Contents

CHAPTER 1: Introduction 1

- Definition of Anatomy 1
- Positioning 1
- Anatomical Terms 2
- Anatomical Planes 3
- Terminology Used in Description of Bones 3
- Terms Used of Hollow Organ 4
- Regional Terms for Specific Body Areas 4
- Terms used in Movement of Synovial Joint 5

CHAPTER 2: General Anatomy 6

- Skeletal System 6
- Cartilages 6
- Bones 7
- Joints 11
- Must Know Factor of Joint 14
- Muscular System 14
- Nervous System 18
- Autonomic Nervous System 20
- Arterial System 21
- Venous System 23
- Lymphatic System 24

CHAPTER 3: Upper Limb 26

- Bones of Superior Extremity 26
- Articulated Skeleton of Hand 31
- Superficial Venous Drainage of Upper Limb/Superior Extremity 32
- Deep Veins of Upper Limb 33
- Nerves of the Upper Limb 33
- Arterial Blood Supply of Upper Limb 38
- Regions of Upper Limb 40
- Front Clavipectoral Fascia 40
- Axilla 42
- Cubital Fossa 44
- Front of ARM 46
- Front of Forearm 48
- Palm 50
- Intrinsic Muscles of Hand 52

- Back 53
- Back of ARM 54
- Back of Forearm and Dorsum of Hand 54
- Joints of Upper Limb 58
- Breast 64
- Surface Anatomy of Upper Limb 66
- Radiology 68
- X-Ray Plates/Views of Upper Limb 69
- Ossification of Upper limb bones 71

CHAPTER 4: Lower Limb 73

- Bones of lower limb 73
- Articulated Skeleton of Foot 82
- Venous Drainage of Inferior Extremity 83
- Superficial Venous Drainage of Lower Limb 84
- Nerves of the Lower Limb 85
- Lymphatic Drainage of Lower Limb 89
- Arteries of Lower Limb 90
- Regions of Lower Limb 92
- Regions of Lower Limb (Front) 92
- Lower Limb (Back) 100
- Joints of Lower Limb 108
- Radiology of Lower Limb 115
- Questions Commonly Asked in the Oral Examination 117
- Surface Marking of Lower Limb 118
- Questions Commonly Asked in the Oral Examination 119
- Lower Limb Summary 120

CHAPTER 5: Abdomen 121

- Osteology (Bones) 121
- Types of Pelvis 124
- Vertebral Column 124
- Umbilicus or Omphalos 125
- Muscles of Abdomen 126
- Inguinal Canal 128
- Hesselbach's Triangle 129
- Rectus Sheath 129
- Peritoneum and its Cavity 130
- Position of Abdominal Viscera in Relation to Regions of Abdomen 133
- Incisions of Anterior Abdominal Wall 133
- Structures of Posterior Abdominal Wall 134
- Veins and Arteries of Abdomen 135
- GI Tract 138
- Esophagus and Stomach 138
- Small Intestine 141
- Abdominal Organs 143
- Large Intestine 148
- Urinary System 151

- Male Urethra 156
- Female Urethra 156
- Female Reproductive System 157
- Male Reproductive System 160
- Perineum 163
- Pelvic Floor Muscles 165
- Pelvic Fascia 166
- Pelvic Cellular Tissue 166
- Radiology 166
- Hysterosalpingography 169
- Questions Asked in Radiology 169
- Surface Marking 169
- Questions Asked in Surface Marking 171

CHAPTER 6: Thorax 173

- Bones of the Thorax 173
- Respiratory Movements with its Mechanism 176
- Intercostal Space 178
- Arteries of Thorax 180
- Veins of Thorax 181
- Autonomic Nervous System and its Thoracic Parts 182
- Thoracic Duct 185
- Pleural Cavities 185
- Mediastinum 186
- Pericardial Cavity 187
- Trachea 188
- Lungs 188
- Heart 192
- Artery Supply to Heart 195
- Venous Drainage of Heart 196
- Conducting System of Heart 196
- Fallot's Tetralogy 197
- Radiology 197
- Questions Asked in Radiology 198
- Surface Marking 199
- Questions Asked in Surface Marking 200

CHAPTER 7: Head, Neck and Neuroanatomy 202

- Skull as a Whole 202
- Bones of Skull 203
- Mandible 208
- Maxilla 210
- Hyoid Bone 211
- Important Landmarks in Cranium 212
- Foramina at the Base of Skull and Their Contents 212
- Important Points/Peculiarities About Skull Bones 214
- External Surface of Base of Skull 214
- Bony Orbit 214
- Important Spongy Bone of Skull 215

- Cervical Vertebrae 216
- Vertebral Column, as a Whole 218
- Joints of Head and Neck 219
- Arteries of Head and Neck 221
- Veins of Head and Neck 223
- Cranial Dural Venous Sinuses 224
- Cervical Plexus and its Branches 225
- Lymph Nodes of Head and Neck 226
- Scalp 226
- Dissection of Face 227
- Neck 231
- Triangles of Neck 232
- Viscera of Head and Neck 238
- Ear 250
- Brain 252
- Cerebral Hemispheres 255
- Ventricles of Brain 266
- Eyeball 274
- Lacrimal Apparatus 277
- Cranial Nerves 278
- Important Cranial Nerves 284
- Parasympathetic Ganglia of Head and Neck 287
- Radiology 287
- Surface Marking 288

CHAPTER 8: Histology 291

- Parts of Binocular Light Microscope 291
- Electron Microscope 291
- Cell 291
- Cell Cycle 293
- Types of Tissue 294
- Epithelial Tissue 294
- Connective Tissue 296
- Muscle Tissue 298
- Sclerous Tissue 299
- Blood Vascular System 301
- Systemic Histology 301
- Clinical Anatomy of GI Tract 310
- Glands of GI Tract 311

CHAPTER 9: Embryology 312

- Stages of General Embryology 312
- Different Types of Placenta 315
- Clinical Anatomy 315
- Short Note on General Embryology 315
- Development of Heart 320
- Development of Respiratory System 323
- Development of Alimentary System 324

- Development of Face 324
- Development of Palate 325
- Branchial (Pharyngeal) Arches and its Derivatives 325
- Derivatives of Pharyngeal Pouches 326
- Development of Tongue 326
- Development of Individual Organ in Short 327
- Development of Placenta at a Glance 332
- Oogenesis at a Glance 332
- Spermatogenesis at a Glance 332
- Nomenclature Used in Embryology 333

CHAPTER 10: Genetics 334

- Chromosome 334
- Turner Syndrome 336
- Superfemale 336
- Klinefelter Syndrome 336
- Barr Body 336
- Allelic Gene 337
- Abnormalities of Human Chromosome 337
- Genetic Counseling 338
- Prenatal Diagnosis 338
- Terms Used in Genetics 339
- Questions 339

Appendix 341

Glossary 343

Index 347

Table of Competency

Number	*COMPETENCY* *The student should be able to*	*Core (Y/N)*	*Chapter*	*Page number*
AN1.1	Demonstrate normal anatomical position, various planes, relation, comparison, laterality and movement in our body	Y	1	01
AN2.1	Describe parts, blood and nerve supply of a long bone	Y	2	07
AN2.2	Enumerate laws of ossification	N	2	07
AN2.3	Enumerate special features of a sesamoid bone	N	2, 4	07, 78
AN2.4	Describe various types of cartilage with its structure and distribution in body	Y	2	07
AN2.5	Describe various joints with subtypes and examples	Y	2	07, 11
AN2.6	Explain the concept of nerve supply of joints and hilton's law	Y	2	07
AN3.1	Classify muscle tissue according to structure and action	Y	2	14
AN3.2	Enumerate parts of skeletal muscle and differentiate between tendons and aponeuroses with examples	Y	2	14, 15
AN3.3	Explain shunt and spurt muscles	N	2	14
AN5.1	Differentiate between blood vascular and lymphatic system	Y	2	21, 24
AN5.2	Differentiate between pulmonary and systemic circulation	Y	2	21, 24
AN5.3	List general differences between arteries and veins	Y	2	21, 23, 24
AN5.4	Explain functional difference between elastic, muscular arteries and arterioles	Y	2	21, 24
AN5.5	Describe portal system giving examples	Y	2	21, 24
AN5.6	Describe the concept of anastomoses and collateral circulation with significance of end-arteries	Y	2	21, 24
AN5.7	Explain function of meta-arterioles, precapillary sphincters, arterio-venous anastomoses	N	2	21, 24
AN5.8	Define thrombosis, infarction and aneurysm	N	2	21, 24
AN6.1	List the components and functions of the lymphatic system	N	2	24
AN6.3	Explain the concept of lymphoedema and spread of tumors via lymphatics and venous system	N	2	24
AN7.1	Describe general plan of nervous system with components of central, peripheral and autonomic nervous systems	Y	2	18
AN7.2	List components of nervous tissue and their functions	Y	2	18
AN7.3	Describe parts of a neuron and classify them based on number of neurites, size and function	Y	2	18
AN7.4	Describe structure of a typical spinal nerve	Y	2	18
AN7.5	Describe principles of sensory and motor innervation of muscles	N	2	18
AN7.6	Describe concept of loss of innervation of a muscle with its applied anatomy	Y	2	18
AN7.7	Describe various type of synapse	N	2	18
AN7.8	Describe differences between sympathetic and spinal ganglia	N	2	18
AN8.1	Identify the given bone, its side, important features and keep it in anatomical position	Y	3	26
AN8.2	Identify and describe joints formed by the given bone	Y	3	26
AN8.3	Enumerate peculiarities of clavicle	Y	3	26
AN8.4	Demonstrate important muscle attachment on the given bone	Y	3	26
AN8.5	Identify and name various bones in articulated hand, specify the parts of metacarpals and phalanges and enumerate the peculiarities of pisiform	Y	3	26, 31
AN8.6	Describe scaphoid fracture and explain the anatomical basis of avascular necrosis	N	3	26, 64

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN9.1	Describe attachment, nerve supply and action of pectoralis major and pectoralis minor	Y	3	40
AN9.2	Breast: Describe the location, extent, deep relations, structure, age changes, blood supply, lymphatic drainage, microanatomy and applied anatomy of breast	Y	3	40, 64
AN9.3	Describe development of breast	N	3	40, 65
AN10.1	Identify and describe boundaries and contents of axilla	Y	3	42
AN10.2	Identify, describe and demonstrate the origin, extent, course, parts, relations and branches of axillary artery and tributaries of vein	Y	3	39, 42
AN10.3	Describe, identify and demonstrate formation, branches, relations, area of supply of branches, course and relations of terminal branches of brachial plexus	Y	3	33, 35, 36, 38, 42
AN10.4	Describe the anatomical groups of axillary lymph nodes and specify their areas of drainage	Y	3	42
AN10.5	Explain variations in formation of brachial plexus	Y	3	42
AN10.6	Explain the anatomical basis of clinical features of erb's palsy and Klumpke's paralysis	N	3	35, 42
AN10.7	Explain anatomical basis of enlarged axillary lymph nodes	N	3	35, 42
AN10.8	Describe, identify and demonstrate the position, attachment, nerve supply and actions of trapezius and latissimus dorsi	Y	3	42
AN10.9	Describe the arterial anastomosis around the scapula and mention the boundaries of triangle of auscultation	N	3	42
AN10.10	Describe and identify the deltoid and rotator cuff muscles	Y	3	42
AN10.11	Describe and demonstrate attachment of serratus anterior with its action	Y	3	42
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	Y	3	42
AN10.13	Explain anatomical basis of injury to axillary nerve during intramuscular injections	N	3	38, 42
AN11.1	Describe and demonstrate muscle groups of upper arm with emphasis on biceps and triceps brachii	Y	3	44, 46
AN11.2	Identify and describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels in arm	Y	3	33, 39, 44
AN11.3	Describe the anatomical basis of venepuncture of cubital veins	Y	3	33, 44
AN11.4	Describe the anatomical basis of saturday night paralysis	Y	3	44
AN11.5	Identify and describe boundaries and contents of cubital fossa	Y	3	44
AN11.6	Describe the anastomosis around the elbow joint	N	3	44
AN12.1	Describe and demonstrate important muscle groups of ventral forearm with attachments, nerve supply and actions	Y	3	48, 50
AN12.2	Identify and describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of forearm	Y	3	32, 35, 36, 37, 39, 40, 48
AN12.3	Identify and describe flexor retinaculum with its attachments	Y	3	48
AN12.4	Explain anatomical basis of carpal tunnel syndrome	Y	3	48
AN12.5	Identify and describe small muscles of hand. Also describe movements of thumb and muscles involved	Y	3	48, 52
AN12.6	Describe and demonstrate movements of thumb and muscles involved	Y	3	48
AN12.7	Identify and describe course and branches of important blood vessels and nerves in hand	Y	3	48
AN12.8	Describe anatomical basis of claw hand	Y	3	48
AN12.9	Identify and describe fibrous flexor sheaths, ulnar bursa, radial bursa and digital synovial sheaths	Y	3	48, 54, 56
AN12.10	Explain infection of fascial spaces of palm	N	3	48
AN12.11	Identify, describe and demonstrate important muscle groups of dorsal forearm with attachments, nerve supply and actions	Y	3	48
AN12.12	Identify and describe origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of forearm	Y	3	48
AN12.13	Describe the anatomical basis of wrist drop	Y	3	48
AN12.14	Identify and describe compartments deep to extensor retinaculum	Y	3	48

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN12.15	Identify and describe extensor expansion formation	Y	3	48, 50
AN13.3	Identify and describe the type, articular surfaces, capsule, synovial membrane, ligaments, relations, movements, blood and nerve supply of elbow joint, proximal and distal radioulnar joints, wrist joint and first carpometacarpal joint	Y	3	62, 63
AN13.4	Describe sternoclavicular joint, acromioclavicular joint, carpometacarpal joints and metacarpophalangeal joint	N	3	63
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	Y	3	61, 62
AN13.6	Identify and 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	Y	3	68
AN13.7	Identify and 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	Y	3	32
AN13.8	Describe development of upper limb	N	3	66
AN14.1	Identify the given bone, its side, important features and keep it in anatomical position	Y	4	72, 77, 78
AN14.2	Identify and describe joints formed by the given bone	Y	4	73
AN15.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior thigh	Y	4	83, 84, 85, 86, 90, 91
AN15.2	Describe and demonstrate major muscles with their attachment, nerve supply and actions	Y	4	92, 93, 94
AN15.3	Describe and demonstrate boundaries, floor, roof and contents of femoral triangle	Y	4	92, 94
AN15.5	Describe and demonstrate adductor canal with its content	Y	4	95
AN16.1	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of gluteal region	Y	4	100
AN16.4	Describe and demonstrate the hamstrings group of muscles with their attachment, nerve supply and actions	Y	4	102, 103
AN16.5	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels on the back of thigh	Y	4	87
AN16.6	Describe and demonstrate the boundaries, roof, floor, contents and relations of popliteal fossa	Y	4	91, 102
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	Y	4	108
AN17.2	Describe anatomical basis of complications of fracture neck of femur	N	4	108
AN17.3	Describe dislocation of hip joint and surgical hip replacement	N	4	108
AN18.1	Describe and demonstrate major muscles of anterolateral compartment of leg with their attachment, nerve supply and actions	Y	4	97, 99
AN18.2	Describe and demonstrate origin, course, relations, branches (or tributaries), termination of important nerves and vessels of anterior compartment of leg	Y	4	91
AN18.5	Explain the anatomical basis of locking and unlocking of the knee joint	Y	4	109
AN18.6	Describe knee joint injuries with its applied anatomy	N	4	109
AN19.1	Describe and demonstrate the major muscles of back of leg with their attachment, nerve supply and actions	Y	4	104, 105, 106
AN19.2	Describe and demonstrate the origin, course, relations, branches (or tributaries), termination of important nerves and vessels of back of leg	Y	4	104, 106
AN19.5	Describe factors maintaining importance arches of the foot with its importance	Y	4	106, 112
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	Y	4	112
AN20.3	Describe and demonstrate fascia lata, venous drainage, lymphatic drainage, retinacula and dermatomes of lower limb	Y	4	89, 94
AN20.4	Explain anatomical basis of enlarged inguinal lymph nodes	N	4	89
AN20.6	Identify the bones and joints of lower limb seen in anteroposterior and lateral view radiographs of various regions of lower limb	Y	4	78
AN20.9	Identify and demonstrate palpation of vessels (femoral, popliteal, dorsalis pedis, post tibial), mid inguinal point, surface projection of—femoral nerve, saphenous opening, sciatic, tibial, common peroneal and deep peroneal nerve, great and small saphenous veins	Y	4	94

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN21.1	Identify and describe the salient features of sternum, typical rib, ist rib and typical thoracic vertebra	Y	6	174
AN21.2	Identify and describe the features of 2nd, 11th and 12th ribs, 1st, 11th and 12th thoracic vertebrae	N	6	173, 176
AN21.3	Describe and demonstrate the boundaries of thoracic inlet, cavity and outlet	Y	6	173
AN21.4	Describe and demonstrate extent, attachments, direction of fibers, nerve supply and actions of intercostal muscles	Y	6	179
AN21.9	Describe and demonstrate mechanics and types of respiration	Y	6	176
AN21.11	Mention boundaries and contents of the superior, anterior, middle and posterior mediastinum	Y	6	186
AN22.2	Describe and demonstrate external and internal features of each chamber of heart	Y	6	192
AN22.3	Describe and demonstrate origin, course and branches of coronary arteries	Y	6	195
AN22.4	Describe anatomical basis of ischemic heart disease	Y	6	197
AN22.5	Describe and demonstrate the formation, course, tributaries and termination of coronary sinus	Y	6	196
AN23.2	Describe and demonstrate the extent, relations tributaries of thoracic duct and enumerate its applied anatomy	Y	6	185
AN23.4	Mention the extent, branches and relations of arch of aorta and descending thoracic aorta	Y	6	180
AN25.1	Identify, draw and label a slide of trachea and lung	Y	8	304
AN25.2	Describe development of pleura, lung and heart	Y	9	320
AN25.3	Describe fetal circulation and changes occurring at birth	Y	9	320
AN25.4	Describe embryological basis of: 1) Atrial septal defect, 2) ventricular septal defect, 3) fallot's tetralogy and 4) Tracheo-oesophageal fistula	Y	6, 9	197, 320
AN25.5	Describe developmental basis of congenital anomalies, transposition of great vessels, dextrocardia, patent ductus arteriosus and coarctation of aorta	Y	9	320
AN25.6	Mention development of aortic arch arteries, svc, ivc and coronary sinus	N	9	320, 322
AN26.1	Demonstrate anatomical position of skull, identify and locate individual skull bones in skull	Y	7	202
AN26.2	Describe the features of norma frontalis, verticalis, occipitalis, lateralis and basalis	Y	7	202
AN26.3	Describe cranial cavity, its subdivisions, foramina and structures passing through them	Y	7	212, 214
AN26.4	Describe morphological features of mandible	Y	7	208
AN26.5	Describe features of typical and atypical cervical vertebrae (atlas and axis)	Y	7	216, 217
AN26.6	Explain the concept of bones that ossify in membrane	N	7	217
AN26.7	Describe the features of the 7th cervical vertebra	N	7	203, 217
AN27.1	Describe the layers of scalp, its blood supply, its nerve supply and surgical importance	Y	7	226
AN28.1	Describe and demonstrate muscles of facial expression and their nerve supply	Y	7	227, 228
AN28.5	Describe cervical lymph nodes and lymphatic drainage of head, face and neck	Y	7	226
AN29.1	Describe and demonstrate attachments, nerve supply, relations and actions of sternocleidomastoid	Y	7	236
AN29.2	Explain anatomical basis of erb's and klumpke's palsy	Y	7	236
AN29.3	Explain anatomical basis of wry neck	N	7	236, 237
AN29.4	Describe and demonstrate attachments of (1) inferior belly of omohyoid, (2) scalenus anterior, (3) scalenus medius, and (4) levator scapulae	N	7	236
AN30.1	Describe the cranial fossae and identify related structures	Y	7	212,
AN30.2	Describe and identify major foramina with structures passing through them	Y	7	212
AN30.3	Describe and identify dural folds and dural venous sinuses	Y	7	224
AN30.4	Describe clinical importance of dural venous sinuses	Y	7	224
AN32.1	Describe boundaries and subdivisions of anterior triangle	Y	7	233
AN32.2	Describe and demonstrate boundaries and contents of muscular, carotid, digastric and submental triangles	Y	7	233

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN33.3	Describe and demonstrate articulating surface, type and movements of temporomandibular joint	Y	7	219
AN33.5	Describe the features of dislocation of temporomandibular joint	N	7	219
AN34.1	Describe and demonstrate the morphology, relations and nerve supply of submandibular salivary gland and submandibular ganglion	Y	7	249
AN35.1	Describe the parts, extent, attachments, modifications of deep cervical fascia	Y	7	231
AN35.4	Describe and demonstrate origin, course, relations, tributaries and termination of internal jugular and brachiocephalic veins	Y	7	223
AN36.1	Describe the (1) morphology, relations, blood supply and applied anatomy of palatine tonsil (2) composition of soft palate	Y	7	240, 242, 243
AN36.2	Describe the components and functions of Waldeyer's lymphatic ring	Y	7	242
AN36.5	Describe the clinical significance of Killian's dehiscence	N	7	240
AN37.1	Describe and demonstrate features of nasal septum, lateral wall of nose, their blood supply and nerve supply	Y	7	246
AN37.2	Describe location and functional anatomy of paranasal sinuses	Y	7	246
AN38.1	Describe the morphology, identify structure of the wall, nerve supply, blood supply and actions of intrinsic and extrinsic muscles of the larynx	Y	7	244
AN39.1	Describe and demonstrate the morphology, nerve supply, embryological basis of nerve supply, blood supply, lymphatic drainage and actions of extrinsic and intrinsic muscles of tongue	Y	7	238
AN40.1	Describe and identify the parts, blood supply and nerve supply of external ear	Y	7	250
AN40.2	Describe and demonstrate the boundaries, contents, relations and functional anatomy of middle ear and auditory tube	Y	7	250
AN40.3	Describe the features of internal ear	N	7	250
AN40.4	Explain anatomical basis of otitis externa and otitis media	N	7	250
AN40.5	Explain anatomical basis of myringotomy	N	7	250
AN41.1	Describe and demonstrate parts and layers of eyeball	Y	7	274
AN41.2	Describe the anatomical aspects of cataract, glaucoma and central retinal artery occlusion	N	7	274
AN41.3	Describe the position, nerve supply and actions of intraocular muscles	N	7	274
AN43.3	Identify, describe and draw microanatomy of olfactory epithelium, eyelid, lip, sclerocorneal junction, optic nerve, cochlea-organ of corti, pineal gland	N	9	325
AN43.4	Describe the development and developmental basis of congenital anomalies of face, palate, tongue, branchial apparatus, pituitary gland, thyroid gland and eye	Y	7, 9	287, 325
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	Y	7, 9	287, 325
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 and accessory nerve	N	7, 9	287, 325
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	Y	7, 9	287, 325
AN43.8	Describe the anatomical route used for carotid angiogram and vertebral angiogram	N	7, 9	287, 325
AN43.9	Identify anatomical structures in carotid angiogram and vertebral angiogram	N	7, 9	287, 325
AN44.1	Describe and demonstrate the planes (transpyloric, transtubercular, subcostal, lateral vertical, linea alba, linea semilunaris), regions and quadrants of abdomen	Y	5,	126
AN44.2	Describe and identify the fascia, nerves and blood vessels of anterior abdominal wall	Y	5	126
AN44.3	Describe the formation of rectus sheath and its contents	Y	5	126, 129
AN44.4	Describe and demonstrate extent, boundaries, contents of inguinal canal including Hesselbach's triangle.	Y	5	126, 128
AN44.5	Explain the anatomical basis of inguinal hernia.	Y	5	126, 128
AN44.6	Describe and demonstrate attachments of muscles of anterior abdominal wall	Y	5	126

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN44.7	Enumerate common abdominal incisions	N	5	126, 133
AN45.2	Describe and demonstrate lumbar plexus for its root value, formation and branches	Y	5	134
AN47.1	Describe and identify boundaries and recesses of lesser and greater sac	Y	5	130
AN47.2	Name and identify various peritoneal folds and pouches with its explanation.	Y	5	130, 131
AN47.3	Explain anatomical basis of ascites and peritonitis	N	5	130
AN47.4	Explain anatomical basis of subphrenic abscess	N	5	130
AN47.5	Describe and 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)	Y	5	130, 139, 141, 144, 145, 151
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 and lymphatic spread in carcinoma stomach	N	5	130
AN47.7	Mention the clinical importance of Calot's triangle	N	5	130
AN47.8	Describe and identify the formation, course relations and tributaries of portal vein, inferior vena cava and renal vein	Y	5	130, 134
AN47.9	Describe and identify the origin, course, important relations and branches of abdominal aorta, coeliac trunk, superior mesenteric, inferior mesenteric and common iliac artery	Y	5	130
AN47.10	Enumerate the sites of portosystemic anastomosis	Y	5	130
AN47.11	Explain the anatomic basis of hematemesis and caput medusae in portal hypertension	Y	5	130
AN47.12	Describe important nerve plexuses of posterior abdominal wall	N	5	130
AN47.13	Describe and demonstrate the attachments, openings, nerve supply and action of the thoracoabdominal diaphragm	Y	5	130
AN47.14	Describe the abnormal openings of thoracoabdominal diaphragm and diaphragmatic hernia	N	5	130
AN48.1	Describe and identify the muscles of pelvic diaphragm	Y	5	151, 165
AN48.2	Describe and demonstrate the (position, features, important peritoneal and other relations, blood supply, nerve supply, lymphatic drainage and clinical aspects of) important male and female pelvic viscera	Y	5	151, 165
AN48.3	Describe and demonstrate the origin, course, important relations and branches of internal iliac artery	Y	5	151, 165
AN48.4	Describe the branches of sacral plexus	Y	5	151, 165
AN48.5	Explain the anatomical basis of suprapubic cystostomy, urinary obstruction in benign prostatic hypertrophy, retroverted uterus, prolapse uterus, internal and external hemorrhoids, anal fistula, vasectomy, tubal pregnancy and tubal ligation	N	5	151, 165
AN48.6	Describe the neurological basis of automatic bladder	N	5	151, 165
AN48.7	Mention the lobes involved in benign prostatic hypertrophy and prostatic cancer	N	5	151, 165
AN48.8	Mention the structures palpable during vaginal and rectal examination	N	5	151, 165
AN49.1	Describe and demonstrate the superficial and deep perineal pouch (boundaries and contents)	Y	5	163
AN49.2	Describe and identify perineal body	Y	5	163
AN49.3	Describe and demonstrate perineal membrane in male and female	Y	5	163
AN49.4	Describe and demonstrate boundaries, content and applied anatomy of ischiorectal fossa	Y	5	163
AN49.5	Explain the anatomical basis of perineal tear, episiotomy, perianal abscess and anal fissure	N	5	163
AN50.1	Describe the curvatures of the vertebral column	Y	5	121
AN50.2	Describe and demonstrate the type, articular ends, ligaments and movements of intervertebral joints, sacroiliac joints and pubic symphysis	Y	5	121
AN50.3	Describe lumbar puncture (site, direction of the needle, structures pierced during the lumbar puncture)	Y	5	121
AN50.4	Explain the anatomical basis of scoliosis, lordosis, prolapsed disc, spondylolisthesis and spina bifida	N	5	121

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN52.1	Describe and identify the microanatomical features of gastrointestinal system: Esophagus, fundus of stomach, pylorus of stomach, duodenum, jejunum, ileum, large intestine, appendix, liver, gallbladder, pancreas and suprarenal gland	Y	8	301
AN52.2	Describe and identify the microanatomical features of—urinary system—kidney, ureter and urinary bladder Male reproductive system—testis, epididymis, vas deferens, prostate and penis Female reproductive system—ovary, uterus, uterine tube, cervix, placenta and umbilical cord	Y	8	304
AN52.5	Describe the development and congenital anomalies of diaphragm	Y	9	320
AN53.1	Identify and hold the bone in the anatomical position, describe the salient features, articulations and demonstrate the attachments of muscle groups	Y	4	73, 75
AN56.1	Describe and identify various layers of meninges with its extent and modifications	Y	7	253
AN56.2	Describe circulation of csf with its applied anatomy	Y	7	253
AN57.1	Identify external features of spinal cord	Y	7	271
AN57.2	Describe extent of spinal cord in child and adult with its clinical implication	Y	7	271
AN57.3	Draw and label transverse section of spinal cord at mid-cervical and mid-thoracic level	Y	7	271
AN57.4	Enumerate ascending and descending tracts at mid thoracic level of spinal cord	Y	7	271
AN57.5	Describe anatomical basis of syringomyelia		7	271
AN58.1	Identify external features of medulla oblongata		7	264
AN58.2	Describe transverse section of medulla oblongata at the level of (1) pyramidal decussation, (2) sensory decussation (3) ion		7	264
AN58.3	Enumerate cranial nerve nuclei in medulla oblongata with their functional group		7	264
AN58.4	Describe anatomical basis and effects of medial and lateral medullary syndrome		7, 9	264, 324
AN59.1	Identify external features of pons		7, 9	262
AN62.3	Describe the white matter of cerebrum	Y	7	260
AN62.4	Enumerate parts and major connections of basal ganglia and limbic lobe	Y	7	258
AN64.1	Describe and identify the microanatomical features of spinal cord, cerebellum and cerebrum	Y	8	309
AN65.1	Identify epithelium under the microscope and describe the various types that correlate to its function	Y	8	294, 295
AN66.1	Describe and identify various types of connective tissue with functional correlation	Y	8	296
AN66.2	Describe the ultrastructure of connective tissue	N	8	296
AN67.1	Describe and identify various types of muscle under the microscope	Y	8	299
AN67.2	Classify muscle and describe the structure-function correlation of the same	Y	8	299
AN68.1	Describe and identify multipolar and unipolar neuron, ganglia, peripheral nerve	Y	8	299
AN68.2	Describe the structure-function correlation of neuron	Y	8	299
AN69.1	Identify elastic and muscular blood vessels, capillaries under the microscope	Y	8	301
AN69.2	Describe the various types and structure-function correlation of blood vessel	Y	8	301
AN70.1	Identify exocrine gland under the microscope and distinguish between serous, mucous and mixed acini	Y	8	294
AN70.2	Identify the lymphoid tissue under the microscope and describe microanatomy of lymph node, spleen, thymus, tonsil and correlate the structure with function	Y	8	308
AN71.1	Identify bone under the microscope; classify various types and describe the structure-function correlation of the same	Y	8	299
AN71.2	Identify cartilage under the microscope and describe various types and structure-function correlation of the same	Y	8	299
AN72.1	Identify the skin and its appendages under the microscope and correlate the structure with function	Y	8	307
AN73.1	Describe the structure of chromosomes with classification	Y	10	334
AN73.2	Describe technique of karyotyping with its applications	Y	10	334
AN73.3	Describe the Lyon's hypothesis	Y	10	339

Number	COMPETENCY The student should be able to	Core (Y/N)	Chapter	Page number
AN74.1	Describe the various modes of inheritance with examples	Y	10	335
AN74.2	Draw pedigree charts for the various types of inheritance and give examples of diseases of each mode of inheritance	Y	10	339
AN74.3	Describe multifactorial inheritance with examples	Y	10	339
AN75.1	Describe the structural and numerical chromosomal aberrations	Y	10	335, 336, 337
AN75.4	Describe genetic basis of variation—polymorphism and mutation	Y	10	339
AN75.5	Describe the principles of genetic counseling	Y	10	338
AN76.1	Describe the stages of human life	Y	9	312
AN76.2	Explain the terms—phylogeny, ontogeny, trimester, viability	Y	9	312
AN77.2	Describe the synchrony between the ovarian and menstrual cycles	Y	9	316
AN77.3	Describe spermatogenesis and oogenesis along with diagrams	Y	9	315, 316
AN77.6	Describe teratogenic influences; fertility and sterility, surrogate motherhood, social significance of "sex-ratio".	N	9	316
AN78.1	Describe cleavage and formation of blastocyst	Y	9	312, 316
AN78.2	Describe the development of trophoblast	Y	9	312, 317
AN78.3	Describe the process of implantation and common abnormal sites of implantation	Y	9	312, 317, 319
AN78.4	Describe the formation of extraembryonic mesoderm and coelom, bilaminar disc and prochordal plate	Y	9	312, 314
AN78.5	Describe in brief abortion; decidual reaction, pregnancy test	Y	9	312
AN79.1	Describe the formation and fate of the primitive streak	Y	9	312, 317
AN79.2	Describe formation and fate of notochord	Y	9	312
AN79.3	Describe the process of neurulation	Y	9	312
AN79.4	Describe the development of somites and intraembryonic coelom	Y	9	312
AN80.1	Describe formation, functions and fate of-chorion—amnion; yolk sac; allantois and decidua	Y	9	318,
AN80.2	Describe formation and structure of umbilical cord	Y	9	317
AN80.3	Describe formation of placenta, its physiological functions, fetomaternal circulation and placental barrier	Y	9	315, 317
AN80.7	Describe various types of umbilical cord attachments	N	9	315
AN81.1	Describe various methods of prenatal diagnosis	Y	10	338
AN81.2	Describe indications, process and disadvantages of amniocentesis	Y	10	339

(C: column; K: knowledge; S: skill; A: attitude/professionalism; C: communication; DOAP session: demonstrate, observe, assess, perform session)