LIST OF QUESTIONS FOR EXAMINATION IN HUMAN ANATOMY

for the students of the English-speaking medium faculty of General Medicine

I. GENERAL QUESTIONS

1. Subject and contents of anatomy. Its place in biological disciplines. Significance of anatomy for learning clinical disciplines and for medical practice.
2. Modern principles and methods of anatomical research. Roentgenoanatomy and its significance for learning clinical disciplines.
3. Axes and planes in anatomy. Topographical lines on the body surface, their significance for denotation of projection of organs on the skin (examples).
4. Anatomy and medicine. Significance of anatomical knowledge for understanding of mechanisms of diseases, their preventive maintenance, diagnostics and treatment.
5. Methodological principles of anatomy (idea of dialectic development, integrity of an organism and interrelation of its parts, unity of structure and function etc).
6. Individual variability of organs. Concept of variants of norm in structure of organs and organism as a whole. Types of constitution.
7. Anatomy and age of human. Features of structure of organs and body of children, teenagers, in youthful, mature, elderly and senile persons. Examples.

II. ANATOMY OF LOCOMOTOR APPARATUS

8. Bone as an organ: development, structure, growth. Classification of bones.
9. Modes and mechanisms of bone formation. Features of bone structure in different age periods.
10. Vertebrae: development, structure in various parts of spine, variants and anomalies; junctions between vertebrae. Atlanro-occipital joint, movements in this joint.
11. Spine as a whole: anatomy, formation of its curvatures. Muscles performing movements of spine.
12. Ribs and sternum: development, structure, variants and anomalies. Joints of ribs with vertebrae and sternum. Thorax as a whole: its individual, age and typologic features. Movements of ribs, muscles performing these movements, their blood supply and innervation.
13. Development of skull during ontogenesis. Individual, age and sex features of skull.
14. Variants and anomalies of bones of skull, their significance in anatomy and practical medicine.
15. First (mandibular) and second (hyoid) visceral arcs, their derivatives. Anomalies of development of visceral arcs and branchial pouches.
16. Bones of facial skull. Orbit: structure of walls, foramina and their significance.
17. Temporal bone: parts, foramina, canals and their significance.
18. Sphenoid bone: parts, foramina and their significance.
19. Pterygopalatine fossa: walls, foramina and their significance.
20. Nasal cavity, structure of its walls. Paranasal sinuses, their significance, variants and anomalies.
21. Characteristics of internal surface of base of the skull: foramina and their significance.
22. Calvaria (roof) of the skull; bones forming it.
23. Anterior cranial fossa: walls and boundaries. Foramina and their significance.
24. Middle cranial fossa: walls and boundaries. Foramina and their significance.

25. Posterior cranial fossa: walls and boundaries. Foramina and their significance.
26. External surface of the base of the skull. Foramina and their significance.
27. Anatomy and topography of temporal and infratemporal fossae.
28. Anatomical and biomechanical classification of joints. Continuous joints.
29. Structure of joint. Classification of joints according to the shape of articular surfaces, number of axes and function. Range of movements in joints.
30. Joints of the skull, kinds of sutures. Temporo-mandibular joint: structiire, shape, movements, muscles acting on this joint, their blood supply and innervation.
31. Development and structure of skeleton of upper extremity. Features of upper extremity as instrument of labour. Roentgenoanatomy of bones of upper extremity.
32.Bones and joints of shoulder girdle. Muscles acting on scapula and clavicle, their blood supply and innervation.
33.Shoulder joint: structure, shape, biomechanics; muscles acting on this joint, their blood supply and innervation, x-ray image of shoulder joint.
34.Joints of forearm and hand, their anatomical and biomechanical features in comparison with joints of leg and foot.
35. Elbow joint: structure, shape, biomechanics. Muscles acting on elbow joint, their innervation and blood supply; x-ray image of elbow joint.
36. Joints of a hand: structure, shape, movements. Muscles acting on joints of hand, their blood supply and innervation; x-ray image of joints of hand.
37. Development and structure of skeleton of lower extremity. Features of anatomy of skeleton, joints and muscles of lower extremity as organ of support and movement.
38. Bones of pelvis and their joints: pelvis as a whole. Age and sex features. Dimensions of female pelvis.
39. Hip joint: structure, shape, movements; muscles making these movements, their blood supply and innervation. X-ray image of hip joint.
40. Knee joint: structure, shape, movements; muscles acting on knee joint, their blood supply and innervation. X-ray image of knee joint.
41.Talocrural joint: structure, shape, movements; muscles acting on this joint, their blood supply and innervation; X-ray image of talocrural joint.
42. Bones of leg and foot: their joints. Passive and active "tightenings" of foot arches, mechanism of their effect on foot.
43. General anatomy of muscles. Muscle as an organ. Classification of skeletal muscles depending on form, structure, position etc. Anatomical and physiological diameters of muscles.
44. Auxiliary apparatus of muscles: fascias, osteofibrous canals, synovial sheaths and sacks, blocks, their anatomy and significance. Sights of P.F.Lesgaft on relationships between function and structure of muscles and bones.
45.Muscles - synergists and antagonists. Action of muscles. Kinds of levers in biomechanics.
46. Muscles and fascias of spine: their topography, structure, function, blood supply and innervation.
47. Muscles and fascias of thorax: their topography, structure, function, blood supply and innervation.
48. Anatomy of muscles of abdomen: their topography, function, blood supply and innervation. Rectus sheath. Linea alba.

49. Inguinal canal: its walls, deep and superficial rings; contents of canal. Weak spots (sites of weakness) of anterior abdominal wall.
50. Diaphragm: parts, topography, function; blood supply and innervation.
51. Muscles of neck: their function, blood supply and innervation. Topography of muscles and fascias of neck.
52. Regions of neck, their boundaries. Triangles of neck, their practical significance.
53. Facial muscles: development, anatomy, topography, function, blood supply and innervation.
54. Masticatory muscles: development, anatomy, topography, function, blood supply and innervation. Fascias of masticatory muscles.
55. Muscle and fascias of shoulder girdle: structure, topography, function, blood supply and innervation.
56. Muscles and fascias of arm: anatomy, topography, function, blood supply and innervation.
57. Muscles and fascias of forearm: anatomy, topography, function, blood supply and innervation.
58. Muscles of hand: function, blood supply and innervation. Osteofibrous canals and synovial sheaths of hand.
59. Axillary fossa: its walls, foramina, their significance. Canal of radial nerve.
60. Anatomy of hip region: topography of muscles, their function, blood supply and innervation.
61. Foramina and canals in pelvic walls, their significance.
62. Anterior muscles and fascias of thigh: topography, function, blood supply and innervation. Muscular and vascular spaces.
63. Femoral canal, its walls and rings (deep and superficial).
64. Medial and posterior muscles and fascias of thigh: their topography, function, blood supply and innervation. Adductor canal.
65. Muscles and fascias of leg: topography, function, blood supply and innervation.
66. Muscles of foot: topography, function, blood supply, innervation.

III. ANATOMY OF INTERNAL ORGANS

Digestive system

67. Development of digestive system. Relationships of stomach and gut with peritoneum at different stages of ontogenesis (dorsal and ventral mesenteries of stomach and gut).
68. Oral cavity: lips, vestibule of mouth, hard and soft palate. Their structure, function, blood supply and innervation.
69. Milk and permanent teeth, their structure, replacement. A tooth row, formula of milk and permanent teeth. Blood supply and innervation of teeth.
70. Tongue (muscles of tongue, papillae): development, structure, function, blood supply, innervation. Regional lymph nodes.
71. Sublingual and submandibular glands: topography, structure, ducts, blood supply and innervation.
72. Parotid gland: topography, structure, duct, blood supply and innervation.
73. Pharynx: topography, structure, blood supply and innervation. Regional lymph nodes. Pharyngeal lymphoid ring.
74. Esophagus: topography, structure, blood supply and innervation. Regional lymph nodes.

75. Stomach: anatomy, topography, x-ray image. Blood supply and innervation. Regional lymph nodes.
76. Small intestine: parts, their topography, relation to peritoneum, structure of wall, blood supply, innervation.
77. Duodenum: parts, structure, topography, relation to peritoneum, blood supply, innervation. Regional lymph nodes.
78. Mesenteric part of small intestine (jejunum and ileum), structure of wall, blood supply, innervation. Regional lymph nodes.
79. Large intestine: parts, their topography, relation to peritoneum; structure of wall, blood supply, innervation. Regional lymph nodes, x-ray image.
80. Cecum: structure, relation to peritorieum, topography of vermiform appendix; blood supply, innervation.
81. Rectum: topography, relation to peritoneum, structure of wall, blood supply and innervation. Regional lymph nodes.
82. Liver: development, structure, topography, blood supply and innervation. Regional lymph nodes.
83. Gall bladder: structure, topography. Ducts of gall bladder and liver. Blood supply and innervation.
84. Pancreas: development, topography, structure, ducts, blood supply, innervation. Regional lymph nodes.
85. Topography of peritoneum in upper compartment of peritoneal cavity; lesser omentum. Omenlal, hepatic, pregastric recesses (bursae), their walls.
86. Topography of peritoneum in middle and lower compartments of peritoneal cavity. Greater omentum. “Recesses”, lateral canals, mesenteric sinuses.

Respiratory system

87. External nose. Nasal cavity (olfactory and respiratory regions). Blood supply and innervation of mucous membrane of nasal cavity.
88. Larynx: cartilages, their joints. Elastic cone. Relief of internal surface of laryngeal mucous membrane.
89. Muscles of larynx: their classification, function, innervation and blood supply.
90. Trachea and bronchi: structure, topography, blood supply and innervation.
91. Lungs: development, topography. Segmental structure of lungs, acinus. X-ray image of lungs.
92. Blood supply and innervation of lungs. Paths of lymph outflow from right and left lungs, their regional lymph nodes.
93. Anatomy and topography of roots of right and left lungs. Anatomy and topography of tracheobronchial lymph nodes.
94. Pleura: parts, borders; pleural cavity, pleural sinuses.
95. Mediastinum: compartments, their topography; organs of mediastiruim.

Urogenital apparatus

96. Kidneys: development, anatomy, topography. Structure of nephron. Developmental anomalies of kidneys.
97. Topography of kidneys, their blood supply and innervation. Regional lymph nodes of kidneys.
98. Anatomy of urinary tracts: nephron, calices, pelvis. Roentgenoanatomy of kidneys.

99. Ureters and bladder: structure, topography, blood supply and innervation.
100. Male and female urethra: topography, parts, sphincters.
101. Testis, epidydymis: development, structure, blood supply, innervation. Coverings of testis.
102. Prostate, seminal vesicles, bulbo-urethral glands: anatomy, topography, relation to urethra, blood supply, innervation. Regional lymph nodes of prostate.
103. Spermatic cord: topography, components. Male external genital organs, their anatomy.
104. Ovaries: topography, structure, relation to peritoneum; blood supply, innervation. Age features of ovary.
105. Uterus: development, parts, topography, ligaments, relation to peritoneum; blood supply, innervation, regional lymph nodes.
106. Uterine tube: structure, topography, relation to peritoneum; blood supply and innervation.
107. Vagina: structure, topography, blood supply, innervation, relation to peritoneum.
108. Female extemal genital organs: structure, blood supply, innervation.
109. Muscle and fascias of male and female perineum. Their blood supply and innervation.
110. Anatomy of peritoneal cavity in male and female pelvis. Its relation to rectum, bladder, uterus and other organs of pelvis.

IV. ANATOMY OF CARDIO-VASCULAR SYSTEM

111. General anatomy of blood vessels, regularities of their position and branching. Main, extra- and intraorganic vessels. Age changes of blood vessels. Characteristics of microcirculatory bed.
112. Arterial and venous anastomoses. Collateral blood flow (examples).
113. Venous plexuses. Inter- and intrasystemic venous anastomoses (cava-caval, cava-cava-portal, porto-caval), their structure, topography.
114. Features of blood circulation in fetus and changes of hemocirculatory system after birth.
115. Heart: development, topography, projection of borders and valves on anterior thoracic wall. X-ray image of heart.
116. Chambers of heart, their anatomy, relief of internal surface. Papillary muscles.
117. Structure of atrial and ventricular myocardium. Conducting system of heart.
118. Valves of heart, their structure, mechanism of regulation of blood inside heart.
119. Pericardium: structure, topography; pericardial sinuses.
120. Arteries of heart: features and variants of their branching. Veins of heart.
121. Innervation of heart. Extra- and intracardiac nervous plexuses, their topography.
122. Vessels of greater circle of blood flow (general characteristics). Regularities of distribution of arteries in hollow and parenchymatous organs.
123. Vessels of lesser (pulmonary) circle of blood flow (general characteristics). Regularities of distribution of arteries and veins in lungs.
124. Aorta and its parts. Branches of aortic arc: their anatomy, topography, regions of branching (blood supply).
125. Branches of thoracic aorta (parietal and visceral): their anatomy, topography, regions of branching.
126. Parietal and visceral (paired and unpaired) branches of abdominal aorta. Regularities of their branching and anastomoses.
127. Common, external and internal iliac arteries, their branches, regions of branching.

128. External carotid artery: topography, branches and supplied areas.
129. Internal carotid artery: topography, branches and supplied areas.
130. Subclavian artery, topography, branches and supplied areas.
131. Arteries of brain, sources of blood supply. Greater arterial (Willis) circle of brain.
132. Axillary and brachial arteries: topography, branches and supplied areas. Blood supply of shoulder joint.
133. Arteries of forearm: topography, branches and supplied areas. Blood supply of elbow joint.
134. Arteries of hand. Arterial palmar arcs and their branches.
135. Femoral artery: topography, branches and supplied areas. Blood supply of hip joint.
136. Popliteal artery: topography and branches. Blood supply of knee joint.
137. Arteries of leg: topography, branches and supplied areas. Blood supply of talocrural joint.
138. Arteries of foot: topography, branches, areas of supply.
139. Superior vena cava: sources of derivation, topography. Azygos and hemiazygos veins, their tributaries and anastomoses.
140. Brachiocephalic veins, their topography. Paths of venous blood flow from head, neck and upper extremities.
141. Veins of brain. Venous sinuses of dura mater. Venous emissaries and diploic veins.
142. Intra- and extracranial paths of venous outflow from brain.
143. Inferior vena cava: sources of derivation and topography. Tributaries of inferior vena cava and their anastomoses.
144. Portal vein: tributaries, their topography; branching of portal vein in the liver. Anastomoses of portal vein and its tributaries.
145. Superficial and deep veins of upper extremity: their anatomy, topography, anastomoses.
146. Superficial and deep veins of lower extremity: their anatomy, topography, anastomoses.

Organs of lymphatic and immune systems

147. Principles of structure of lymphatic system (capillaries, vessels, trunks and ducts, their general characteristics). Paths of lymph outflow from regions of the body into venous bed.
148. Structure of lymphatic capillaries and vessels. Anatomical structures ensuring lymph flow from site of formation into venons bed.
149. Thoracic duct: formation, structure, topography, variants of inflow to venous bed.
150. Right lymphatic duct, formation, topography, site of inflow into venous bed.
151. Lymph node as an organ (structure, function). Classification of lymph nodes.
152. Anatomy and topography of vessels and regional lymph nodes of head and neck.
153. Anatomy and topography of lymphatic vessels and regional lymph nodes of upper extremity.
154. Anatomy and topography of lymphatic vessels and regional lymph nodes of lower extremity.
155. Paths of lymph outflow from mammary gland; topography of regional lymph nodes.
156. Lymphatic bed of lungs and topography of lymph nodes of thoracic cavity.
157. Anatomy and topography of lymphatic vessels and regional lymph nodes of abdominal organs.
158. Anatomy and topography of lymphatic vessels and regional lymph nodes of pelvis.

159. Organs of immune system, their classification. Regularities of their structure in human ontogenesis.
160. Thymus: development, topography, structure, blood supply and innervation.
161. Central organs of immune system (bone marrow, thymus): their topography, development, structure in different age.
162. Peripheral organs of immune system: their topography, general features of structure in ontogenesis.
163. Immune organs of mucous membranes: tonsils, solitary lymphoid nodules, lymphoid (Peyer's) patches of small intestine; their topography and structure.
164. Spleen: development, topography, structure, blood supply and innervation.

V. ANATOMY OF CENTRAL NERVOUS SYSTEM

165. Nervous system and its significance in the organism. Classification of nervous system, interrelationships of its parts.
166. Origin of nervous system. Principles of development and formation in ontogenesis.
167. Concept of neuron (neurocyte). Nervous fibres, roots and fascicles; neural nodes, their classification and structure.
168. Spinal cord: development, localization in vertebral canal, internal structure, blood supply.
169. Nuclei of grey matter of spinal cord, their significance. Localization of conducting tracts in white substance of spinal cord.
170. Development of the brain - cerebral vesicles and their derivatives. Formation of ventricular system of the brain.
171. Interrelationships of grey and white matter in hemispheres of cerebrum. Topography of basal nuclei, localization and functional significance of nervous tracts in internal capsule.
172. Sulci and gyri of superolateral surface of hemispheres of cerebrum. Localization of cortical centres.
173. Sulci and gyri of medial and inferior surface of hemispheres of cerebrum. Localization of cortical centres.
174. Structure of cerebral cortex and associative conducting tracts of the brain and spinal cord, their topography.
175. Anatomy and topography of corpus callosum, fornix, anterior comissure, internal capsule, their functions.
176. Anatomy and topography of lateral ventricles, their walls. Choroid plexuses. Paths of outflow of liquor.
177. Anatomy and topography of rhinencephalon; its central and peripheral parts.
178. Anatomy and topography of diencephalon; parts, internal structure. Localization of nuclei and conducting tracts in diencephalon.
179. Anatomy and topography of midbrain; parts, internal structure. Localization of nuclei and conducting tracts in mesencephalon.
180. Anatomy and topography of pons; parts, internal structure. Localization of nuclei and conducting tracts in pons.
181. Cerebellum: structure, nuclei; pedunculi, their fibrillar composition.
182. Anatomy and topography of medulla oblongata. Localization of nuclei and conducting tracts in medulla oblongata.

183. Anatomy of rhomboid fossa: its relief. Projection of nuclei of cranial nerves on the surface of rhomboid fossa.
184. Anatomy and topography of IVth ventricles, its walls. Paths of outflow of liquor.
185. Structure of simple and complex reflex arcs. Classification of conducting tracts of the brain and spinal cord.
186. Conducting tracts of exteroceptive sensitivity. Localization of conducting tracts of pain and temperature sensitivity in different parts of brain and spinal cord.
187. Conducting tracts of tactile sensitivity. Localization in different parts of brain and spinal cord.
188. Conducting tracts of proprioceptive sensitivity of cerebellar direction. Localization in different parts of brain and spinal cord.
189. Conducting tracts of proprioceptive sensitivity of cortical direction. Localization in different parts of brain and spinal cord.
190. Medial lemniscus, composition of fibres. Localization in different parts of brain.
191. Motor pyramidal conducting tracts. Localization in different parts of brain and spinal cord.
192. The descending tracts of the forebrain subcortical nuclei, the extrapyramidal system.
193. Reticular formation of brain: composition, localization in different parts of the brain, significance.
194. Limbic system, its nuclei, localization in brain, connections, functional significance.
195. Meninges, their structure. Subdural and subarachnoid spaces.
196. Sinuses of cerebral dura mater, their structure, topography, functional significance.

VI. ANATOMY OF PERIPHERAL NERVOUS SYSTEM

197. Spinal nerve: formation, branches. Posterior branches of spinal nerves, areas of their distribution. Formation of plexuses of spinal nerves.
198. Cervical plexus: topography, nerves, area of innervation.
199. Branches of supraclavicular part of brachial plexus, areas of innervation.
200. Branches of subclavicular part of brachial plexus, areas of innervation.
201. Innervation of skin of upper extremity: origin and topography of nerves.
202. Innervation of muscles and skin of hand: origin and topography of nerves.
203. Intercostal nerves: their branches, areas of innervation.
204. Lumbar plexus: topography, nerves, areas of innervation.
205. Sacral plexus: topography, nerves, areas of innervation.
206. Sciatic nerve: branches, areas of innervation.
207. Innervation of skin of lower extremity. Origin and topography of cutaneous nerves (branches).
208. Olfactory and optic nerves: their anatomy and topography. Conducting tract of analyzer of vision.
209. Oculomotor, trochlear and abducens nerves: their anatomy and topography. Paths of pupillary reflex.
210. Trigeminal nerve: branches, their anatomy, topography, areas of innervation.
211. Facial nerve: branches, their anatomy, topography, areas of innervation.
212. Vestibulocochlear nerve: anatomy, topography, areas of innervation.
213. Glossopharyngeal nerve: branches, their anatomy, topography, areas of innervation.
214. Vagus nerve: branches, their anatomy, topography, areas of innervation.

215. Accessory and hypoglossal nerves: their anatomy, topography, branches, areas of innervation.
216. Autonomic nervous system: classification, characteristics of its parts.
217. Parasympathetic part of autonomic nervous system, general characteristics; centres and peripheral part (nodes, distribution of branches).
218. Sympathetic part of autonomic nervous system, general characteristic; centres and peripheral part (nodes, distribution of branches).
219.Cervical part of sympathetic trunk: topography, nodes, branches, areas of innervation.
220.Thoracic part of sympathetic trunk: topography, nodes, branches, areas of innervation.
221.Lumbar and sacral parts of sympathetic trunk: topography, nodes, branches, areas of innervation.
222.Sympathetic plexuses of abdomen and pelvis (celiac, mesenteric, hypogastric): sources of formation, nodes, branches.

VII. ANATOMY OF SENSORY ORGANS

223.Classification and characteristics of sensory organs. General plan of structure, connections with brain. .
224.Organ of hearing and balance: general plan of structure and functional features.
225. External ear: parts, structure, blood supply, innervation. .
226.Middle ear: parts (tympanic cavity, auditory ossicles, auditory tube, mastoid cells), anatomical characteristics, blood supply and innervation. .
227. Internal ear: vestibular apparatus, parts (osseous and membranous labyrinthes), anatomical characteristics.
228. Internal ear: organ of hearing (cochlea, its osseous and membranpus labyrinthes, spiral organ), their anatomical characteristics. Conducting tract of acoustic analyzer.
229. Organ of vision: general plan of structure. Eyeball and its auxiliary apparatus.
230.Refracting structures of eyeball: cornea, aquous humor of cameras, lens, vitreous body, their anatomical characteristics.
231.Vascular coat of eyeball, its parts. Mechanism of accommodation.
232. Retina. Conducting tract of visual analyzer.
233. Auxiliary apparatus of eyeball: muscles, eyelids, lacrimal apparatus, conjunctiva, their anatomical characteristics, blood supply, innervation.
234. Organs of taste and smell: structure, topography, blood supply, innervation.

VIII. ANATOMY OF ENDOCRINE GLANDS

235.Classification of endocrine glands, their general characteristics.
236. Branchiogenic endocrine glands: thyroid, parathyroid, their topography, structure, blood supply, innervation.
237. Neurogenic endocrine glands: posterior lobe of hypophysis, adrenal medulla and pineal body (epiphysis), their development, topography, structure.
238. Hypophysis, topography, structure, role in the system of endocrine glands.
239. Group of endocrine glands of adrenal system: chromaffin bodies (paraganglia) - carotid, coccygeal, interrenal bodies. Their development, structure, topography.
240. Adrenal glands: development, topography, structure, blood supply, innervation.
241. Endocrine part of pancreas, gonads: topography, structure, blood supply, innervation.