EXAM QUESTIONS FOR FOREIGN STUDENTS OF THE 2ND YEAR OF GENERAL MEDECINE FACULTY FOR THE DISCIPLINE "ANATOMY" DURING 2023-24 YEAR

1. Introduction to anatomy. The subject of human anatomy. Principles of the modern anatomy and methods of investigation in the anatomy. Content of the subject. History of anatomy. Human development. General structure of human body development. The concept of organs and organ systems. Anatomical terminology Relations with the biological disciplines. Methods of anatomical research. Axes and planes in anatomy. Lines on the surface of the body, clinical significance.
2. History of anatomy. The first anatomical researches. Anatomy of Renaissance. Russian anatomists. History of anatomical department of Volgograd State medical university.
3. The development of axial skeleton in phylo- and ontogenesis. Variants and anomalies of axial skeleton. The stages of axial skeleton evolution. The features of newborn vertebral column, formation of lordosis and kyphosis. The points of ossification. Variants and anomalies
4. The vertebral column as a whole: the structure of a typical vertebra. Features of the vertebrae according to the different parts of the spine; the formation of its curvatures. Vertebrae: structure in various parts of the spine. Ribs and sternum, structure.
5. Phylo- and ontogenesis of the skull. Development of the skull in fetal period and newborn. General patterns of the skull. Mammalian skull, origin of the auditory ossicles and the temporomandibular joint. Ontogenesis of the human calvaria. Anatomy of newborn skull.
6. Unpaired bones of the cerebral skull: frontal, ethmoid, sphenoid, occipital (their parts, structural details). Clinical significance of the canals, grooves and holes.
7. The paired bones of the cerebral skull: parietal, temporal bones. The temporal bone: its parts, details of the structure. Canals of temporal bone. Topography of the facial canal. Clinical significance of the canals. The temporal bone as an organ of hearing and balance.
8. Craniometrical points of cerebral and facial skull. Cranial index and parameters. Contreforces of skull. Typical places of fractures for cranial base. Areas of typical jaw fractures.
9. Development of the facial skull. Formation of the hard palate. Anomalies. Anatomy of the upper and lower jaws, palatine bone, zygomatic bone, lacrimal bones, nasal bones, vomer, nasal concha, hyoid bone. Contraforces of the upper jaw. Places of typical fractures according to Le Fort I, II, III).
10. Cranial base. Skull base borders. Internal cranial base: borders and openings of the anterior, middle and posterior cranial fossa. External cranial base: location of holes and canals. Hard palate: anatomy, functions and borders.
11. Anatomy and topography of temporal, infratemporal and pterygopalatine fossa: borders, walls, contents, anatomical relations.
12. Orbit: borders, walls, anatomical relations. Pathways into the orbit.
13. The nasal cavity: borders, walls, anatomical relations. Paranasal sinuses. Clinical relevance.
14. Skeleton of upper limbs in phylo- and ontogenesis. [1] Regularities of the structure of the additional skeleton. Phylo- and ontogenesis of the upper limb bones. Features of the bones of the upper limb. Additional bones of upper limbs. The points of ossification. Age-related changes. Variants and anomalies of upper limbs. Development of the upper limbs.
15. Upper limbs: shoulder girdle and free upper limb. The bones of the shoulder, forearm and hand.
16. Skeleton of lower limbs in phylo- and ontogenesis. Regularities of the structure of the additional skeleton. Phylo- and ontogenesis of the lower limb bones. Features of the bones of the lower limb. Additional bones of lower limbs. The points of ossification. Age-related changes. Variants and anomalies of lower limbs.
17. Lower limbs: pelvic girdle and free lower limb. Sections of the free lower limb: thigh, lower leg, foot. Bones of the pelvic girdle: iliac bone, ischium, pubic bone. Pelvis as a whole. The distances and diameters of the pelvis. Clinical relevance
18. General arthrology. Phylo - and ontogenesis development of joints. Classification of joints. Particular features of the structural elements of the joints. Joint biomechanics. Types of joint

movements.

19. Joints of the axial skeleton. Atlanto-occipital joint, atlanto-axial joint.

20. Temporomandibular joint: structure, shape, movements, muscles, their blood supply and innervation.

21. Joints of the upper limb: structure, shape, movements, muscles, their blood supply and innervation.

22. Joints of the lower limb: structure, shape, movements, muscles, their blood supply and innervation.

23. General information about muscular system. The anatomy of the muscular system. Classification of the muscles. Muscle development. The concept of myotome. Muscle structure. Auxiliary muscular apparatus. Variations and abnormalities of skeletal muscles.

24. The muscles of the back, chest, abdomen: the structure, topography, functions. Diaphragm. Fascias of the back, thorax, abdomen.

25. Topography of possible places for hernias (white line of the abdomen, umbilical ring, inguinal canal, diaphragm triangles, lumbar triangles). The structure and attachment points of the fascias of the back, chest, abdomen. Abdominal rectus sheath (vagina), inguinal ligament and inguinal canal.

26. Classification of the head muscles. The structure, topography and functions the muscles of facial expression. Chewing muscles: topography and functions. Anatomy of the fascias and fascial spaces of the head. Anatomy of the scalp: its layers, neurovascular supply and clinical correlations.

27. Classification, structure, topography and functions of the neck muscles. Blood supply and innervation.

28. Anatomy of the fasciae and fascial spaces of the neck. Triangles of the neck: anatomy, borders, contents. Cross-sectional anatomy of the neck (by V.N. Shevkunenko). International classification of the fascias (PNA).

29. Muscles and fascias of the upper limb: structure, topography, functions. Topography of the upper limb. Axillary (armpit) and elbow fossas. Fibro-osseous canals of the hand. Palmar aponeurosis

30. Muscles and fascias of the lower limb: structure, topography, functions. Topography of the lower limb. Femoral triangle. Femoral canal. Adductor canal. Popliteal fossa: borders, content. Fibro-osseous canals of the foot. Plantar aponeurosis. Clinical correlations.

31. Development of digestive system in onto- and phylogenesis.

32. Overview of the alimentary system. The oral cavity: lips, vestibule, cheek, hard and soft palate. Tongue (muscles of the tongue, papillae), structure, function, blood supply and venous drainage, lymphatic drainage, innervation. Large salivary glands: parotid, sublingual, submandibular (topography, structure, excretory ducts).

33. Anatomy of the teeth: classification, structure, individual and group signs. Age features. Development of the teeth, stages of the dental eruption. Dental formulas. Variants and anomalies.

34. Hollow organs of digestive system: overview. Development of the hollow organs, variants and anomalies, methods of clinical examination. Crossing of airways and digestive tract in the pharynx. The structure, topography and functions of the pharynx.

35. Esophagus: parts, topography, structure, blood supply and innervation. Anatomical sphincters of esophagus. Regional lymph nodes. Anomalies. Factors preventing regurgitation of food from stomach to esophagus.

36. Stomach: anatomy, topography, blood supply and innervation. Regional lymph nodes. Methods of clinical examination. Anomalies.

37. Duodenum: parts, structure, topography, relation to the peritoneum, blood supply, innervation, regional lymph nodes. The mesenteric part of the small intestine (jejunum and ileum), wall structure, blood supply, innervation, regional lymph nodes. Methods of clinical examination.

38. Large intestine: parts, topography, wall structure, relation to the peritoneum, blood supply, regional lymph nodes, innervation. The difference between small and large intestine. Anomalies.

39. Caecum: structure, topography, relation to the peritoneum. Ileocecal valve. Blood supply, innervation. Appendix: structure, topography (vatiants), relation to the peritoneum. Blood supply, innervation. Appendix as the organ of immune system.

40. Pancreas: topography, structure, excretory ducts, blood supply, innervation, regional lymph nodes. Exsocrine and endocrine parts of pancreas.
41. Liver: topography, structure, lobes, segments, relation to the peritoneum. The gallbladder. Billiary system: excretory ducts of the liver and gallbladder. Blood supply, regional lymph nodes, innervation. Anomalies.
42. Topography of peritoneum in upper, middle and lower compartments of peritoneal cavity; greater and lesser omentum. Omental, hepatic, pregastric recesses (bursae), their walls.
43. External nose (parts, cartilages). The nasal cavity (olfactory and respiratory areas). The walls of the nasal cavity and its foramina, canals, blood supply and innervation.
44. Development of the respiratory system. Anomalies.
45. Larynx: topography, cartilages, joints. Relief of the internal surface of laryngeal mucous membrane. Muscles of the larynx: their classification, function, innervation and blood supply.
46. Trachea and bronchi: structure, topography, blood supply and innervation.
47. Lungs: topography. Segmental structure of lungs. Structure of the acinus. Anomalies.
48. Pleura: structure, pleural cavity, pleural sinuses. Mediastinum: departments, their topography, mediastinal organs.
49. Development of the cardiovascular system. Anomalies.
50. Heart: topography, structure of chambers, blood supply, innervation. Conducting system of heart. Valves of the heart, mechanism of blood circulation. Pericardium: structure, topography; pericardial sinuses.
51. Kidneys: anatomy, topography. Nephron. Renin-angiotensin-aldesteron system.
52. Urinary system: ureters, urinary bladder, urethra. Topography, structure, blood supply, regional lymph nodes, innervation. Sexual characteristics of the urethra.
53. Development of the urinary system.
54. Male and female external genital organs: structure, blood supply, innervation.
55. Female internal genital organs. Uterus and uterine tubes: topography, structure, ligaments, relation to the peritoneum, blood supply, innervation. Ovaries: topography, structure, relation to the peritoneum, blood supply, innervation.
56. General overview of the male genital organs. Male internal genital organs: structure, blood supply, innervation. Testis: topography, layers, exocrine and endocrine functions. Epididymis: structure, functions. Blood supply, innervation.
57. Development of genital organs. Sexual differntiation. Anomalies.
58. The general anatomy of the blood vessels. Regularities of the distribution of arteries in hollow and parenchymal organs. Regularities of the passage and branching of blood vessels. Microcirculatory bed. Anastomoses of arteries and veins (examples). Collateral blood flow (examples). Vessels of lesser (pulmonary) circle of blood flow (general characteristics). Regularities of the distribution arteries and veins in the lungs. Vessels of greater circle of blood flow (general characteristics).
59. Aorta: topography, parts. Branches of aortic arch: topography, regions of blood supply.
60. Branches of the thoracic aorta (parietal and visceral): topography and supplied areas.
61. Parietal and visceral (paired and unpaired) branches of abdominal aorta, its anastomoses.
62. Arteries of the brain. Greater arterial (Willis) circle of the brain. Anastomoses of the cerebral arteries.
63. Common and external carotid arteries: topography, branches and supplied areas. Anastomoses.
64. Internal carotid artery: parts, topography, branches and supplied areas. Anastomoses.
65. Subclavian artery, topography, branches and supplied areas. Anastomoses.
66. Axillary artery: topography, departments, branches and supplied areas.
67. Arteries of the upper limb: branches and areas of blood supply.
68. Common and internal iliac arteries, their branches and areas of blood supply.
69. External iliac artery, branches and areas of blood supply. Arteries of the lower limb.
70. Venous system: principal organization. Development in phylo- and ontogenesis. Features of blood circulation in fetus and changes of cardiovascular system after birth. Venous plexuses. Inter- and intrasystemic venous anastomoses (cava-caval, cava-cava-portal, porto-caval), structure, topography.

71. Veins of the head. Emissary and diploic veins. Intra- and extracranial pats of venous outflow from brain. Venous sinuses of dura mater. Internal jugular vein.
72. External and anterior jugular veins, its formation, topography, tributaries.
73. Veins of the head: topography, pathways of the venous drainage.
74. Subclavian vein: formation, topography, tributaries. Veins of the upper limb: topography, tributaries. Clinical significance of the superficial veins.
75. Superior vena cava: formation (brachiocephalic veins) and topography. Azygos and hemiazygos veins, tributaries and anastomoses.
76. Inferior vena cava: sources of derivation and topography. Tributaries of inferior vena cava and anastomoses. Veins of the lower limbs. Clinical significance of the superficial veins.
77. Portal vein: tributaries, topography. Anastomoses of the portal vein.
78. The lymphatic system: development in phylo- and ontogenesis. Variants and anomalies. Organization of the lymphatic system (capillaries, vessels, nodes, trunks, ducts). Lymphatic drainage into the venous bed. Factors affecting lymph flow.
79. Lymph node as an organ (structure, function). Classification of lymph nodes.
80. Thoracic duct: formation, structure, topography, variants of inflow to venous bed. Right lymphatic duct, formation, topography, site of inflow into venous bed.
81. Organs of the immune system: topography, structure, functions.
82. The nervous system: general organization, functions. The concept of a neuron. Classification of neurons. Simple and complex reflex arcs. Phylo- and ontogenesis of the nervous system.
83. Spinal cord: localization in the vertebral canal, internal structure, blood supply. Topography of the white and grey matter (scheme). Functions of the nuclei and neural pathways. Meninges of the spinal cord.
84. Anatomy and topography of medulla oblongata. Topography of the white and grey matter (scheme). Functions of the nuclei and neural pathways.
85. Anatomy of rhomboid fossa: relief. Projection of nuclei on the surface of rhomboid fossa (scheme). IV ventricle.
86. Anatomy and topography of the pons: parts, internal structure. Topography of the white and grey matter (scheme).
87. Cerebellum: external and internal structure; peduncles, nuclei. Neural pathways of cerebellar direction (scheme).
88. Anatomy and topography of the midbrain: parts, external structure. Topography of the white and grey matter (scheme). Nuclear functions.
89. Anatomy and topography of the diencephalon: parts, external and internal structure. Neurosecretory nuclei of the hypothalamus. III ventricle.
90. Telencephalon: internal structure. Topography of basal nuclei: structure, topography, functions. Localization of the neural pathways in the internal capsule (scheme). Association, commissural and projection fibers of the cerebral hemispheres. Corpus callosum, fornix, adhesions.
91. Lateral ventricles: topography, anatomy. Circulation of cerebrospinal fluid. Meninges of the brain their structure. Subdural and subarachnoid spaces. Circulation of cerebrospinal fluid.
92. General organization of cortex. The first and second signal systems. Sulci and gyri of superolateral, medial and inferior surfaces of cerebral hemispheres. Localization of cortical centers.
93. Limbic system: nuclei, position in the brain, connections, functional significance.
94. Reticular formation: nuclei, functions.
95. Pathways of proprioceptive sensitivity of the cortical direction, location in various parts of the spinal cord and brain (scheme).
96. Pathways of proprioceptive sensitivity of the cerebellar direction, their position in various parts of the spinal cord and brain (scheme).
97. Pathways of exteroceptive sensitivity; their position in various parts of the spinal cord and brain (scheme).
98. Motor conducting pyramidal and extrapyramidal pathways; their position in various parts of the spinal cord and brain (scheme).

99. Cranial nerves: overview. Origin the cranial nerves, location on the brainstem, their exit from the skull, their functions according to modality of cranial nerves.
100. Olfactory nerve: anatomy and topography. Neural pathway of olfactory nerve.
101. Optic nerve: parts, anatomy and topography. Optic tract.
102. Oculomotor, trochlear and abducens nerves: anatomy, topography, areas of innervation. Pupillary reflex pathway.
103. Trigeminal nerve: nuclei, trigeminal ganglion, branches, areas of innervation.
104. Facial nerve: localization of nuclei, topography, area of innervation. Intracanalicular branches of the facial nerve. Extracranial branches of the facial nerve (parotid plexus, branches to the facial muscles).
105. Vestibulocochlear nerve: nuclei, topography, areas of innervation. Pathway of auditory and vestibular impulses.
106. Glossopharyngeal nerve: nuclei, branches, topography, areas of innervation.
107. Vagus nerve: nuclei, parts, branches, topography, areas of innervation.
108. Accessory nerve: its anatomy, topography, branches, areas of innervation.
109. Hypoglossal nerve: its anatomy, topography, branches, areas of innervation.
110. Autonomic nervous system: classification, characteristics of its parts. Parasympathetic nervous system.
111. Sympathetic nervous system. Topography of the sympathetic trunk. Sympathetic centers and nerves.
112. Spinal nerve and its branches. Formation of plexuses of the spinal nerves. The posterior branches of the spinal nerves and the areas of their distribution. Intercostal nerves.
113. Cervical plexus: topography, branches, area of innervation.
114. Brachial plexus: topography, branches of the supraclavicular and subclavian parts.
115. Lumbar, sacral plexuses: topography, branches, area of innervation.
116. Tongue: taste zones. The pathway of the taste analyzer.
117. The eye: general plan of the structure. The eyeball and its auxiliary apparatus.
118. The organ of hearing and balance: the general plan of the structure and functional features.
119. Endocrine glands (neurogenic). Their structure, topography, functions, blood supply, innervation.
120. Endocrine glands (branchiogenic). Their structure, topography, functions, blood supply, innervation.

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