

## **Questions for the exam on discipline "Anatomy»**

### **OSTEOLOGY AND ARTHROLOGY**

1. Bone as an organ: development, structure. Classification of bones. Vertebrae: their structure in different parts of the vertebral column (cervical, thoracic, lumbar, sacral, coccygeal vertebrae), variants and anomalies. Structure of ribs, sternum.
2. Structure of bones of the shoulder girdle (scapula, clavicle). Structure of bones of free part upper limb. The humerus, bones of a forearm (ulna, radius). Bones of the hand.
3. Hip (coxal) bone, femur, patella. Bones of the leg and the foot.
4. Anatomic and biomechanical classification of bone connections (articulations) their functional features. Continuous articulations (or connections - synarthrosis) of bones. Structure of a joint. Classification of synovial joints (diarthrosis) according to the number of articular surfaces, number of axes and shape of articular surfaces, and function.
5. Connections of vertebrae. The vertebral column as a whole: formation of its curvatures, movements. The atlanto-occipital joint, the atlanto-axial joints. Connections (articulations) of the skull bones (continuous connections, temporo-mandibular joint).
6. Connections of ribs with vertebrae and sternum. Thorax as a whole.
7. Connections of bones of shoulder girdle. Connections of free part of upper limb. Shoulder joint. The elbow joint, connections of bones of forearm.
8. Joints of the hand. The hand as a whole.
9. Connections of pelvic girdle. Pelvis as a whole. Age and sexual features, sizes of female pelvis. Hip joint.
10. The knee joint, connections of the leg bones and of the foot.

### **THE SKULL**

1. Development of the skull in ontogenesis. Individual, age and sexual features of a skull. Variants and anomalies of cranial bones.
2. The skull. Cranial part. Occipital, parietal and frontal bones. Sphenoid bone, its parts, foramina. Temporal bone, structure, its canals. Ethmoid bone.
3. Bones of the facial (visceral) skull: maxilla, mandible, zygomatic, nasal, palatine, lacrimal, inferior nasal concha, vomer, hyoid.
4. The skull as a whole. Calvaria. The base of the skull. Internal and external surfaces.
5. Temporal, infratemporal and pterygo-palatine fossae, their topography. Facial skull. The orbit, bones of walls, apertures. The nasal cavity. The paranasal sinuses. Palatum osseum.

### **MYOLOGY (THE MUSCULAR SYSTEM)**

1. General anatomy of muscles, structure of muscles as an organ. Development of skeletal muscles, their classification (according to form, structure, arrangement, etc.). Muscles synergists and antagonists. The auxiliary apparatus of muscles: fasciae, synovial sheaths and bursae, their structure and function; sesamoid bones: their position and function. Muscles and fasciae of the head: muscles of facial expression (mimic), masticatory muscles.
2. Muscles of the neck. Topography of the neck (Triangles of the neck). Fasciae of the neck. Fasciae spaces of the neck.
3. Muscles and fasciae of the back.
4. Muscles and fasciae of the thorax (chest). Diaphragm.
5. Muscles of the abdomen.
6. The sheath of the rectus abdominis muscle. The linea alba. The inguinal canal, its walls, deep and superficial rings; contents of the inguinal canal. Weak places of the anterior abdominal wall.
7. Muscles and fasciae of the shoulder girdle. Muscles and fasciae of the arm.
8. Muscles of the forearm: anterior group.

9. Muscles of the forearm: posterior group.
10. Muscles of the hand.
11. Fasciae and topography of the upper limb (The axillary fossa. The canal of the radial nerve. The bony-fibrous (osteo-fibrosus) canals and synovial sheaths of the hand).
12. Muscles of the pelvic girdle.
13. Muscles of the thigh.
14. The muscles of the leg.
15. Muscles of the foot.
16. Fasciae and topography of the lower limb. The structures under the inguinal ligament (muscular and vascular lacunae). The adductor canal, its walls. The femoral triangle.

## **SPLANCHNOLOGY**

### **The digestive system**

1. Development of the digestive system. The mouth: lips, oral cavity (oral vestibule, hard and soft palate). The teeth (deciduous and permanent), their structure, the dental row, the dental formula and the eruption time of deciduous and permanent teeth.
2. The tongue: development, structure, functions. Salivary glands (the parotid, sublingual and submandibular salivary glands, small salivary glands).
3. The pharynx: structure, parts, topography. The lymphoepithelial (Pyrogov's) ring of pharynx (ring of tonsils).
4. The esophagus: topography (skelepotopy, syntopy and holotopy), structure, constrictions.
5. The stomach: structure, topography, position (relation) according to peritoneum, ligaments.
6. The small intestine: its parts, topography, position according to peritoneum, structure of its wall (the duodenum, mesenteric part of the small intestine (jejunum and ileum)).
7. The abdominal cavity, its walls. Regions of anterior abdominal wall. The peritoneum, peritoneal cavity, variants of organ position (relation) according to peritoneum.
8. The large intestine: its parts, their topography, position according to peritoneum; the structure of a wall. The caecum: structure, position according to peritoneum, topography of the vermiform appendix. The rectum: topography, position according to peritoneum, the structure of its wall.
9. The liver: structure, topography, ligaments, functions, features of blood supply.
10. The gallbladder. Paths for bile excretion (the ducts of the gallbladder and the liver).
11. The pancreas: topography, structure, ducts, endocrine part, functions.
12. The peritoneal cavity. Topography of the peritoneum in the upper storey of the peritoneal cavity. The lesser omentum and omental, hepatic and pregastric bursae and their walls.
13. Topography of the peritoneum in the middle and lower storeys of the peritoneal cavity. The greater omentum. The recesses, grooves, sinuses of walls of the peritoneal cavity, pouches of the pelvis.

## **UROGENITAL APPARATUS (THE URYNARY SYSTEM. THE REPRODUCTIVE SYSTEM)**

1. The kidneys: development, topography, structure, their coats, position according to peritoneum, supporting apparatus, functions. Functional unit of the kidney – nephron. Blood supply of the kidneys: intrarenal division of vessels. Excretory apparatus.
2. The ureter, the urinary bladder, their structure, topography, position according to peritoneum. The female urethra.
3. Development of the Reproductive system. Male genital organs. The testis, structure, endocrine part of the testis. The epididymis.
4. The prostate, the seminal vesicles. The bulbo-urethral glands (Cowper's), their relation to the urethra.
5. The spermatic cord, its components. The ductus (vas) deferens. Semen-conveying ducts (Reproductive system ducts in Males).
6. Male external genital organs (penis, scrotum). The male urethra.
7. Female genital organs. The ovary, topography, structure, position according to the peritoneum, endocrine part of the ovary. The uterine tube: structure, position according to peritoneum.
8. The uterus: parts, topography, ligaments, position according to peritoneum. The vagina: structure, topography, position according to

peritoneum.

9. Female external genitalia (pudendum femininum). The perineum: parts. Muscles and fasciae of the perineum (male and female). Peritoneum of the pelvic cavity in the male and female pelvis. Its relation to the rectum, the urinary bladder, the uterus and other organs.

## **THE RESPIRATORY SYSTEM**

1. Development of the Respiratory system. Two parts: upper respiratory system and lower respiratory system; two portions: conducting and respiratory. The external nose. The nasal cavity (olfactory and respiratory areas). The paranasal sinuses.
2. The larynx: cartilages, joints, the elastic cone of the larynx, the relief of the internal surface (mucous membrane) of the larynx. Muscles of the larynx, their classification, functions. The trachea and primary bronchi, structure, topography.
3. The lungs: development, topography (skelepotopy, syntopy and holotopy). The segmental structure of the lungs. The roots of right and left lungs: anatomy and topography. Division of bronchi (bronchial tree, alveolar tree), structural and functional unit of the lungs – acinus. Blood supply of the lungs.
4. The pleura: parts, borders; the pleural cavity, pleural recesses. The mediastinum: parts, organs of the mediastinum, their topography.

## **CARDIOVASCULAR SYSTEM**

1. General anatomy of blood vessels. The heart: development, structure of the heart. Chambers of the heart: structure. Layers of the heart walls. The features of the myocardium of atria and ventricles. Conducting system of the heart. Topography, projection of borders and valves of the heart on the anterior thoracic wall. Blood supply of the heart, coronary circulation. The pericardium, its topography. The vessels of the pulmonary circulation (general characteristic), their distribution in lungs. The Systemic circulation.
2. General anatomy of blood vessels. Distribution of General anatomy of blood vessels.
3. The aorta and its parts. Branches of arch of the aorta. The external carotid artery, its topography, branches and areas, supplied by them. arteries.
4. The internal carotid artery, topography, branches. The subclavian artery: topography, branches and areas supplied by them. Blood supply of the brain and the spinal cord (cervical part).
5. The axillary and brachial arteries: topography, branches and areas, supplied by them. The arteries of the forearm: topography, branches, areas, supplied by them. Collateral blood circulation at the region of the elbow joint. The arteries of the hand. Arterial palmar arches and their branches. Collateral blood circulation (main collateral artery) at the upper limb, practical significance.
6. Thoracic part of the aorta, branches (parietal and visceral). The visceral (paired and unpaired) branches of the abdominal aorta. The parietal (paired and unpaired) branches of the abdominal part of the aorta. Features of their distribution and anastomoses.
7. The common iliac artery, external and internal iliac arteries, their branches.
8. The femoral and the popliteal arteries: topography, branches and areas, supplied by them. Blood supply of the hip and the knee joints.
9. The arteries of the leg: topography, branches and areas, supplied by them. The arteries of the foot: topography, branches and areas, supplied by them.
10. Veins of the Systemic circulation. The superior vena cava, the main tributaries and its topography. The brachiocephalic veins, their formation, tributaries. The azygos and hemiazygos veins.
11. The veins of the brain, the venous blood sinuses of the dura mater, the emissary and diploic veins. Intracranial and extracranial ways of outflow from the brain..
12. Superficial and deep veins of the upper limb and their topography
13. The inferior vena cava, sources of its formation and topography. The tributaries of the inferior vena cava and their anastomoses.
14. The common iliac veins, external and internal iliac veins, their tributaries; venous plexuses of the true pelvis.
15. Superficial and deep veins of the lower limb and their topography.
16. The hepatic portal vein. Its tributaries, their topography; the distribution of portal vein in the liver. Intersystemic and intrasystemic

anastomoses of veins (porto-caval, cava-caval anastomoses).

17. The spleen: development, topography, structure, position according to peritoneum, ligaments.

# **NERVOUS SYSTEM**

## **Anatomy of cerebrum**

1. Anatomic and morphological classifications of the nervous system; its anatomic formations (plexus, ganglions, nerves).
2. Anatomy of spinal cord; meninges of the spinal cord; Intermeningeal spaces. Spinal segment.
3. Anatomic classification of cerebrum. Anatomy of cerebrum. Anatomic of structures of the brainstem part of the cerebrum (medulla oblongata, pons, mesencephalon and diencephalon).
4. Anatomy of medulla oblongata and pons.
5. Anatomy of mesencephalon and diencephalon.
6. Anatomy of cerebellum.
7. Telencephalon. Relief of pallium. Localization of functions in the cortex of hemispheres. Meninges of the cerebrum and their derivatives.
8. Basal ganglia. White matter of hemispheres. Internal capsule.
9. Lateral ventricles. III and IV ventricle. Its walls.
10. Rhomboid fossa, its structure, topography of nuclei of the cranial nerves.
11. Classification of conducting tracts of the head and spinal cord. Ascending tracts.
12. Descending conducting tracts of the brain and spinal cord.

## **Anatomy of sense organs**

13. Anatomy of sense organs. Organ of vision.
14. Anatomy of organs of hearing and balance.

## **Peripheral nerves**

15. Spinal nerve, its branches. Anterior branches of thoracic nerves.
16. Cervical plexus, its branches, areas of innervations.
17. Brachial plexus, , its branches
18. Lumbar and sacro-coccygeal plexus, , its branches
19. Review of cranial nerves. General description. Olfactory, optic, oculomotor, block (trochlea) and abducent nerves.
20. Trigeminal nerve. Branches of trigeminal nerve.
21. Facial nerve.
22. Vestibulo-cochlear and glossopharyngeal nerves.
23. Vagus, accessory and hypoglossal nerves.