

Contents

<i>Foreword to the Second Edition by Dr Nafis Ahmad Faruqi</i>	<i>iv</i>
<i>Foreword to the First Edition by Prof (Dr) Mahdi Hasan</i>	<i>v</i>
<i>Foreword to the First Edition by Shingare PH</i>	<i>vi</i>
<i>Preface to the Second Edition</i>	<i>vii</i>

Section 1 General Anatomy

1. Skeleton	3
SN-1 Long bone 3	
SAQ-1 Short bones 5	
SN-2 Pneumatic bone 7	
SN-3 Sesamoid bone 7	
SN-4 Periosteum 9	
SN-5 Epiphysis 11	
SN-6 Diaphysis 13	
SAQ-2 Metaphysis 13	
SN-7 Blood supply of the long bone 14	
SAQ-3 Growing end 17	
SAQ-4 Primary centre of ossification 18	
SAQ-5 Secondary centre of ossification 18	
2. Joints	19
SN-8 Classification of joints 19	
SN-9 Fibrous joints 20	
SN-10 Suture 21	
SN-11 Syndesmoses 22	
SN-12 Primary cartilaginous joint (synchondrosis) 23	
SN-13 Secondary cartilaginous joint (symphysis) 23	
SN-14 Typical synovial joint 24	
SN-15 Classification of synovial joint 25	
SN-16 Pivot joint 27	
3. Muscles	28
OLA-1 What is a sarcomere? 28	
SAQ-6 Pinnate muscles 28	
SN-17 Prime movers (agonists) 30	
SN-18 Antagonist 30	
SN-19 Fixators 31	
SN-20 Synergist 31	
4. Cardiovascular System	32
OLA-2 Enumerate 4 arteries commonly used for palpating peripheral pulsations 32	
SN-21 Anastomosis 32	
SN-22 End arteries 33	
SN-23 Bursa 34	

Section 2 General Histology

5. Epithelium	37
SAQ-1 Simple squamous epithelium 37	
SN-1 Simple columnar epithelium 38	
SN-2 Pseudostratified epithelium 39	
SN-3 Stratified squamous epithelium 39	
SN-4 Transitional epithelium (urothelium) 40	
OLA-1 What is brown fat? 41	
OLA-2 Draw and label a section of a cilium 41	
OLA-3 Classify compound epithelium with examples 42	
OLA-4 What are the differences between microvilli, cilia and stereocilia? Explain with the help of diagrams 42	
SN-5 Junctional complexes 43	
6. Connective Tissue	45
SN-6 Write a note on dense regular connective tissue 45	
SN-7 Write a note on adipose tissue 46	
SN-8 What are the different types of cells in a connective tissue? What are their identification points and functions? 47	
OLA-5 Describe plasma cell 51	
7. Cartilage	52
SN-9 Draw and write a note on articular cartilage 52	
SN-10 Draw and write a note on hyaline cartilage 54	
SN-11 Draw and write a note on fibrocartilage 55	
SN-12 Draw and write a note on elastic cartilage 57	
8. Bone	59
OLA-6 What are Howship's lacunae? 59	
OLA-7 What is osteon? Or Haversian system? 59	
OLA-8 State the different types of lamellae in the bone 59	
OLA-9 What is Volkmann's canal? 60	
OLA-10 State the cells of bone. Describe each briefly. 60	
OLA-11 What is osteoclast? 61	
SN-13 Compact bone 61	
9. Muscle	64
OLA-12 Classify muscles with examples 64	
OLA-13 Describe transverse section (TS) of skeletal muscle 64	
OLA-14 Describe longitudinal section (LS) of skeletal muscle 65	
OLA-15 What is intercalated disc? What are its functions? 65	
OLA-16 Difference between smooth, cardiac and skeletal muscles 66	

OLA-17 Cardiac muscle 66 SN-14 Sarcomere 67	11. Lymphoid Tissue 74
10. Blood Vessels 69	OLA-18 Draw and describe any of the following: Spleen, lymph node, tonsil, thymus 74 SAQ-2 Loose areolar tissue 75
Section 3 Lower Limb	
12. Bones of Lower Limb 79	OLA-18 Enumerate the actions of gluteus maximus 126 OLA-19 Enumerate the actions of gluteus medius 126 OLA-20 Enumerate the bones under cover of gluteus maximus 126 SAQ-8 Enumerate the muscles under cover of gluteus maximus 126 SAQ-9 Enumerate the nerves under cover of gluteus maximus 127 OLA-21 Enumerate the vessels under cover of gluteus maximus 127 SN-11 Gluteus maximus 127 LAQ-6 Describe the structures under cover of gluteus maximus 130 SN-12 Gluteus medius 131 SAQ-10 Cruciate anastomosis 133
13. Front of Thigh 87	16. Popliteal Fossa 135
OLA-3 Name the muscles forming boundaries of femoral triangle 87 OLA-4 Name the muscles forming the floor of femoral triangle 87 OLA-5 Name the structures forming the boundaries of femoral ring 87 OLA-6 Name the cutaneous nerves seen in roof of femoral triangle 87 OLA-7 Name the muscles of anterior compartment of thigh 88 SN-4 Superficial inguinal lymph nodes 88 SN-5 Fascia lata 90 SN-6 Iliotibial tract 91 SN-7 Saphenous opening 91 SAQ-5 Name the branches of femoral artery in femoral triangle 93 LAQ-1 Describe femoral triangle (triangle of Scarpa) 94 OLA-8 Name the fascia forming the femoral sheath 101 SAQ-6 Enumerate the contents of femoral sheath 101 SN-8 Femoral sheath 101 SN-9 Femoral canal 104 LAQ-2 Describe femoral artery 107 OLA-9 What is the root value of femoral nerve? 111 OLA-10 What is the root value of obturator nerve? 111 SAQ-7 Name the branches of femoral nerve 111 LAQ-3 Describe femoral nerve 112 OLA-11 Name the nerves forming the subsartorial plexus 116 OLA-12 Attachments to patella 116 LAQ-4 Describe adductor canal OR Subsartorial canal OR Hunter's canal 117	SAQ-11 Enumerate the muscles forming the boundaries of popliteal fossa 135 SAQ-12 Enumerate the structures forming the floor of popliteal fossa 135 SAQ-13 Contents of popliteal fossa 136 LAQ-7 Describe popliteal fossa 136 SAQ-14 Enumerate the branches of popliteal artery 141 OLA-22 Name the terminal branches of popliteal artery 142 LAQ-8 Describe popliteal artery 142 OLA-23 Root value of tibial nerve 146 OLA-24 Enumerate the terminal branches of tibial nerve 126 OLA-25 Enumerate the branches of tibial nerve in popliteal fossa 146 LAQ-9 Describe the tibial nerve 146 OLA-26 Root value of common peroneal nerve 149 OLA-27 Branches of common peroneal nerve in the fossa 149 SN-13 Common peroneal nerve 150 SN-14 Foot drop 151 SN-15 Popliteus 151
14. Medial Side of Thigh 120	17. Back of Thigh 154
OLA-13 Enumerate the muscles of adductor compartment 120 OLA-14 Enumerate the muscles supplied by obturator nerve 120 LAQ-5 Describe obturator nerve 120	SAQ-15 Name the branches of profunda femoris artery 154 OLA-28 Enumerate the hamstring muscles 155 SN-16 Hamstring muscles 155 OLA-29 What is the root value of sciatic nerve? 156 LAQ-10 Describe the sciatic nerve 156 OLA-30 Name the muscles of posterior compartment of thigh 160
15. Gluteal Region 124	18. Front, Lateral and Medial Sides of Leg and Dorsum of Foot 161
SN-10 Ischial tuberosity 124 OLA-15 Which is the key muscle in gluteal region? 125 OLA-16 Name the nerve supplying gluteal maximus. What is the root value? 125 OLA-17 Name the nerve supplying gluteal medius. What is the root value? 126	OLA-31 Name the muscles supplied by superficial peroneal nerve 161 OLA-32 Enumerate muscles of anterior compartment of leg 161 OLA-33 Enumerate muscles of lateral compartment of leg 161 OLA-34 Enumerate muscles of posterior superficial compartment of leg 161

OLA-35	Enumerate muscles of posterior deep compartment of leg	161	SN-25	Capsule of knee joint	191
OLA-36	Name the muscles supplied by deep peroneal nerve	162	SN-26	Draw and label the diagram showing anastomosis around knee joint	191
OLA-37	Name the branches of dorsalis pedis artery	162	SAQ-20	Enumerate intra-articular structures of knee joint	192
SN-17	Peroneus longus muscle	162	SN-27	Cruciate ligament	193
SN-18	Dorsalis pedis artery	163	SN-28	Compare anterior and posterior cruciate ligaments	194
OLA-38	Cutaneous nerve supply of dorsum of foot.	164	SN-29	Meniscus	195
19. Back of Leg		166	SAQ-21	Meniscofemoral ligaments	196
SAQ-16	Tibialis posterior muscle	166	SAQ-22	Oblique popliteal ligament	197
OLA-39	Give the attachments and actions of soleus	167	OLA-52	Transverse ligament (transverse meniscal ligament)	197
SN-19	Soleus	168	SAQ-23	Synovial membrane of knee joint	197
20. Sole of Foot		170	OLA-53	Coronary ligament	198
OLA-40	Name the muscles of 1st layer of sole	170	OLA-54	Arcuate ligament	198
OLA-41	Name the muscles of 2nd layer of sole	170	OLA-55	Ligamentum patellae	198
OLA-42	Name the muscles of 3rd layer of sole	170	SN-30	Collateral ligaments	199
OLA-43	Mention the structures in the 4th layer of sole of foot	170	SN-31	Relations of knee joint	199
SN-20	Muscles supplied by lateral plantar nerve	171	SN-32	Movements of knee joint and muscles bringing the movements of knee joint	200
OLA-44	Muscles supplied by medial plantar nerve	172	SAQ-24	Stability of knee joint	202
OLA-45	Nerve supply of lumbricals of sole	172	SN-33	Bursae around knee joint	202
SAQ-17	Actions of dorsal interossei of foot	172	SN-34	Locking and unlocking of knee joint	203
SAQ-18	Actions of plantar interossei of foot	173	LAQ-14	Describe ankle joint (talocrural)	204
SN-21	Plantar aponeurosis	173	SN-35	Deltoid ligament	207
SN-22	Comparison between the plantar and palmar aponeurosis	175	OLA-56	Movements of ankle joint	208
SN-23	Layers of sole	175	SAQ-25	Lateral ligament of ankle joint	208
OLA-46	Cutaneous nerve supply of sole of foot	177	LAQ-15	Describe inversion	209
21. Venous and Lymphatic Drainage		179	LAQ-16	Describe eversion	210
and Comparison of Lower and Upper Limbs			SN-36	Compare pronation, supination with inversion and eversion	211
SAQ-19	Venous perforators of lower limb	179	SN-37	Spring ligament (plantar calcaneonavicular ligament)	211
LAQ-11	Describe great saphenous vein	180	23. Arches of Foot		213
LAQ-12	Describe venous drainage of lower limb	183	SAQ-26	Applied anatomy of arches of foot	213
22. Joints of Lower Limb		185	OLA-57	Enumerate functions of the foot.	213
OLA-47	Which muscles are chief flexors of hip joint?	185	OLA-58	Name the inverters of foot	213
OLA-48	What is the nerve supply of hip joint?	185	OLA-59	Talipes equinovarus—clubfoot	214
OLA-49	Names the articulating surface participating in formation of hip joint	185	SAQ-27	Supports of arches	214
OLA-50	Dislocation of hip joint	185	LAQ-17	Describe medial longitudinal arch	214
OLA-51	Attachments of capsule of hip joint	186	LAQ-18	Describe lateral longitudinal arch	217
LAQ-13	Describe hip joint	186			
SN-24	Classify knee joint (genual)	190			
Section 4 Upper Limb					
24. Bones of Upper Limb		221	26. Axilla		247
OLA-1	Enumerate the muscles in the upper limb having more than 1 head	221	OLA-3	Enumerate the muscles acting in raising the arm above the head	247
OLA-2	Enumerate the peculiarities of clavicle	223	LAQ-2	Describe axilla	247
SN-1	Coracoid process	223	SN-12	Axillary fascial 'tent'	250
25. Pectoral Region		225	OLA-4	Name the branches that arise from each of three parts of axillary artery	250
LAQ-1	Describe mammary gland	225	SN-13	2nd part of axillary artery	251
SN-2	Development of mammary gland	231	LAQ-3	Describe axillary artery	253
SN-3	Lymphatic drainage of mammary gland	232	OLA-5	Axillary lymph nodes	256
SN-4	Serratus anterior muscle	234	SN-14	Axillary lymph nodes	256
SN-5	Nerve to serratus anterior	235	LAQ-4	Describe brachial plexus	257
SN-6	Suprascapular nerve	237	SN-15	How does nerve plexus is formed?	260
SN-7	Nerve to the subclavius	238	OLA-6	What is brachial plexus?	261
SN-8	Trapezius	238	OLA-7	What is prefixed and post-fixed brachial plexus?	261
SN-9	Pectoralis minor	239	SN-16	What are the components of brachial plexus?	262
SN-10	Pectoralis major	240	OLA-8	What are parts of brachial plexus?	263
SN-11	Clavipectoral fascia	243	OLA-9	Nomenclature of brachial plexus	263

- OLA-10 Branches of roots, and trunks of brachial plexus 263
 OLA-11 Branches of cords of brachial plexus 264
 OLA-12 Dorsal scapular nerve 265
 OLA-13 Branches of lateral cord of brachial plexus 265
 SN-17 Horner's syndrome 266
 SN-18 Erb's paralysis 267
 SN-19 Klumpke's paralysis 269
 OLA-14 Cervical rib 271
 OLA-15 Sprengel's deformity 271
 OLA-16 Nerve injuries of upper limb 271

27. Scapular Region 273

- OLA-17 Actions of deltoid muscle and its nerve supply 273
 SN-20 Deltoid 273
 SAQ-1 Rotator cuff 275
 SAQ-2 Quadrangular space 277
 SAQ-3 Upper triangular space 278
 SAQ-4 Lower triangular space 278
 OLA-18 Name the muscles supplied by axillary nerve 279
 OLA-19 A ten-year-old girl fractures her humerus at the surgical neck. What damage would you check for and how? 279
 LAQ-5 Describe axillary nerve 279
 SN-21 Movements of the pectoral girdle 282
 SN-22 Winging of scapula 283
 SN-23 Ape thumb deformity 285
 SN-24 Scapular anastomosis 286

28. Cutaneous Nerves, Superficial Veins and Lymphatic Drainage 287

- OLA-20 Describe the origin and termination of cephalic vein 287
 LAQ-6 Describe cephalic vein 287
 OLA-21 Median cubital vein—importance 290
 SN-25 Median cubital vein 291
 SN-26 Bicipital aponeurosis 291

29. Arm 293

- OLA-22 Attachments and actions of biceps brachii 293
 LAQ-7 Describe musculocutaneous nerve 293
 OLA-23 Medial pectoral nerve 296
 OLA-24 Medial cutaneous nerve of forearm 297
 LAQ-8 Describe brachial artery 297
 OLA-25 Branches of radial nerve in radial groove 301
 OLA-26 Branches of radial nerve in axilla 301
 OLA-27 Branches of radial nerve in front of lower part of arm 301
 LAQ-9 Describe radial nerve 301
 SN-27 Applied anatomy of radial nerve 308
 SN-28 Wrist drop 309
 SN-29 Profunda brachii artery 310
 OLA-28 What structures pass between medial and lateral head of triceps? 311
 OLA-29 Boundaries of cubital fossa 312
 OLA-30 Contents of cubital fossa 312
 OLA-31 Applied anatomy of cubital fossa 313
 LAQ-10 Describe cubital fossa 313

30. Forearm and Hand 316

- OLA-32 Branches of radial artery in forearm 316
 LAQ-11 Describe ulnar artery 316
 OLA-33 Name the boundaries and contents of anatomical snuffbox 320
 SN-30 Anatomical snuffbox 321
 OLA-34 What are the attachments of flexor retinaculum? 322
 SN-31 Flexor retinaculum 323

- SN-32 Extensor retinaculum 324
 OLA-35 Name the muscles supplied by median nerve in hand 325
 LAQ-12 Describe median nerve 325
 OLA-36 Name the superficial flexors of forearm and their nerve supply 331
 OLA-37 Branches of ulnar nerve in forearm 322
 OLA-38 Name the muscles inserted in the extensor expansion of index finger 322
 OLA-39 Enumerate the muscles pass through the carpal tunnel 332
 SN-33 Carpal tunnel 333
 OLA-40 Cutaneous supply of palm of hand 334
 OLA-41 Cutaneous supply of dorsum of hand 335
 SN-34 Palmar aponeurosis 335
 SN-35 Dupuytren's contracture 335
 SN-36 Dorsal digital expansion 336
 OLA-42 Enumerate the muscles inserted in the extensor expansion of middle finger 337
 LAQ-13 Describe interossei 338
 OLA-43 Nerve supply of lumbricals 339
 OLA-44 Actions of lumbricals 339
 SN-37 Lumbricals 340
 OLA-45 Branches of superficial palmar arch 341
 LAQ-14 Describe superficial palmar arch 341
 OLA-46 Branches of deep palmar arch 342
 LAQ-15 Describe deep palmar arch 342
 OLA-47 Name the muscles supplied by ulnar nerve in hand 344
 LAQ-16 Describe ulnar nerve 344
 SN-38 Pulp space 347
 OLA-48 Contents of thenar space 347
 OLA-49 Muscles of thenar space 348
 OLA-50 Nerve supply of muscles of thenar space 348
 SN-39 Palmar spaces 349
 OLA-51 Extensor expansion of little finger 350
 OLA-52 Extensor expansion of ring finger 350
 SN-40 Posterior interosseous nerve 350

31. Joints of Upper Limb 352

- OLA-53 Name the factors stabilizing shoulder joint 352
 OLA-54 Name the muscles causing adduction at shoulder joint 352
 OLA-55 Muscles causing lateral rotation at shoulder joint 352
 OLA-56 Muscles causing medial rotation at shoulder joint 352
 LAQ-17 Describe intrinsic muscles of hand 353
 SN-41 Branches of ulnar nerve in hand 353
 SN-42 Coracoacromial arch 355
 LAQ-18 Describe shoulder joint or glenohumeral joint 356
 OLA-57 Name the flexors of the elbow joint 360
 SN-43 Anastomosis around the elbow joint 360
 LAQ-19 Describe elbow joint 361
 SAQ-5 Carrying angle 364
 OLA-58 Name the movements at radioulnar joints and muscles causing them. 364
 SN-44 Radioulnar joints 364
 SN-45 Interosseous membrane 366
 LAQ-20 Describe supination and pronation 367
 OLA-59 Classify the radioulnar joints 369
 OLA-60 Bones forming wrist joint 369
 LAQ-21 Describe wrist joint (radiocarpal) 369
 OLA-61 Name the movements at metacarpophalangeal joint of middle finger and muscles causing them 374
 SN-46 First carpometacarpal joint 374
 SN-47 Tennis elbow 376
 SN-48 Compare upper limb with lower limb 377