

NERVOUS TISSUE

1. Neurocytes develop from:

- a) neural tube; b) notochordal island;
- c) mesoderm; d) endoderm;

2. Neurons of autonomic ganglia develop from:

- a) mesoderm b) neural tube c) ganglionic plate d) endoderm

3. The specific sign of the onset of nerve cell differentiation is considered to be:

- a) appearance of bundles of neurofilaments and neurotubules in the cytoplasm;
- b) development of lysosomes;
- c) hypertrophy of the Golgi apparatus;
- d) development of granular endoplasmic reticulum.

4. The marginal veil in the developing neural tube consists of:

- a) neuronal processes; b) neurocytes;
- c) glial cells; d) microglia.

5. In an experiment, the ganglionic plate was removed from an embryo. In which organ will defects occur?

- a) spinal cord; b) adrenal gland;
- c) kidney; d) lung.

6. In an embryo, development of the anterior brain vesicle is blocked. Which CNS organ will not develop?

- a) cerebellum; b) cerebral cortex;
- c) medulla oblongata; d) spinal cord.

7. In a preparation there are 3 types of neurons: multipolar, bipolar, pseudounipolar. How many axons does each neuron have?

- a) 1; b) 2; c) 3; d) 4.

8. What is the axon of a neurocyte?

- a) a process that transmits the nerve impulse from the cell body to the periphery;
- b) a process that transmits the impulse from the periphery to the cell body;
- c) a process involved in anterograde axonal transport;
- d) a process where neurotransmitters are synthesized.

9. What is a dendrite of a neurocyte?

- a) a process transmitting impulses from the cell body to the periphery;
- b) a process transmitting impulses from the periphery to the cell body;
- c) a process involved in retrograde axonal transport;
- d) a process where neurotransmitters are synthesized.

10. What is axonal transport?

- a) continuous movement of cytoplasmic components along the axon;
- b) discontinuous movement along the dendrite;

- c) continuous movement along neuron processes;
- d) a nerve impulse passing along processes.

11. A neuron has a pear-shaped body, 2–3 dendrites and an axon. Name the cell:

- a) Betz cell; b) Purkinje cell;
- c) Kupffer cell; d) ependymocyte.

12. A neuron has a pyramidal-shaped body up to 150 μm in size, with dendrites and an axon. Name the cell:

- a) Purkinje cell; b) Betz cell;
- c) granule cell; d) Golgi cell.

13. Name the cell found in intramural nerve plexuses:

- a) Betz cell; b) Purkinje cell;
- c) Dogiel cell; d) Golgi cell.

14. In a neuron, Nissl substance (tigroid) corresponds to:

- a) lysosome; b) rough endoplasmic reticulum;
- c) Golgi apparatus; d) neurofibrils.

15. In nerve impulse conduction in neurons, the following participates:

- a) neurofibrils; b) lysosomes;
- c) ergastoplasm; d) synaptic vesicles.

16. Neurofibrils in a neuron function in:

- a) support; b) protection;
- c) impulse conduction; d) trophic function.

17. Which specialized organelles characterize neurons?

- a) microvilli; b) synaptic vesicles;
- c) cilia; d) tonofibrils.

18. Which types of macroglia are distinguished?

- a) astrocytic, choroid, tanocytes, oligodendroglia;
- b) astrocytic, ependymal, fibrous, protoplasmic;
- c) astrocytic, ependymoglia, oligodendroglia;
- d) choroid, ependymoglia, oligodendroglia.

19. Neuroglia forming the lining of brain ventricles is called:

- a) ependymocyte; b) oligodendrocyte;
- c) astrocyte; d) microglia.

20. All features are typical for myelinated nerve fibers except:

- a) one axon cylinder; b) nodes of Ranvier;
- c) tonofibrils; d) multiple axon cylinders.

21. Myelin nerve fiber sheath structures are formed by:

- a) ependymocytes; b) astrocytes;
- c) oligodendrocytes; d) microglia.

22. The main role in regeneration of nerve fibers belongs to:

- a) ependymocytes; b) astrocytes;
- c) neurolemmocytes; d) microglia.

23. After nerve transection, a dense connective tissue scar formed. How will regeneration proceed?

- a) no regeneration; b) slowed regeneration;
- c) accelerated regeneration; d) normal recovery.

24. Structure of a myelinated nerve fiber:

- a) one axon cylinder, myelin sheath, neurilemma, basement membrane;
- b) several axon cylinders, myelin sheath, basement membrane;
- c) one axon cylinder, glial boundary membrane, basement membrane;
- d) several axon cylinders, glial boundary membrane, myelin sheath, basement membrane.

25. Structure of an unmyelinated nerve fiber:

- a) one axon cylinder, myelin sheath, neurilemma, basement membrane;
- b) several axon cylinders, myelin sheath, basement membrane;
- c) one axon cylinder, glial boundary membrane, myelin sheath, basement membrane;
- d) several axon cylinders suspended on mesaxons, lemmocyte cytoplasm, basement membrane.

26. Named eponymously, the unmyelinated gaps in nerve fibers are:

- a) Rouget nodes; b) Ranvier nodes;
- c) Robertson nodes; d) Dogiel nodes.

27. Which nerve fiber conducts impulses at 5–120 m/s?

- a) collagen; b) elastic;
- c) unmyelinated; d) myelinated.

28. A nerve ending is:

- a) terminal branching of the axon;
- b) terminal branching of dendrites;
- c) terminal branching of neuron processes;
- d) part of the axon hillock.

29. A receptor represented by branched axon endings surrounded by lemmocytes and a connective tissue capsule is:

- a) free nerve ending;
- b) free bush-like nerve ending;
- c) unencapsulated ending;
- d) encapsulated ending.

30. Muscle spindles belong functionally to:

- a) neurosecretory; b) motor;
- c) associative; d) sensory.

31. Sensory nerve endings are formed by:

- a) axon terminal of sensory neuron;
- b) dendrite terminal of sensory neuron;
- c) dendrite terminal of efferent neuron;
- d) axon collateral of neuron.

ORGANS OF SENSES

1. Name the developmental source of the anterior corneal epithelium of the eye:

- a) mesoderm; b) neural tube;
- c) mesenchyme; d) ectoderm.

2. Name the developmental source of the corneal stroma (substantia propria):

- a) mesoderm; b) endoderm;
- c) mesenchyme; d) ectoderm.

3. Name the developmental source of the posterior corneal epithelium:

- a) ectoderm; b) neural tube;
- c) mesenchyme; d) mesoderm.

4. Which type of epithelium forms the anterior corneal epithelium?

- a) simple squamous;
- b) simple cuboidal;
- c) pseudostratified columnar;
- d) stratified non-keratinized.

5. What is the receptor apparatus of the eye?

- a) cornea; b) sclera;
- c) lens; d) retina.

6. What belongs to the accommodative apparatus of the eye?

- a) retina; b) cornea;
- c) iris; d) sclera.

7. The anterior part of the vascular coat, represented by a pigmented disc with a central opening (pupil), is called:

- a) cornea; b) anterior chamber of the eye;
- c) iris; d) choroid proper.

8. The ciliary muscle, ciliary processes with vessels, externally covered by the ciliary part of the retina, form the:

- a) pupil; b) iris;
- c) ciliary body; d) lens.

9. How many neurons form the chain of the eye's receptor apparatus?

- a) one; b) two;
- c) three; d) four.

10. Which of the following retinal cells are photoreceptors?

- a) bipolar cells; b) multipolar cells;
- c) pigment cells; d) cones.

11. Which embryonic cells give rise to cone- and rod-containing cells?

- a) myoblasts; b) melanoblasts;
- c) neuroblasts; d) fibroblasts.

12. Axons of which retinal cells form the nerve fiber layer?

- a) amacrine cells; b) horizontal cells;
- c) associative cells; d) ganglion cells.

13. Which specialized organelle in melanocytes absorbs 85–90% of the light entering the eye?

- a) phagosomes; b) microvilli;
- c) melanosomes; d) tonofibrils.

14. Which vitamin is an essential component of the visual pigment rhodopsin?

- a) vitamin B; b) vitamin PP;
- c) vitamin A; d) vitamin D.

15. Which retinal layer in the fovea centralis (area of best vision) is not displaced for the passage of light rays to the cone layer?

- a) ganglion layer; b) outer nuclear layer;
- c) inner nuclear layer; d) outer plexiform layer.

16. A person has impaired twilight vision ("night blindness"). Which cells are affected?

- a) cones; b) rods;
- c) amacrine cells; d) horizontal cells.

17. How many types of cells are present in the receptor layer of the olfactory organ?

- a) one; b) two;
- c) three; d) four.

18. Which specialized organelle do olfactory cells possess?

- a) cilia; b) flagella;
- c) microvilli; d) tonofibrils.

19. A person has damage to the mucous membrane covering the upper part of the middle nasal concha. The peripheral part of which analyzer is destroyed?

- a) taste; b) olfaction;
- c) hearing; d) equilibrium.

20. The organ of taste is what type of receptor?

- a) baroreceptor; b) chemoreceptor;
- c) thermoreceptor; d) mechanoreceptor.

21. As a result of accidental ingestion of acetic acid, the taste buds of the anterior part of the tongue have atrophied. Which taste sensation is lost?

- a) sweet; b) salty;
- c) bitter; d) sour.

22. Taste buds at the root of the tongue are damaged. Which taste sensation is affected?

- a) sweet; b) bitter;
- c) sour; d) salty.

23. In which part of the ear is the organ of Corti located?

- a) outer ear; b) middle ear;
- c) cochlea; d) semicircular canal system.

24. Which type of epithelium lines the vestibular part of the membranous labyrinth?

- a) pseudostratified columnar;
- b) simple squamous;
- c) stratified cuboidal;
- d) stratified non-keratinized squamous.

25. In which part of the cochlear cross-section is the organ of Corti located?

- a) scala tympani; b) membranous labyrinth;
- c) scala vestibuli; d) spiral ganglion.

26. Which cells of the organ of Corti are secondary sensory receptor cells?

- a) inner hair cells; b) pillar cells;
- c) supporting cells; d) cells of the stria vascularis.

27. Name the specialized organelle in the receptor cells of the organ of Corti:

- a) kinocilium; b) neurofibrils;
- c) microvilli; d) flagella.

28. Which cells of the organ of Corti form the tunnel?

- a) outer hair cells; b) outer supporting cells;
- c) pillar cells; d) inner hair cells.

29. Which cells of the spiral organ do not lie on the basement membrane?

- a) outer and inner hair cells; b) pillar cells;
- c) outer supporting cells; d) inner supporting cells.

30. Which cells of the spiral organ transmit excitation to the spiral ganglion?

- a) pillar cells; b) outer supporting cells;
- c) inner supporting cells; d) outer and inner hair cells.

31. In which part of the ear is the organ of equilibrium located?

- a) outer ear; b) middle ear;
- c) cochlea; d) vestibular labyrinth.

32. Where are the sensory cristae located?

- a) ampulla; b) utricle;
- c) saccule; d) spiral ganglion.

33. In experimental animals, receptor cells of the sensory cristae in the ampullae of the semicircular canals are damaged. Which function is impaired?

- a) gravity perception; b) linear acceleration;
- c) vibration; d) angular acceleration (rotation of the body and head).

34. Which specialized organelle in the receptor cells of the organ of equilibrium is motile?

- a) stereocilium; b) kinocilium;
- c) microvilli; d) flagella.

CARDIOVASCULAR SYSTEM

1. What are the sources of heart development?

- a) endoderm and mesenchyme;
- b) parts of the visceral layer of the splanchnotome and ectoderm;
- c) parts of the visceral layer of the splanchnotome and mesenchyme;
- d) parts of the parietal layer of the splanchnotome and mesenchyme.

2. The wall of the heart consists of the following layers:

- a) mucosa, submucosa, muscular, adventitial;
- b) mucosa, muscular, serous;
- c) endocardium, myocardium, epicardium, adventitial;
- d) endocardium, myocardium, epicardium.

3. The endocardium develops from:

- a) ectoderm;
- b) endoderm;
- c) mesoderm;
- d) dermatome.

4. The endocardium includes all of the following except:

- a) ectoderm;

- b) subendothelial layer;
- c) musculo-elastic layer;
- d) blood vessels.

5. Contractile cardiomyocytes contain:

- a) striated myofibrils;
- b) smooth myofibrils;
- c) tonofibrils;
- d) cilia.

6. Cells of the cardiac conduction system (atypical cardiomyocytes) contain:

- a) striated myofibrils;
- b) smooth myofibrils;
- c) tonofibrils;
- d) cilia.

7. What types of atypical cardiomyocytes are distinguished?

- a) pacemaker (P-cells), transitional cells, Purkinje fiber cells;
- b) pacemaker cells, bundle of His cells, Purkinje fiber cells;
- c) principal cells, pacemaker cells, Purkinje fiber cells;
- d) principal, intermediate, and accessory cells.

8. How does reparative regeneration of the myocardium occur?

- a) the defect is replaced by fully functional cardiac muscle tissue (restitution);
- b) the defect is partially replaced by functional muscle tissue (substitution);
- c) the defect is replaced by smooth muscle tissue migrating from the endocardium;
- d) the defect is replaced by dense fibrous connective (scar) tissue.

9. The endocrine function of the heart consists in the production of:

- a) prostaglandins;
- b) natriuretic factor;
- c) vasopressin;
- d) natriuretic factor and ADH.

10. What is the process of blood vessel development called?

- a) hematopoiesis;
- b) histogenesis;
- c) angiogenesis;
- d) vasculogenesis.

11. The first blood vessels are formed in:

- a) the amnion;
- b) the wall of the yolk sac;
- c) the allantois;
- d) the chorion.

12. How are arteries classified morphologically?

- a) muscular, non-muscular, musculo-elastic;
- b) muscular, elastic, and mixed types;
- c) fibrous, muscular, elastic;
- d) fibrous, muscular, non-muscular, elastic.

13. The arterial wall contains all of the following tissue elements except:

- a) endothelium;
- b) internal elastic membrane;
- c) pericyte;
- d) smooth myocyte.

14. The wall of elastic arteries contains:

- a) elastic membranes;
- b) striated myocytes;
- c) pigment cells;
- d) neurons.

15. The wall of a mixed-type artery contains all tissues except:

- a) muscular tissue;
- b) loose irregular connective tissue;
- c) mucous tissue;
- d) nervous tissue.

16. How are veins classified morphologically?

- a) muscular (with weak, moderate, or strong development of muscular elements) and non-muscular;
- b) muscular, non-muscular, musculo-elastic;
- c) muscular, elastic, and mixed types;
- d) fibrous, muscular, non-muscular, elastic.

17. The wall of the femoral vein contains all of the following except:

- a) endothelium;
- b) subendothelial layer;
- c) fenestrated elastic membranes;
- d) adipocytes.

18. Veins of the meninges belong to:

- a) muscular type with strong development of muscular elements;
- b) muscular type with moderate development of muscular elements;
- c) muscular type with weak development of muscular elements;
- d) non-muscular type.

19. The capillary wall consists of:

- a) endothelium, internal elastic membrane, pericytes;
- b) endothelium, pericytes, adventitial layer;
- c) endothelial layer, muscular layer, mesothelium;

d) endothelium, basement membrane, pericytes, ground substance with adventitial cells.

20. The microcirculatory bed includes:

- a) arteries;
- b) veins;
- c) heart;
- d) hemocapillaries.

21. Located within the split basement membrane of capillary walls are:

- a) myocytes;
- b) pericytes;
- c) fibroblasts;
- d) adipocytes.

22. Functions of the microcirculatory vessels include all except:

- a) exchange;
- b) regulation of blood flow;
- c) blood storage (deposition);
- d) maintenance of blood ionic composition.

23. Hemocapillaries have:

- a) 1 layer;
- b) 2 layers;
- c) 3 layers;
- d) 4 layers.

24. The endothelium of blood vessels performs all of the following functions except:

- a) antithrombogenic;
- b) exchange;
- c) barrier;
- d) trophic.

25. Pericytes perform the following function:

- a) supportive;
- b) contractile;
- c) trophic;
- d) cambial (stem-cell related).

26. Vasa vasorum ("vessels of vessels") are present only in:

- a) arteries;
- b) veins;
- c) lymph nodes;
- d) all vessels.

27. Smooth myocytes are found everywhere except in:

- a) arteries;

- b) veins;
- c) the myocardium of the heart;
- d) arterioles.

28. In muscular veins with a weak development of muscular elements, smooth muscle cells are located:

- a) in all tunics;
- b) in the tunica intima;
- c) in the tunica media;
- d) in the tunica adventitia.

HEMATOPOIETIC ORGANS

1. Which tissue forms the stroma of the red bone marrow?

- a) stratified squamous non-keratinized epithelium;
- b) reticular tissue;
- c) mucous tissue;
- d) loose irregular connective tissue.

2. Which tissue forms the stroma of the thymus?

- a) stratified squamous non-keratinized epithelium;
- b) reticular tissue;
- c) mucous tissue;
- d) loose irregular connective tissue.

3. Which tissue forms the stroma of the spleen?

- a) stratified squamous non-keratinized epithelium;
- b) reticular tissue;
- c) mucous tissue;
- d) loose irregular connective tissue.

4. Which tissue forms the stroma of a lymph node?

- a) stratified squamous non-keratinized epithelium;
- b) reticular tissue;
- c) mucous tissue;
- d) loose irregular connective tissue.

5. In the parenchyma of which organ do lymphocytes not form follicles?

- a) spleen;
- b) red bone marrow;
- c) lymph nodes;
- d) palatine tonsils.

6. In which organ does a lymphatic follicle contain a central artery?

- a) lymph nodes;
- b) spleen;
- c) palatine tonsil;
- d) intestinal tonsil.

7. Which organ contains white pulp and red pulp?

- a) lymph nodes;
- b) spleen;
- c) palatine tonsil;
- d) red bone marrow.

8. Which organ is covered externally by a connective tissue capsule, has a lobular structure, a stroma consisting of stratified squamous non-keratinized epithelium forming layered epithelial bodies, and a parenchyma made of lymphocytes distributed unevenly to form cortical (dark) and medullary (light) regions in each lobule?

- a) spleen;
- b) red bone marrow;
- c) thymus;
- d) lymph nodes.

9. Sources of thymus development:

- a) ventral wall of the pharyngeal part of the intestinal tube;
- b) III–IV pharyngeal pouches;
- c) mesoderm;
- d) ectoderm.

10. The stroma of an organ is represented by reticular tissue, and the parenchyma by all blood cells at different stages of development. Which organ is this?

- a) thymus;
- b) red bone marrow;
- c) lymph node;
- d) spleen.

11. Which organ is externally covered by stratified squamous non-keratinized epithelium forming deep folds, beneath which lies loose irregular connective tissue containing numerous lymphoid follicles?

- a) thymus;
- b) spleen;
- c) palatine tonsil;
- d) lymph node.

12. A large artery enters the hilum and divides into trabecular, pulpar, central, and penicillar arterioles. Their ends have thickenings (ellipsoids/sheaths), followed by hemocapillaries that either pass directly into sinusoidal veins without interruption (according to the “closed circulation theory”) or open into the pulp before entering the veins (according to the “open circulation theory”). The venous pathway then mirrors the

arterial pathway. The blood supply of which organ is described?

- a) spleen;
- b) lymph node;
- c) kidney;
- d) liver.

13. An organ has a bean-shaped form and is externally covered by a connective tissue capsule. Vessels carrying interstitial fluid enter from the convex surface, while a single efferent vessel exits through the hilum. The parenchyma consists of lymphoid follicles in the cortex and medullary (lymphoid) cords. Sinuses are present between the capsule, trabeculae, and lymphoid structures. Which organ is this?

- a) spleen;
- b) lymph node;
- c) red bone marrow;
- d) thymus.

14. In which organ do lymphocytes form follicles in the cortex and cords extending toward the center in the medulla?

- a) spleen;
- b) thymus;
- c) palatine tonsil;
- d) lymph node.

15. An organ is externally covered by mesothelium; its stroma consists of reticular tissue, and its parenchyma is represented by white and red pulp. What organ is this?

- a) spleen;
- b) thymus;
- c) palatine tonsil;
- d) lymph node.

16. In which of the following organs is the parenchyma represented by myeloid tissue?

- a) thymus;
- b) palatine tonsil;
- c) red bone marrow;
- d) lymph node.

17. Which of the following hematopoietic organs is externally covered by mesothelium?

- a) lymph node;
- b) thymus;
- c) spleen;
- d) red bone marrow.

18. In which hematopoietic organ is the stroma of non-mesenchymal origin?

- a) lymph node;
- b) thymus;
- c) spleen;
- d) red bone marrow.

19. What is the “white pulp” of the spleen?

- a) spherical accumulation of lymphocytes;
- b) accumulation of platelets;
- c) accumulation of neutrophils;
- d) accumulation of monocytes.

20. What type of capillaries is characteristic of hematopoietic organs?

- a) small capillaries;
- b) medium-sized capillaries;
- c) large capillaries with continuous endothelium;
- d) sinusoidal capillaries with discontinuous basement membrane and discontinuous endothelium.

ENDOCRINE SYSTEM

1. Which of the following organs belongs to the central organs of the endocrine system?

- a) adrenal glands;
- b) thyroid gland;
- c) hypothalamus;
- d) gonad.

2. Which of the following organs belongs to the peripheral organs of the endocrine system?

- a) hypothalamus;
- b) pituitary gland;
- c) pineal gland;
- d) thyroid gland.

3. Source of development of the adenohypophysis:

- a) epithelium of the roof of the oral cavity;
- b) epithelium of the III–IV pharyngeal pouches;
- c) coelomic epithelium;
- d) sympathetic ganglia.

4. Source of development of the adrenal cortex:

- a) Rathke’s pouch;
- b) epithelium of the III–IV pharyngeal pouches;
- c) coelomic epithelium of the mesenteric root (interrenal bodies);
- d) sympathetic ganglia.

5. Sources of development of the thyroid gland:

- a) evagination of the roof of the diencephalon;
- b) evagination of the ventral wall of the pharynx between the I and II pairs of pharyngeal pouches;

- c) Rathke's pouch;
- d) epithelium of the III and IV pairs of pharyngeal pouches.

6.Sources of development of the parathyroid gland:

- a) evagination of the roof of the diencephalon;
- b) evagination of the ventral wall of the pharynx;
- c) Rathke's pouch;
- d) epithelium of the III and IV pairs of pharyngeal pouches.

7.In which endocrine organ are the hormones oxytocin and vasopressin produced?

- a) hypothalamus;
- b) pituitary gland;
- c) pineal gland;
- d) thyroid gland.

8.In which endocrine organ are releasing hormones (liberins) and inhibiting hormones (statins) produced?

- a) pituitary gland;
- b) hypothalamus;
- c) pineal gland;
- d) adrenal glands.

9.In which endocrine organ are the hypothalamic hormones oxytocin and vasopressin stored and released into the blood?

- a) pituitary gland;
- b) pineal gland;
- c) thyroid gland;
- d) adrenal glands.

10.In which part of the pituitary gland are Herring bodies located?

- a) tuberal part;
- b) anterior lobe;
- c) intermediate lobe;
- d) posterior lobe.

11.In which part of the pituitary gland are melanocyte-stimulating hormone (MSH) and lipotropic hormone produced?

- a) tuberal part;
- b) anterior lobe;
- c) intermediate lobe;
- d) neurohypophysis.

12.Which part of the pituitary gland is called the neurohypophysis?

- a) tuberal part;
- b) anterior lobe;
- c) intermediate lobe;
- d) posterior lobe.

13. Which of the following adenohypophyseal cells belongs to the acidophils?

- a) somatotroph;
- b) gonadotroph;
- c) thyrotroph;
- d) melanotroph.

14. Which adenohypophyseal hormone affects the activity of the gonads?

- a) somatotrophic hormone;
- b) gonadotrophic hormone;
- c) adrenocorticotrophic hormone;
- d) thyrotrophic hormone.

16. The parenchyma of a part of an organ is represented by epithelial cords, between which there is a dense network of fenestrated sinusoidal capillaries. The cells are divided into chromophilic and chromophobic types. Which part of the pituitary gland is described?

- a) tuberal part;
- b) anterior lobe;
- c) intermediate lobe;
- d) neurohypophysis.

17. Which of the following hormones is not produced in the adenohypophysis?

- a) lactotropic hormone;
- b) melanotropic hormone;
- c) somatotrophic hormone;
- d) cortisone.

18. An organ is covered externally by a capsule, has a lobular structure, and is richly supplied with blood vessels. Its parenchyma is represented by true follicles whose height may change depending on the functional activity of the organ. What organ is this?

- a) pituitary gland;
- b) thyroid gland;
- c) parathyroid gland;
- d) adrenal gland.

19. Which cells of the thyroid gland produce hormones that influence the overall metabolism of the body?

- a) C cells;
- b) thyrocytes;
- c) fibrocytes;
- d) interfollicular cells.

20. What is the effect of parathyroid hormone?

- a) regulates the general metabolism of the body;
- b) increases the level of calcium in the blood;

- c) decreases the level of calcium in the blood;
- d) acts on the gonads.

21. An organ consists of a cortex and a medulla. In the cortex, the cells are arranged into three zones: zona glomerulosa, zona fasciculata, and zona reticularis. What organ is this?

- a) thyroid gland;
- b) adrenal gland;
- c) parathyroid gland;
- d) pituitary gland.

DIGESTIVE SYSTEM

1. What are the functions of the digestive system?

- a) secretory, absorptive, barrier-protective;
- b) mechanical and chemical processing of food, secretory, excretory;
- c) chemical processing of food, secretory, barrier-protective, excretory;
- d) mechanical and chemical processing of food, secretory, excretory, absorptive, barrier-protective.

2. What is the general structural plan of the digestive tube wall?

- a) mucosa, submucosa, muscular layer, serous (or adventitial) membrane;
- b) epithelium, lamina propria, and muscularis mucosae;
- c) mucosa, inner and outer muscular layers, adventitia;
- d) epithelium, muscular layer, serous (or adventitial) membrane.

3. The anterior part of the digestive system includes:

- a) pharynx, esophagus, stomach;
- b) oral cavity, esophagus, stomach;
- c) oral cavity, esophagus, pharynx, stomach;
- d) organs of the oral cavity, pharynx, esophagus.

4. Source of development of the oral mucosal epithelium:

- a) ectoderm of the anal pit;
- b) ectoderm of the oral pit (stomodeum);
- c) intestinal endoderm;
- d) mesoderm.

5. What are the structural features of the oral mucosa?

- a) lined by transitional epithelium; lacks muscularis mucosae and submucosa;
- b) lined by simple ciliated columnar epithelium; lacks lamina propria and muscularis mucosae;
- c) lined by stratified squamous non-keratinized and partially keratinized epithelium; muscularis mucosae well developed; submucosa absent;

d) lined by stratified squamous non-keratinized and partially keratinized epithelium; lacks muscularis mucosae, and in some areas lacks submucosa.

6. Sources of tongue development:

- a) epithelium of the 1st, 2nd, and 3rd pharyngeal pouches;
- b) epithelium of the 1st, 2nd, and 3rd pharyngeal clefts;
- c) mesenchyme of the 1st, 2nd, and 3rd pharyngeal arches;
- d) epithelium of the 3rd and 4th pharyngeal pouches.

7. Source of tongue muscle development:

- a) dermatome;
- b) myotome;
- c) sclerotome;
- d) mesenchyme.

8. What type of tissue forms the muscles of the tongue?

- a) smooth muscle tissue;
- b) skeletal striated muscle tissue;
- c) cardiac striated muscle tissue;
- d) myoepithelial tissue.

9. What is the structure of the mucous glands of the tongue?

- a) simple branched alveolar;
- b) simple branched tubular;
- c) simple branched tubuloalveolar;
- d) compound branched tubuloalveolar.

10. What is the structure of the serous (protein-secreting) glands of the tongue?

- a) simple branched alveolar;
- b) simple branched tubular;
- c) simple branched tubuloalveolar;
- d) compound branched tubuloalveolar.

11. Where are the secretory end pieces of the intrinsic salivary glands of the tongue located?

- a) in the mucosa of the dorsal surface;
- b) in the mucosa of the ventral surface;
- c) in the submucosa of the ventral surface;
- d) in the muscular layer.

12. What type of epithelium covers the mucosa of the ventral surface of the tongue?

- a) simple columnar epithelium;
- b) simple squamous epithelium;
- c) stratified squamous non-keratinized epithelium;
- d) stratified squamous partially keratinized epithelium.

13. Longitudinal folds of the tongue mucosa are located on the:

- a) dorsal surface of the tongue;
- b) lateral surface of the tongue;
- c) middle part of the tongue;
- d) ventral surface of the tongue.

14. Which papilla is located on the lateral surfaces of the tongue?

- a) fungiform papilla;
- b) filiform papilla;
- c) foliate papilla;
- d) circumvallate papilla.

15. Which papilla lacks taste buds?

- a) fungiform papilla;
- b) foliate papilla;
- c) filiform papilla;
- d) circumvallate papilla.

16. Which papillae are the most numerous on the tongue?

- a) fungiform papillae;
- b) filiform papillae;
- c) circumvallate papillae;
- d) foliate papillae.

17. Which papillae are the smallest?

- a) foliate papillae;
- b) filiform papillae;
- c) fungiform papillae;
- d) circumvallate papillae.

18. Which papillae are the longest?

- a) filiform papillae;
- b) fungiform papillae;
- c) foliate papillae;
- d) circumvallate papillae.

19. Which papillae are most developed in children?

- a) filiform papillae;
- b) circumvallate papillae;
- c) fungiform papillae;
- d) foliate papillae.

20. In which part of the tongue are papillae absent?

- a) tip;
- b) body;
- c) dorsum;
- d) root.

21. Which tongue papilla is covered by stratified squamous partially keratinized epithelium?

- a) fungiform papilla;
- b) circumvallate papilla;
- c) filiform papilla;
- d) foliate papilla.

22. Which papillae undergo reduction in adults?

- a) foliate papillae;
- b) fungiform papillae;
- c) circumvallate papillae;
- d) filiform papillae.

23. What type of epithelium covers the foliate papilla of the tongue?

- a) simple columnar epithelium;
- b) simple squamous epithelium;
- c) stratified squamous non-keratinized epithelium;
- d) stratified squamous partially keratinized epithelium.

24. Which functions are NOT characteristic of the major salivary glands?

- a) saliva production, endocrine function;
- b) participation in digestion, renin synthesis;
- c) synthesis of nerve growth factor and epithelial growth factor;
- d) synthesis of pepsin, antibodies.

25. What is the structural type of the parotid salivary gland?

- a) simple alveolar;
- b) simple tubuloalveolar;
- c) complex alveolar;
- d) complex tubuloalveolar.

26. What is the nature of secretion of the sublingual gland?

- a) serous (proteinaceous);
- b) mucous;
- c) mixed, predominantly mucous;
- d) mixed, predominantly serous.

27. Which cells line the secretory end pieces of the parotid gland?

- a) mucocytes;
- b) serocytes;
- c) plasmocytes;
- d) fibrocytes.

28. Which types of secretory end pieces are found in the parotid salivary gland?

- a) serous and mixed;
- b) mucous;

- c) serous;
- d) serous, mucous, and mixed.

29. Which types of secretory end pieces are found in the submandibular salivary gland?

- a) serous and mixed;
- b) mucous;
- c) serous;
- d) serous, mucous, and mixed.

30. Which types of secretory end pieces are found in the sublingual salivary gland?

- a) serous and mixed;
- b) mucous;
- c) serous;
- d) serous, mucous, and mixed.

31. In which part of the oral cavity is the mucosa immovably fused with the periosteum?

- a) tongue;
- b) lips;
- c) cheeks;
- d) hard palate.

32. Where are the lymphoid nodules of the palatine tonsils located?

- a) epithelial layer of the mucosa;
- b) lamina propria of the mucosa;
- c) submucosa;
- d) striated pharyngeal muscle.

33. In which part of the tongue are the lingual tonsils located?

- a) tip;
- b) body;
- c) dorsum;
- d) root.

34. The ducts of which salivary glands open into the crypts of the lingual tonsil?

- a) mucous glands of the tongue;
- b) serous glands of the tongue;
- c) mixed glands of the tongue;
- d) mixed submandibular gland.

35. Which function is NOT characteristic of the esophagus?

- a) motor-evacuatory;
- b) digestive;
- c) secretory;
- d) barrier-protective.

36. The source of development of the esophageal epithelium is:

- a) ectoderm;
- b) prechordal plate;
- c) endoderm;
- d) mesoderm.

37. What type of muscle tissue forms the muscular layer in the upper third of the esophagus?

- a) smooth muscle;
- b) skeletal muscle;
- c) cardiac muscle;
- d) myoepithelial cells.

38. The esophageal mucosa is lined by:

- a) simple squamous epithelium;
- b) pseudostratified columnar epithelium;
- c) stratified squamous non-keratinized epithelium;
- d) transitional epithelium.

39. Which glands are located in the submucosa of the esophagus?

- a) cardiac glands;
- b) pyloric glands;
- c) proper esophageal glands;
- d) duodenal glands.

40. Which membrane forms the outer covering of the esophagus?

- a) adventitia throughout;
- b) serosa throughout;
- c) adventitia in the upper half and serosa in the lower half;
- d) adventitia above the diaphragm and serosa below the diaphragm.

41. Which embryonic tissue gives rise to the mucosal epithelium of the middle gastrointestinal tract?

- a) ectoderm;
- b) endoderm;
- c) mesoderm;
- d) mesenchyme.

42. Name the stomach region whose mucosa contains simple branched tubular glands with a predominance of mucous cells and fewer chief and parietal cells.

- a) cardiac region;
- b) pyloric region;
- c) body;
- d) fundus.

43. Name the stomach region whose mucosa contains highly branched simple tubular glands lacking parietal cells.

- a) cardiac region;
- b) fundus;
- c) body;
- d) pyloric region.

44. Which gastric gland cells secrete pepsinogen?

- a) mucous cells;
- b) chief cells;
- c) parietal cells;
- d) neck cells.

45. Which gastric gland cells secrete hydrochloric acid?

- a) endocrine cells;
- b) mucous cells;
- c) parietal cells;
- d) chief (endocrine) cells.

46. In which intestinal segment are glands found?

- a) duodenum;
- b) jejunum;
- c) ileum;
- d) colon.

47. Name the intestinal segment whose mucosa and submucosa contain numerous large accumulations of lymphoid tissue.

- a) duodenum;
- b) jejunum;
- c) ileum;
- d) rectum.

48. Which intestinal cells participate in membrane (parietal) digestion?

- a) goblet cells;
- b) absorptive (brush-border) cells;
- c) Paneth cells;
- d) Kulchitsky cells.

49. Which intestinal cells participate in regeneration?

- a) absorptive cells;
- b) goblet cells;
- c) undifferentiated (non-brush-border) cells;
- d) endocrine cells.

50. In which intestinal segment do goblet cells predominate?

- a) duodenum;
- b) jejunum;
- c) ileum;
- d) colon.

51. What is the source of liver and pancreas development?
a) ectoderm; b) endoderm; c) mesoderm; d) mesenchyme.
52. In violation of which liver function are secondary sexual characteristics sharply expressed?
a) protein-forming; b) bile-forming;
c) detoxification; d) urea-forming.
53. When liver function is impaired, does blood clotting decrease?
a) bile-forming; b) protein-forming;
c) detoxification; d) urea-forming.
54. Liver macrophages are represented by:
a) hepatocytes; b) lipocytes; c) Kupffer cells; d) labrocytes.
55. The intracellular hemocirculation system of the liver is represented by capillaries.:
a) with a continuous basement membrane;
b) with a partially discontinuous basement membrane;
c) with an intermittent basement membrane;
d) fenestrated type.
56. The structural and functional unit of the pancreas is represented by:
a) an acinus; b) a lobule.;
c) the triad; d) the trabecula.
57. What is the name of a pancreatic cell with large granules in the apical part and a granular endoplasmic reticulum in the basal part?
a) hepatocyte; b) central cell;
c) acinous cell; d) endocrinocyte.
58. Which cells of the endocrine islet of Langerhans produce insulin?
a) A-cells; b) B-cells;
c) D cells; d) PP cells.
59. Which cells of the endocrine islet of Langerhans produce glucagon?
a) A cells; b) B cells;
c) D-cells; d) PP-cells.
60. What hormone is produced by D-cells of the endocrine islet of Langerhans?
a) insulin; b) somatostatin;
c) VIP; d) pancreatic polypeptide.

Teeth

1. List the functions of the teeth:
a) supporting, phonetic, mechanical, secretory;
b) supporting, trophic, mechanical, sensory;
c) phonetic, sensory, aesthetic, trophic;
d) mechanical, phonetic, sensory, aesthetic.
2. Name the timing of the development of baby teeth:
a) on the 30th day of embryonic development;
b) at the 10th week of embryonic development;
c) at the 6th-7th week of embryonic development;

d) in the 1st week after the birth of the child.

3. List the parts that make up the dental bud:

- a) the dental papilla, the dental sac, the bone plate;
- b) epithelial dental organ, dental sac, surrounding mesenchyme;
- c) epithelial dental organ, dental papilla, bone plate;
- d) epithelial dental organ, dental papilla, dental sac.

4. Which successive stages are distinguished in the first period of dental histogenesis?

- a) the stage of the dental plate and the stage of the "cap";
- b) the stage of the "cap" and the stage of the "bell";
- c) the stage of the dental plate and the stage of the dental ball;
- d) the stage of the tooth ball and the stage of the "bell".

5. A dental plate is:

- a) a protrusion of the gum epithelium into the oral cavity;
- b) ingrowth of the gingival epithelium into the mesenchyma to be treated;
- c) accumulation of mesenchymal cells under the gum epithelium;
- d) thickening of the gum epithelium;

6. What cells do the inner cells of the dental cup differentiate into?

- a) dentinoblasts;
- b) into the pulp cells of the enamel organ;
- c) into the pulp cells of the tooth;
- d) into the ameloblasts;

7. What is a dental papilla?

- a) mesenchymal cells surrounding the enamel organ;
- b) mesenchymal cells embedded in the dental cup;
- c) the inner cells of the dental cup;
- d) the outer cells of the dental cup.

8. What elements of the tooth develop from the dental papilla?

- a) ameloblasts and periodontium;
- b) cementoblasts and periodontium;
- c) dentinoblasts and dental pulp;
- d) the pulp of the enamel organ.

9. What is a dental pouch?

- a) mesenchymal cells surrounding the enamel organ;
- b) mesenchymal cells embedded in the dental cup;
- c) the inner cells of the dental cup;
- d) the outer cells of the dental cup

10. Which elements of the tooth develop from the dental sac?

- a) dentinoblasts and periodontium;
- b) ameloblasts and periodontium;
- c) cementoblasts and periodontium;
- d) dentinoblasts and dental pulp;

11. What are the sources of development of the enamel organ?

- a) ectoderm; b) endoderm;
- c) mesoderm; d) mesenchyme.

12. Which cells of the enamel organ are involved in the histogenesis of dentin?

- a) ameloblasts; b) odontoblasts;

c) cementoblasts; d) fibroblasts.

13. Name the cells that form dentin:

a) odontoblasts; b) ameloblasts;

c) chondroblasts; d) osteoblasts.

14. Name the part of the dental bud in which odontoblasts are formed:

a) they are transformed from the internal cells of the epithelial dental organ;

b) from the pulp cells of the epithelial dental organ;

c) from the cells of the inner surface of the dental sac;

d) from the cells of the periphery of the dental papilla.

15. Name the organelles that are most developed in odontoblasts in connection with their function:

a) mitochondria, a coarse-grained endoplasmic reticulum;

b) granular endoplasmic reticulum, Golgi complex, mitochondria;

c) ribosomes, coarse-grained endoplasmic reticulum, lysosomes;

d) lysosomes, Golgi complex, mitochondria.

16. Specify the stages of dentin development:

a) the formation of organic components of the intercellular substance and its calcification;

b) differentiation of mesenchymal cells into odontoblasts and their synthesis of intercellular matter;

c) deposition of hydroxyapatites in the form of lumps and grains and their fusion into spherical structures;

d) polarization of odontoblasts and their synthesis of intercellular matter.

17. Determine the tooth tissue, the organic matrix of which is formed by radial and tangential collagen fibers:

a) enamel; b) dentin;

c) cement; d) pulp.

18. From which of the listed cells does enamel develop?

a) from ameloblasts; b) from odontoblasts;

c) from cementoblasts; d) from fibroblasts.

19. In which tooth tissue are the Schragger stripes and Retzius lines located?

a) in enamel; b) in dentine; c) in pulp; d) in cement.

20. Retzius physiological lines are areas of enamel with:

a) the least calcification;

b) without modification;

c) the greatest calcification;

d) with the greatest and least calcification.

21. Name the source of dental pulp development:

a) odontoblasts; b) ameloblasts;

c) mesenchyme of the dental papilla; d) mesenchyme of the dental sac.

22. In which layer of the pulp are the poorly differentiated cells located?

a) in the odontoblastic layer; b) in the Weyl layer;

c) in the subodontoblastic layer; d) in the central one.

23. Pear-shaped cells with

- numerous long processes are located in the peripheral layer of the pulp, and a well-developed granular endoplasmic reticulum is clearly visible in the cytoplasm. What kind of cells are these?
- a) fibroblast; b) poorly differentiated;
 - c) odontoblast; d) cementoblast.
24. In which tooth tissue are the free denticles located?
- a) in the enamel; b) in the dentine;
 - c) in pulp; d) in cement.
25. What kind of fibers is missing in the pulp?
- a) collagen; b) elastic;
 - c) reticular; d) precollagenic.
26. What is the source of cement development?
- a) external cells of the enamel organ; b) internal cells of the enamel organ;
 - c) mesenchyme of the dental papilla; d) mesenchyme of the dental sac.
27. In which tooth tissue are there no blood vessels?
- a) in pulp; b) in cement;
 - c) in the bone alveoli; d) in the periodontium.
28. In which tooth tissue are Sharpey fibers located?
- a) in enamel; b) in dentine;
 - c) in pulp; d) in cement.

RESPIRATORY SYSTEM

1. What functions does the respiratory system perform?
 - a) gas exchange; b) digestion;
 - c) basic exchange; d) protective.
2. From which germ layer does the epithelium of the vestibule of the nasal cavity develop?
 - (a) ectoderm; b) endoderm;
 - c) mesoderm; d) mesenchyme.
3. Name the envelope of the airways in which unicellular endoepithelial glands are found:
 - a) mucous; b) submucosal;
 - c) fibrous-cartilaginous; d) adventitious.
4. The epithelium of the respiratory tract contains unicellular endoepithelial glands that secrete a mucous secretion onto the surface of the epithelial layer, which moistens the epithelium and creates conditions for dust particles to adhere to the air. Name these glands.
 - a) mixed protein-mucous glands; b) argentophin endocrinocyte;
 - c) goblet-shaped exocrinocyte; d) bordered epitheliocyte.
5. The epithelium of the airways has an organoid of special significance, name:
 - a) flagellum; b) myofibrils;
 - c) cilia; d) microvilli.
6. The mucous membrane of the trachea is lined with epithelium:
 - a) single-layered, single-row, flat;

- b) single-layered cylindrical ciliated;
- c) multi-layered flat non-horny;
- d) multi-layered flat keratinizing.

7. Name the shell of an organ in which a thin layer of loose fibrous unformed connective tissue without a sharp border passes into dense fibrous connective tissue of the suprachondria of open cartilaginous rings and contains a large number of mixed protein-mucous glands:

- a) the own plate of the mucous membrane of the larynx.;
- b) the submucosa of the trachea;
- c) adventitial membrane of the main bronchus;
- d) the serous membrane of the lung.

8. In which organ is the fibrous-cartilaginous membrane represented by hyaline open rings, the free ends of which are connected by bundles of smooth muscle cells attached to the outer surface of the cartilage:

- a) large-caliber bronchus; b) medium-caliber bronchus;
- c) trachea; d) small-caliber bronchus.

9. The adventitial membrane of the trachea is represented by:

- a) loose fibrous unformed connective tissue;
- b) dense fibrous unformed connective tissue;
- c) adipose tissue;
- d) muscle tissue.

10. The glands are located in the submucosal base of the trachea according to the structure and nature of the secretion:

- a) simple protein; b) simple mucous membranes;
- c) complex mucous membranes; d) complex protein-mucous membranes.

11. Which cells of the epithelium of the airways are called cambial?

- a) ciliated; b) secretory;
- c) basal; d) goblet-shaped.

12. Bronchial cartilage tissue develops from:

- a) ectoderm; b) endoderm;
- c) mesoderms; d) mesenchyma.

13. The preparation shows a bronchus, the fibrous-cartilaginous membrane of which is represented

by elastic cartilaginous tissue. Name this bronchus:

- a) large-caliber bronchus; b) trachea;
- c) medium-caliber bronchus; d) small-caliber bronchus.

14. Name a bronchus consisting of a mucous membrane with a low cubic epithelium, a thickened submucosal base in which there are no glands and an adventitial membrane:

- a) trachea; b) a large-caliber bronchus;
- c) medium-caliber bronchus; d) small-caliber bronchus.

15. In what structure of the lung is the surfactant located?

- a) small-caliber bronchus; b) terminal bronchiole;
- c) respiratory bronchioles; d) alveoli.

16. In what structure of the lung are alveolocytes of type I, II:

- a) small-caliber bronchus; b) terminal bronchiole;

c) respiratory bronchioles; d) alveoli.

17. Cells of irregular flattened elongated shape, on the free surface of the cytoplasm of which there are very short cytoplasmic outgrowths facing the alveolar cavity. Name them

a) basal; b) edged;

c) type I alveolocytes; d) type II alveolocytes.

18. The components of the air–hematic barrier are all of the following, except:

a) fibroblasts;

b) respiratory alveolar cells;

c) endothelial cells of blood capillaries;

d) basement membranes.

46

19. Name the cells containing acidic and alkaline phosphatase capable of synthesizing surfactant:

a) goblet-shaped; b) secretory;

c) type I alveolocytes; d) type II alveolocytes.

20. The main functions of a surfactant should include everything except:

a) ensuring the diffusion of gases;

b) reduction of the surface tension of the alveolar wall;

c) an obstacle to the penetration of fluid into the alveoli;

d) increased surface tension of the alveolar wall.

21. Which cells provide air heating at the alveolar level?

a) type I alveolocytes; b) type II alveolocytes;

c) alveolocytes of type III; d) macrophages.

22. The pleura of the lung develops from:

a) ectoderm; b) endoderm;

c) mesoderms; d) mesenchyma.

LEATHER AND ITS DERIVATIVES

1. What is the source of the epidermis development?

- a) endoderm; b) ectoderm;
- c) mesenchyme; d) mesoderm.

2. What is the source of the dermis development?

- a) ectoderm; b) somite derivative;
- c) a derivative of splanchnotome; d) mesenchyme.

3. Name the source of hypoderma development.

- a) ectoderm; b) endoderm;
- c) mesenchyme; d) mesoderm.

4. What type of epithelium does the epidermis belong to?

- a) pseudo-multi-layer (single-layer multi-row) ;
- b) multilayer planar transition;
- c) multilayer flat keratinizing;
- d) multi-layered flat non-horny.

5. Which organoid of special significance is characteristic of the epithelial cells of the epidermis?

- a) myofibrils; b) neurofibrils;
- c) tonofibrils; d) cilia.

6. Which layer of the epidermis contains Merkel and Langerhans cells?

- a) basal; b) thorny;
- c) granular; d) horny.

7. Which layers in the epidermis are responsible for physiological regeneration?

- a) basal; b) granular;
- c) shiny; d) horny.

8. Which cells of the epidermis give a positive reaction to dopa oxidase?

- a) epidermocytes; b) melanocytes;
- c) Merkel; d) Langerhans.

9. Which cells of the epidermis connect to the underlying layer using semidesmosomes?

- a) basal epidermocytes; b) spiny;
- c) granular; d) horny cells.

10. Which cells of the epidermis contain keratoglycin protein?

- a) basal epidermocytes; b) thorny;
- c) granular; d) horny.

11. Which cells of the epidermis contain the protein eleidin?

- a) basal epidermocytes; b) thorny;
- c) cells of the shiny layer; d) horny.

12. On the electronogram, the cells of the epidermis of the skin in the cytoplasm have all

the organelles of common importance, as well as granules in the form of a "tennis racket". Name this

cell.

- a) basal epidermocyte; b) Merkel cell;
- c) Langerhans cell; d) horny scales.

13. What kind of connective tissue does the papillary layer of the dermis consist of?

- a) dense fibrous unformed;
- b) dense fibrous decorated;
- c) loose fibrous unformed;
- d) reticular connective tissue.

14. What kind of connective tissue does the reticular layer of the dermis of the skin consist of?

- a) dense fibrous unformed;
- b) dense fibrous decorated;
- c) loose fibrous unformed;
- d) reticular connective tissue.

15. In which layer of the skin is the lamellar body of the Vater-Pachinni?

- a) the spiny layer of the epidermis; b) the reticulated layer of the dermis;
- c) papillary layer of the dermis; d) hypodermis.

16. In which layer of the skin do the tactile bodies of Meissner lie?

- a) the thorny layer of the epidermis; b) the reticulated layer of the dermis;
- c) papillary layer of the dermis; d) hypodermis.

17. Name the source of hair development.

- a) derivatives of mesenchyme; b) derivatives of mesoderm;
- c) derivatives of nervous tissue; d) derivatives of epidermis.

18. In which layer of the skin does the hair shaft lie?

- a) the epidermis; b) the papillary layer of the dermis;
- c) the reticular layer of the dermis; d) hypodermis.

19. In what substance of the hair are melanocytes deposited?

- a) in the germ zone; b) in the medulla.;
- c) in the cortical substance; d) in the cuticle.

20. In what structures of the hair is there solid keratin?

- a) germ zone; b) brain matter;
- c) cortical matter; d) melanocytes.

21. In which substance of the hair do the cells lie in the form of coin columns?

- a) in the germ zone; b) in the medulla;
- c) in the cortical substance; d) in the cuticle.

22. What are the sweat glands?

- a) simple tubular unbranched;
- b) simple tubular unbranched, but the terminal section is rounded in the form of a glomerulus;
- c) simple tubular branched;
- d) complex tubular branched.

23. Name the type of secretion of sweat glands that begin to function during puberty

- a) merocrine; b) apocrine;
- c) endocrine; d) holocrine.

24. Name the structure of the sebaceous glands:

- a) simple tubular unbranched;
- b) simple tubular branched;
- c) simple alveolar branched;
- d) simple alveolar unbranched.

25. Where does the excretory duct of the sebaceous gland come off?

- a) into the hypodermis; b) the reticulated layer of the dermis;
- c) the hair bulb; d) the hair funnel.

26. Name where the sebaceous glands are missing:

- a) back skin; b) forehead skin;
- c) the auricle; d) palms and soles.

27. What is the source of nail development?

- a) bone tissue; b) epidermis;
- c) cartilage tissue; d) muscle tissue.

29. What structures of the nail contain hard keratin?

- a) nail plate; b) nail bed;
- c) the nail plate; d) the nail roller.

THE EXCRETORY SYSTEM

1. Which organ goes through three stages in its development?

- a) liver; b) spleen;
- c) kidney; d) pancreas.

2. Name the organ where the medulla is represented by 8-12 pyramids, from which thin rays grow into the cortical substance.

- a) lymph node; b) kidney;
- c) the testis; d) the ovary.

3. Name the nephron if the renal corpuscle, proximal and distal sections lie in the cortical substance on the border with the medulla, and the loops are located in the medulla.

- a) cortical; b) intermediate;
- c) juxtamedullary; d) juxtaglomerular.

4. Identify the nephron lying in the cortical substance, while their loops descend into the outer zone of the medulla.

- a) cortical; b) intermediate;
- c) juxtamedullary; d) juxtaglomerular.

5. Specify the nephron when it lies completely in the cortical substance of the kidney:

- a) cortical; b) intermediate;
- c) juxtamedullary; d) juxtaglomerular.

6. In which kidney nephrons is the carrying arteriole smaller in diameter than the carrying arteriole?

- a) in the cortical; b) in the intermediate;
- c) juxtamedullary; d) juxtaglomerular.

7. In which nephrons of the kidney is the bearing arteriole larger in diameter than the carrying arteriole?

- a) cortical; b) intermediate;
- c) juxtamedullary; d) juxtaglomerular.

8. In which part of the renal nephron is the filtration of fluid from the blood plasma?

- a) the proximal section; b) the Henle loop;
- c) the distal part; d) the renal corpuscle.

9. What is the structure of the kidney at the top of the pyramids that flows into the papillary canal?

- a) the distal part of the nephron; b) the loop of Henle;
- c) pelvis; d) collecting tube.

10. There are arteries on the border of the cortical and medulla of the kidneys. Name it.

- a) interlobular; b) arc;
- c) bringing; d) intra-scapular.

11. In which vessels of the kidney does the second phase of reabsorption occur, the reverse absorption of fluids and substances?

54

- a) primary capillaries; b) interlobular capillaries;
- c) secondary capillaries; d) stellate veins.

12. Where does the third phase of urination, acidification of urine, occur?

- a) in the renal corpuscles; b) in the papillary canals;
- c) in cups; (d) in collecting tubes.

13. The vascular glomerulus of the renal corpuscle of the nephron is represented by:

- a) a capillary with an intermittent basement membrane;
- b) arteriole;
- c) fenestified capillary;
- d) a capillary with a continuous basement membrane.

14. In which organ do capillary endothelial cells and podocyte organ cells lie on a common three-layer membrane?

- a) kidneys; b) liver; c) testis; d) stomach.

15. Which cells have wide large processes - cytotrabecules, from which small processes - cytopodia branch off?

- a) hepatocyte; b) epitheliocyte;
- c) myocyte; d) podocyte.

16. Name the part of the urinary tract where the epithelium is represented by light and dark

cells. Do dark cells secrete hydrochloric acid and resemble

the parietal gland cell of the stomach in structure?

- a) pelvis; b) collecting tube;
- c) the calyx; d) the ureter.

17. Determine the structure of the renal corpuscle, if it has a 3-layered structure. The outer

and inner layers are light, and the denser middle layer is dark. The middle layer forms a mesh with a cell diameter of up to 7 nm with its microfibrils.

- a) the inner leaf of the capsule; b) the walls of the capillary;
- c) the basement membrane; d) the outer leaf of the capsule.

18. In case of kidney disease - nephritis, shaped

blood elements, plasma proteins with large molecules, immune bodies, fibrinogen, etc. are found in the patient's urine. Specify which part of the nephron is being disrupted?

- a) the proximal department;
- b) the distal section;
- c) filtration barrier - nephron capsule;
- d) juxtaglomerular apparatus.

19. Cells absorb proteins from primary urine by pinocytosis, which are further broken down to amino acids under the action of lysosomal enzymes. Determine which part of the nephron these cells are located in?

- a) the proximal part; b) the descending part of the loop;
- c) the ascending part of the loop; d) the distal part.

20. Which part of the nephron cells have a cubic shape, a brush border, basal striation, and many lysosomes and pinocytic vesicles?

- a) distal section; b) proximal section;
- c) the direct distal section; d) the descending part of the loop.

21. What is the cell structure of the tubules of the kidney nephron, which is of great importance

for passive reverse absorption of water?

- a) brush rim; b) mitochondria; c) folds of cytolemma; d) lysosomes.

22. Specify which organoid of the nephron tubule cells plays an important role in the active

reabsorption of certain electrolytes (sodium, chlorides, etc.)?

a) Golgi apparatus; b) lysosomes; c) endoplasmic reticulum; d) mitochondria.

23. Determine the structure of the kidney nephron tubule cells with high activity alkaline phosphatase and those involved in the complete reabsorption of glucose:

a) brush border; b) basal striation;

55

c) pinocytosis vesicles; d) mitochondria.

24. A patient's urine sample contains a large amount of proteins and sugar. Which part of the nephron has undergone qualitative changes?

a) the descending part of the loop; b) the ascending part of the loop;

c) the proximal section; d) the distal section.

25. Which section of the nephron has a diameter of 13-15 microns, the wall is formed by flat cells.

Is the cytoplasm light, poor in organoids?

a) proximal division; b) distal division;

c) the descending part of the loop; d) the ascending part of the loop.

26. Determine the renal nephron section if the diameter of the tubule is 30-50 microns, the wall is formed

by a low prismatic epithelium devoid of a brush border, with a well-defined

basal striation:

a) the proximal section; b) the descending part of the loop;

c) the ascending part of the loop; (d) the distal part.

27. What is the structure of the endocrine system of the kidneys?

a) mesangial cells; b) juxtaglomerular apparatus;

c) podocyte cells; d) renal corpuscle.

28. Name the cells lying in the wall of the carrying and carrying arterioles under the endothelium,

have an oval shape, and renin granules in the cytoplasm:

- a) mesangial; b) juxtavascular;
- c) juxtaglomerular; d) interstitial.

29. Which section of the nephron forms a dense spot lying between the arterioles?

- a) the proximal section; b) the descending section of the loop;
- c) ascending section of the loop; d) distal section.

30. In which structure of the endocrine system of the kidneys are cells that are tall in shape,

devoid of basal striation and basement membrane, and are "sodium receptors":

- a) dense spot; b) juxtaglomerular cells;
- c) juxtavascular cells; d) interstitial cells.

31. The juxtaglomerular apparatus includes cells with irregular shapes, fibrillar structures are detected in the cytoplasm. They have long appendages in contact with the mesangial cells of the glomerulus. Identify them.

- a) dense spot; b) juxtavascular cells;
- c) juxtaglomerular cells; d) interstitial cells.

32. Which cells belong to the prostaglandin apparatus of the kidneys, if they are of mesenchymal

origin, organelles are well developed in the cytoplasm and lipid granules are located.

Is the shape elongated, process-like, which connects it to the tubules of the nephron and

blood capillaries?

- a) mesangial cells; b) juxtavascular cells;
- c) interstitial cells; d) juxtaglomerular cells.

33. Which cells of the prostaglandin system are the source of the formation

of prostaglandins that have an antihypertensive effect?

- a) mesangial cells;
- b) cells of the distal part;
- c) dark cells of collecting tubules;
- d) light cells of collecting tubules.

34. Tell the age of the person if the same volume of kidney tissue accounts for up to 50 glomeruli:

- a) newborn baby; b) one-year-old child;
- c) adolescence; d) adulthood.

35. Specify the functional significance of the renal cups and pelvis.

- a) urinary function; b) urinary function;

56

- c) urinary function; d) urinary filtration function.

36. Determine the organ of the urinary tract, if the mucosa forms deep longitudinal folds, alveolar-tubular glands are located in the submucosal base. The muscle membrane is two-layered in the upper part, and three-layered in the lower part.

- a) papillary canal; b) pelvis;
- c) the ureter; d) the bladder.

37. Name the organ if it consists of 4 layers: mucosa, submucosa, muscle and outer membranes. The mucosa is represented by a transitional epithelium and its own plate.

- a) lung; b) liver; c) kidney; d) bladder.

38. Which organ is capable of being in two states - stretched and compressed - due to one type of epithelium?

a) heart; b) bladder; c) gallbladder; d) appendix.

THE MALE REPRODUCTIVE SYSTEM

1. What functions does the male reproductive system perform?

a) generative and endocrine; b) excretory and endocrine;
c) respiratory and protective; d) protective and receptor.

2. From what sources does the male reproductive system develop?

a) sexual roller, primary kidney, mesenchyme;
b) sexual roller, ventricle, endoderm;
c) Muller's duct, myotoma, genital roller;
d) secondary kidney, genital roller, mesenchyme.

3. Name the location of the primary germ cells (gonoblasts).

a) allantois; b) amnion;
c) yolk sac; d) serosa.

4. How is the migration of gonoblasts into the genital roller carried out?

(a) by blood flow and pseudopodia; b) by blood flow and primary urine;
c) blood flow and secondary urine; d) rheotaxis and charge difference.

5. What happens if the gonoblast does not enter the genital roller?

a) the reproductive system will develop in its place;
b) the reproductive system will not develop;
c) the reproductive system will develop out of place;
d) the excretory system will not develop.

6. From which rudiment do the convoluted tubules of the testis develop?

a) from the tubules of the primary (trunk) kidney; b) from the Wolf duct;
c) from the genital cords; d) from the tubules of the ventricle (cephalic kidney).

7. What develops from the tubules of the primary (trunk) kidney during the formation of the male reproductive system?

a) convoluted tubules of the testis; b) testicular network;
c) the vas deferens; (d) vas deferens.

8. What develops from the Wolf's duct during the laying of the male reproductive system?

a) convoluted tubules of the testis; b) testicular network;
c) the canal of the appendage; d) the straight tubules.

9. Which organs of the male reproductive system develop from the genitourinary sinus?

a) external genitalia; b) testis;
c) appendage; d) male uterus.

10. What happens in the convoluted tubules of the testis?

a) spermatogenesis; b) oogenesis;
c) phagocytosis; d) pinocytosis.

11. How many convoluted tubules are there in the testes of a mature man and what is their total length?

- a) 300-450 and 200-300 meters; b) 600-800 and 100-200 meters;
- c) 100-200 and 200-3000 meters; d) 800-1000 and 500-800 meters.

12. What functions does the supporting Sertoli cell perform?

- a) suction; b) contractile;
- c) trophic; d) excretory.

13. What function do interstitial Leydig cells perform?

- a) endocrine; b) phagocytic;
- c) trophic; d) gas exchange.

14. What hormone is secreted by the interstitial Leydig cell?

- a) progesterone; (b) Testosterone;
- c) estrogen; d) oxytocin.

15. How do spermatogonies divide in the first period of reproduction during spermatogenesis?

- a) mitosis; b) meiosis; c) amitosis; d) budding.

59

16. How many divisions occur during maturation during spermatogenesis?

- a) one; (b) two; c) three; d) four.

17. What happens to the spermatid in the IV period (formation) during spermatogenesis?

- a) spermiogenesis; b) oogenesis;
- c) histogenesis; d) organogenesis.

18. What is the chromosome set of spermatogonies?

- a) 23 chromosomes; (b) 46 chromosomes; (c) 92 chromosomes; (d) 28 chromosomes.

19. What is the chromosome set of prespermatids (spermatocytes of the second order)?

- a) 23 chromosomes; (b) 46 chromosomes; c) 92 chromosomes; d) 28 chromosomes.

20. What is the chromosome set of spermatids?

- (a) 23 chromosomes; b) 46 chromosomes; c) 92 chromosomes; d) 28 chromosomes.

21. Which sex chromosomes are contained in spermatozoa?

- (a) X and Y; b) X and X; c) Y and Y; d) A and B.

22. What effect does high temperature have on spermatogenesis?

- a) disrupts spermiogenesis; b) disrupts reproduction;
- c) disrupts maturation; d) disrupts growth.

23. At what age is the lumen of the convoluted tubules of the testis larger?

- a) in a newborn; b) in a boy under 6 years of age;
- c) for men under 50 years of age; d) for men after 60 years of age.

24. What kind of tissue makes up the skeleton of the wall of the convoluted tubule of the testis?

- a) loose fibrous; b) bone tissue;
 - c) cartilaginous tissue; (d) fibrous tissue.
25. What epithelium is covered by the vas deferens?
- a) multilayered, flat, non-horny;
 - b) multi-layered transition;
 - c) single-layer double-row flickering;
 - d) multi-layered flat organizational.
26. What functions does the prostate gland perform?
- a) endocrine, exocrine, contractile;
 - b) excretory, endocrine, protective;
 - c) endocrine, protective, excretory;
 - d) exocrine, protective, phagocytic.
27. What is the prostate gland in terms of tissue?
- a) glandular-muscular organ; b) musculoskeletal-connective tissue organ;
 - c) neuromuscular organ; d) musculoskeletal organ.
28. What kind of epithelium is covered with the mucous membrane of the ejaculatory canal?
- a) multilayered flat non-horny;
 - b) multi-layered flat keratinizing;
 - c) multi-layered transition;
 - d) single-layer multi-row flickering.
29. What kind of tubules (vessels) are found in the cavernous bodies of the penis?
- a) true capillary; b) precapillary;
 - c) sinusoidal; (d) lacuna.

THE FEMALE REPRODUCTIVE SYSTEM

1. Name the embryonic beginnings from which the ovary develops:

- a) intestinal endoderm, coelomic epithelium;
- b) the indifferent sex gland, tubules of the mesonephros;
- c) the indifferent sex gland; gonoblasts
- d) the indifferent sex gland, gonoblasts, mesenchyme.

2. What morphological type of organs does the ovary belong to?

- a) layered;
- b) parenchymal zonal;
- c) parenchymal bundle;
- d) parenchymal lobule.

62

3. What is the cortical substance of the ovary?

- a) RVNST with blood vessels and nerves;
- b) a collection of follicles and yellow bodies at different stages of development;
- c) a set of yellow bodies at different stages of development;

d) a set of primordial follicles.

4. Numerous primordial follicles, follicles in varying degrees of growth, as well as atretic, white and yellow bodies are found on the ovary section. Which part is the ovary represented?

- a) cortical substance; b) cerebral substance;
- c) capsule; d) neurovascular bundle.

5. What is the formation of the ovarian medulla?

- a) RVNST with blood vessels;
- b) growing and atretic follicles;
- c) yellow and white bodies;
- d) RVNST and primordial follicles

6. What structure of the ovary consists of loose fibrous unformed connective tissue in which blood vessels and nerve fibers are located?

- a) cortical substance; (b) Brain matter;
- c) Graaf's vesicle; d) primordial follicle.

7. The primordial follicle is characterized by the following features:

- a) it contains ovogonia surrounded by a single layer of flat follicular cells;
- b) contains an ovocyte of the 2nd order, surrounded by a single layer of flat follicular cells;
- c) contains an ovocyte of the 1st order, surrounded by two layers of cubic follicular cells;
- d) contains an ovocyte of the 1st order, surrounded by a single layer of flat follicular cells.

8. What is the shape of the folliculocytes in the primary follicle?

- (a) flat; b) cubic;
- c) cylindrical; d) cone-shaped.

9. What is the shape of the egg:

- a) appendage; (b) Rounded;
- c) prismatic; d) equipped with a flagellum.

10. In what period of oogenesis is the cell of the primary follicle located?

- a) reproduction; (b) growth;
- c) maturation; d) formation.

11. An increased content of estrogens was found in the woman's blood. What structures

are the ovaries responsible for the increased hormone levels?

- a) white body; b) yellow body;
- c) the atretic body; (d) a growing follicle.

12. What layers does the follicle theca consist of?

- a) grainy and pale;
- b) fibrous and transitional;

c) fibrous and vascular;

d) radiant and granular.

13. The outer connective membrane of a growing follicle includes the following tissues:

(a) loose, fibrous, unformed; (b) dense, fibrous, shaped;

c) muscular; d) cartilaginous.

14. What hormones do the interstitial cells of the follicle theca produce?

a) estrogens; b) progesterone and relaxin;

c) inhibins; (d) androgens.

15. Specify the mature ovarian follicle:

a) vesicular follicle; b) white body;

c) the primary follicle; d) the corpus luteum.

63

16. Where in the tertiary follicle is the ovocyte of the 2nd order localized?

a) in the center;

b) in the granulosa layer;

c) in the vascular layer of the fluid;

d) in the ovipositor tubercle, surrounded by a radiant crown.

17. Choose the correct definition of ovulation:

a) it is the growth and maturation of the follicle;

b) this is the process of yellow body formation;

c) this is the rupture of the tertiary follicle and the exit of the ovocyte of the second order into the peritoneal cavity;

d) these are age-related changes in the ovary.

18. On what day, during the 28-day menstrual cycle, does ovulation occur?

a) 7-8 days; b) 12-14 days;

c) day 20-22; d) day 25-26.

19. The yellow body synthesizes hormones:

a) estrogens; b) androgens;

c) progesterone; d) gonadocrinin.

20. What is the duration of the menstrual corpus luteum?

a) 7-8 days; b) 12-14 days;

c) 20-22 days; d) 30-40 days.

21. What is the duration of the functioning of the corpus luteum of pregnancy?

a) 7-8 days; b) 30-40 days;

c) 60-90 days; d) 120-190 days.

22. Which of the listed structures is formed in place of the corpus luteum?

a) primary follicle; b) vesicular follicle;

c) white body; d) atretic body.

23. On the section of the ovarian cortex, large oval formations are visible, the central parts of which are represented by a connective tissue scar. Name these structures:

- a) yellow body; b) white body;
- c) atretic; d) a growing follicle.

24. What is the name of the process of destruction of ovarian follicles?

- a) degeneration; b) atresia;
- c) atrophy; d) desquamation.

25. In the cortical substance of the ovary, structures are visible that look like yellow bodies, in

the center of which there is a wrinkled shiny shell. Name these structures:

- a) primary follicle; b) white body;
- c) yellow body; d) atretic body.

26. The atretic body consists of:

- a) follicles; b) luteocytes;
- c) thecocytes; d) pigmentocytes.

27. What is the fate of the atretic body?

- a) ovulation; (b) involution;
- c) luteinization; d) proliferation.

28. What phases are distinguished in the ovarian cycle?

- a) menstrual, postmenstrual;
- b) premenstrual, postmenstrual;
- c) follicular, luteal;
- d) follicular, ovulation, luteal.

29. A histological preparation has been prepared from the organs of the female genital tract, in which

a mucous membrane lined with two types of cells is visible: ciliated and glandular.

Determine which part of the pathways is represented on the drug:

- a) oviducts; b) uterus; c) vagina; d) parametrium.

64

30. Which epithelium lines the mucous membrane of the oviduct?

- a) single-layered flat; b) multilayered flat;
- c) cubic; d) single-layer, single-row cylindrical.

31. What is the name of the inner lining of the uterus?

- a) endothelium; b) endomysium;
- c) endometrium; d) perimetrium.

32. What is the name of the middle lining of the uterus?

- a) perimetrium; b) myometrium;
- c) endometrium; d) perimysium.

33. What is the name of the outer lining of the uterus?

- a) parametri; () perimetry;
- c) endometrium; d) perimysium.

34. In which lining of the uterus can signs of a parenchymal organ be seen?

- (a) in the myometrium; (b) in the endometrium;

c) in the perimetrium; d) in the endometrium and myometrium.

35. What is the name of the middle layer of the myometrium and what is the direction of the bundles of myocytes in it?

- a) submucosal, circular;
- b) vascular, circular;
- c) supravascular, oblique;
- d) subcasular, oblique.

36. What size do smooth muscle cells of the myometrium reach during pregnancy?

- a) 50 microns; b) 100 microns;
- c) 500 microns; d) 1000 microns.

37. Choose the correct sequence of phases of the menstrual period:

- a) desquamation, secretion, regeneration;
- b) regeneration, secretion, desquamation;
- c) secretion, desquamation, regeneration;
- d) desquamation, regeneration, secretion.

38. Remnants of the functional layer of the endometrium (the bottoms of the uterine glands) were found in the uterus. What phase of the menstrual cycle are we talking about?

- a) desquamation; b) proliferation;
- c) secretion; d) regeneration.

39. On a histological preparation made from the uterine wall of a healthy woman, the endometrium is covered with a cylindrical epithelium without cilia, the uterine glands are straight, and there are no decidual cells. What is the stage of the sexual cycle?

- a) desquamation; b) proliferation;
- c) secretion; d) regeneration.

40. On a histological preparation made from the uterine wall of a healthy woman, the endometrium is covered with highly prismatic epithelium with cilia, and the uterine glands

are convoluted, with many deciduous cells. What stage of the ovarian-menstrual cycle does the drug demonstrate?

- a) desquamation; b) proliferation;
- c) secretion; d) regeneration.

41. Which epithelium is lined with the endometrium of the uterus in the secretory phase?

- a) flat; b) cubic;
- c) cylindrical; (d) cylindrical with cilia.

42. What hormone causes the onset of the secretory phase of the menstrual cycle?

- a) oxytocin; b) progesterone;
- c) serotonin; d) follitropin.

43. Histological analysis of a biopsy of the endometrium of a healthy woman

revealed large, compactly arranged polygonal cells rich in lipids and glycogen in the stroma. What are these cells?

65

a) epithelial; b) decidual;

c) smooth muscle cells; d) fibrocytes.

44. What do the uterine glands look like in the premenstrual period?

a) in the form of straight tubes; b) in the form of branched tubes;

c) in the form of a twisted tube; d) in the form of bubbles.

45. In which phase of the ovarian-menstrual cycle is the largest amount of pituitary hormones produced?

a) proliferation; b) desquamation;

c) secretion; d) regeneration.

46. What pituitary hormones act on the uterine myometrium during the desquamation phase?

a) follicle-stimulating hormone; b) luteinizing hormone;

c) oxytocin and vasopressin; d) somatotrophic hormone.

47. Which epithelium lines the vaginal mucosa?

a) single-layer flat; b) single-layer cubic;

c) transitional; d) multilayer flat.

48. Histological analysis of a biopsy of the vaginal mucosa revealed that cells in the basal layer of the epithelium swell strongly and increase in volume, while cells in the functional layer loosen, vacuolize, and keratogalin lumps accumulate in them. Which day of the menstrual-ovarian cycle does the above picture correspond to?

a) day 4-5; b) day 7-8;

c) day 12-14; (d) day 22-24.

49. What morphological type of organs does the mammary gland belong to?

a) layered; b) parenchymal lobular;

c) parenchymal zonal; d) atypical.

50. What is the name of the secretory department of the breast?

a) lobule; b) acinus (alveoli);

c) the islet; d) the follicle.

51. The secretory part of the mammary gland includes the following cells:

a) serocytes, mucocytes, myoepitheliocytes;

b) lactocytes, mucocytes, serocytes;

c) lactocytes, serocytes, myoepitheliocytes;

d) lactocytes, myoepitheliocytes.

52. What is the type of secretion in the mammary glands?

a) merocrine; b) apocrine;

c) holocrine; d) greasy.

53. When labor activity of the uterus is weakened due

to the weak contractility of the myometrium, what hormonal intervention can help it?

a) estrogens; b) progesterone;

c) oxytocin; d) androgens.