinical genetics Mendelian laws of inheritance Cell division, Mitosis & Meiosis.		
2	Chromosome-I	Structure, Classification, Sex chromatin, Lyon hypothesis	Grouping of chromosomes	Karyotyping
3.	Chromosome-II	Chromosomal Disorders- Trisomy & monosomy, down's syndrome, patau's, Edward's & Klinefelter's syndrome	Genetic code	
4.	Genetic diseases	Structure of DNA & RNA, Single Gene Disorders, Genetic transmission- Autosomal dominant/ recessive, Sex linked dominant/ recessive, Gene mutation Mutagens, Mosaicism, leukemias Multifactorial Disorders	Cri-du chat syndrome, Fragile X syndrome, Genomic Imprinting- Angelman & Prader-willi syndrome	Robertsonian translocation, Philadelphia chromosome
6.	Clinical Genetics	Pedigree chart/symbols	Pedigree analysis	
7.	Diagnosis of Genetics Diseases	Prenatal diagnosis:- Indications Amniocentesis, Chorionic villus biopsy, Maternal serum screening.	Ultrasonography/ imaging studies & biochemical parameters	
8.	Genetic Counseling &	Indications of	Human cloning,	stem cells

		Gene therapy, Human genome		
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## Recommended Books for Undergraduate programme

S no	Title	Author	Publisher	Edition
1	Gray's Anatomy for students	Richard L. Drake , A Wayne Vogt, Adam W. Mitchell	Elsevier	First South Asia Edition
2	Clinical Anatomy	Richard S. Snell	Wolters Kluwer	9th edition
3	Clinical Neuroanatomy	Richard S. Snell	Wolters Kluwer	7th edition
4	Cunningham's Manual of practical Anatomy Volume 1,2,3	Rachel Koshi	oxford	16th Edition
6	Di Fiore's Atlas of Histology	Victor P. Eroschenko	Wolters Kluwer	13th Edition
7	Langman's Medical Embryology	T.W. Sadler	Wolters Kluwer	13th Edition
8	Surface and Radiological Anatomy	A. Halim	CBS Publishers	3 <sup>rd</sup> Edition
9	Human Osteology -A Clinical orientation	Nafis Ahmad Faruqi	CBS Publishers	3 <sup>rd</sup> Edition
10	Gray's Anatomy-The Anatomical Basis of clinical practice	Susan Standring	Elsevier	41th Edition
11-	Synopsis of surgical anatomy	Lee McGregor's	Varghese publisher	(Indian Edition)12 <sup>th</sup>
12	A manual of clinical surgery	S Das	S.S Das	12 <sup>th</sup>

## Examination /Marks Distribution

Total marks-	400
Internal Assessment	200
Professional Examination-	200

**Internal Assessment:** Three Assessment in theory and practical are held as -

Exam	Theory	Practical
First semester	100 marks	100 marks
Second semester	100 marks	100 marks
End semester	200 marks	200 marks
Round the year performance of Student	200 marks	200 marks
	Total-600 marks <b>Reduced to 100 Marks</b>	Total-600 marks <b>Reduced to 100 marks</b>

**Internal assessment    Theory -100 Marks    Practical -100 Marks    Total-200 Marks**

### Professional Examination

<b>Theory -Paper I</b>	100 marks	Total-200 marks
<b>Theory - Paper II</b>	100 marks	<b>Reduced to 100 marks</b>
<b>Practical</b>	100 marks	Total-100 marks
<b>Total</b>		<b>200 Marks</b>