

1. At inspection of the patient the insufficient amount of immunoglobulins was revealed. What cells of immune system produce them?
 - A. Plasma cells
 - B. T-helpers
 - C. Plasmablasts
 - D. T-suppressors
 - E. T-killers
2. At the patient with primary immune deficiency the dysfunction of antigen presentation to immunocompetent cells is revealed. The damaged function of what cells can cause it?
 - A. Macrophages, monocytes
 - B. Fibroblasts
 - C. B-lymphocytes
 - D. T-lymphocytes
 - E. O-lymphocytes
3. At the patient after appendectomy neutrophil leukocytosis with regenerative shift is determined in a blood. What is the most probable mechanism of a leukocytosis development in this case?
 - A. Intensifying a leucopoiesis
 - B. Intensifying a leucopoiesis and decrease emigration of leucocytes
 - C. To a tissue retardation of destruction of leucocytes
 - D. Retardation of emigration of leucocytes in a tissue
 - E. Redistribution of leucocytes in an organism
4. On a tissue specimen in a connective tissue the large cells filled with basophilic metachromatic granules are found out; they contain heparin and histamine. What cells are found out in a preparation?
 - A. Tissue basophils (mast cells)
 - B. Plasmocytes
 - C. Fibroblasts
 - D. Macrophages
 - E. Adipocytes
5. The reduced hemoglobin content in a blood is revealed. What function of a blood will be disturbed?
 - A. Transport of gases
 - B. Transport of hormones
 - C. Maintenance of immunity
 - D. Clotting
 - E. Transport of nutritive substances
6. At the patient with pneumonia the increase of leucocytes in the blood test is revealed. How is this phenomenon called?
 - A. Leukocytosis
 - B. Anemia
 - C. Leukopenia
 - D. Anisocytosis
 - E. Poikilocytosis

7. In a blood of the patient 14,5 % of erythrocytes with diameter more than 8 mcm, 15,5 % of erythrocytes up to 6 mcm, other erythrocytes with diameter 7,1- 7,9 mcm are revealed. How is such phenomenon called?
 - A. Anisocytosis
 - B. Erythrocytosis
 - C. Erythropenia
 - D. Physiological poikilocytosis
 - E. Pathological poikilocytosis
8. After heart attack at the patient the morphological integrity of a wall of heart was restored. At the expense of what tissue the regeneration was carried out?
 - A. Connective
 - B. Nervous
 - C. Smooth muscular
 - D. Striated muscular
 - E. Epithelial
9. In a blood smear among leucocytes the spherical cells with segmented nuclei prevail. The fine granules in their cytoplasm are stained both acidic and basic dyes. How are these cells called?
 - A. Neutrophils
 - B. Basophils
 - C. Eosinophils
 - D. Juvenile neutrophils
 - E. Monocytes
10. In slide there is a tissue, the structural unit of which is the fiber, consisting of symplastum and satellite cells, covered by a common basal membrane. For what tissue is this frame characteristic?
 - A. Skeletal striatal muscle
 - B. Smooth muscle
 - C. Cardiac muscle
 - D. Loose connective
 - E. Reticular
11. On a tissue specimen of a cartilage the isogenic groups of cells are taped. What cells are initial in formation of these groups?
 - A. Chondrocytes
 - B. Chondroblasts
 - C. Prechondroblasts
 - D. Fibroblast
 - E. Osteoblast
12. During research of a striated muscular fiber after influence of hydrolytic enzymes the destruction of thin myofilaments is observed. Which frames have been damaged?
 - A. Actin filaments
 - B. Tonofibrils
 - C. T-system
 - D. Sarcoplasmic reticulum
 - E. Myosin filaments

13. At the 53 years patient a malignant epithelial tumour of pericardium is diagnosed. What epithelium is a source of its development?
- A. Simple squamous
 - B. Transitional
 - C. Simple pseudostratified ciliated
 - D. Stratified keratinized
 - E. Stratified nonkeratinized
14. After a long inflammation of a nasal cavity mucosa the changes of an epithelium are observed. What epithelium has undergone to changes?
- A. Simple pseudostratified
 - B. Stratified squamous
 - C. Simple squamous
 - D. Stratified cuboidal
 - E. Stratified columnar
15. During the trainings at the sportsman the leg was injured. A traumatologist diagnosed break of a tendon. What type of a connective tissue forms this structure?
- A. Dense regular
 - B. Cartilage
 - C. Dense irregular
 - D. Loose fibrous connective
 - E. Reticular
16. With age the human skin is exposed to changes, which can be shown by decrease of its elasticity. What elements of a connective tissue more over provides its elasticity?
- A. Collagen and elastic fibers
 - B. Cells of epidermis
 - C. Ground substance
 - D. Connective tissue cells
 - E. Reticular fibers
17. During examination of a blood smear of the patient the cells are found out which make 0,5 % from total of leucocytes, have the S-shaped nucleus, and basophilic granules in cytoplasm. Name these cells.
- A. Basophils
 - B. Neutrophils
 - C. Eosinophils
 - D. Monocytes
 - E. Lymphocytes
18. At the patient the dry pleuritis is diagnosed. What epithelium lining pleural cavity is damaged in this case?
- A. Simple squamous
 - B. Simple columnar
 - C. Simple cuboidal
 - D. Transitional
 - E. Pseudostratified
19. Articular cartilage, as is known, has no perichondrium. What type of cartilage growth is used during its regeneration?

- A. Interstitial
 - B. Appositional
 - C. By sheath formation
 - D. Appositional and interstitial
 - E. Does not regenerate
20. During electro microscopic examination of a hyaline cartilage the cells with well advanced rough er, Golgi apparatus are found out. What function do these cells execute?
- A. Formation of intercellular Substance
 - B. Deposition of a glycogen
 - C. Nutrition of a tissue
 - D. Deposition of lipid
 - E. Destruction of intercellular Substance of a cartilage
21. In a blood smear the large (diameter 20 microns) spherical cells with pale basophilic cytoplasm, beans shaped nucleus are observed, they constitute 20% of a total amount of leucocytes. How is this clinical phenomenon called?
- A. Monocytosis
 - B. Reticulocytosis
 - C. Lymphocytosis
 - D. Leukopenia
 - E. Neutrocytosis
22. At the child, 6 years, parasitic invasion is diagnosed. What changes of the leukocytic formula is necessary to expect?
- A. Increase of quantity of eosinophils
 - B. Increase of quantity of lymphocytes
 - C. Increase of quantity of neutrophils
 - D. Decrease of quantity of eosinophils
 - E. Increase of quantity of monocytes
23. At the analysis of x-ray film of the patient the doctor has paid attention to the amplified resorption of an bone tissue in separate sites. To super activity of which cells can this phenomenon be connected?
- A. Osteoclasts
 - B. Chondroblasts
 - C. Osteocytes
 - D. Osteoblasts
 - E. Chondrocytes
24. At the patient, 56 years, a malignant epithelial tumor of a trachea was diagnosed. What epithelium is a source of development of a tumor?
- A. Simple pseudostratified ciliated
 - B. Transitional
 - C. Stratified nonkeratinized
 - D. Stratified keratinized
 - E. Simple columnar
25. By results of study of blood maculae on a place of a crime the crime-medical expert has found out, that it is a blood of the woman. To what attributes is it fixed?
- A. Presence of nuclear satellites in neutrophils

- B. Phenomenon of a poikilocytosis
 - C. Presence of microcytes and macrocytes
 - D. Presence of specific granules in eosinophils
 - E. Amount of erythrocytes
26. At the child around of a scratch on a skin the attributes of an inflammation have appeared: a pain, reddening, edema as attributes of immediate hypersensitivity. What blood cells cause these changes?
- A. Basophils
 - B. Lymphocytes
 - C. Eosinophils
 - D. Neutrophils
 - E. Monocytes
27. In a drawing the sarcomere, structural unit of striated muscles myofibril is schematically represented. It is poised between two z-lines. How will zone of a sarcomere change at the maximal contraction?
- A. Disappears
 - B. Does not change
 - C. Is enlarged in 2 times
 - D. Decreases in 2 times
 - E. Occupies all sarcomere
28. At research of a tissue specimen of a connective tissue the neutrophils are defined. What function do these cells execute, entering from a blood into a tissue?
- A. Phagocytosis of microorganisms
 - B. Nutritive
 - C. Trophic
 - D. Adjust reductions of smooth Myocytes
 - E. Dilate blood vessels
29. The physiological regeneration and reorganization of a bone is provided by osteoprogenitor cells of:
- A. Canal of an osteon, periosteum and endosteum
 - B. Wall of an osteon
 - C. Wall and canals of an osteon
 - D. Cartilage
 - E. Woven bone
30. In a slide of a human red bone marrow the clumps of huge cells which are taking place in close contact with capillaries are determined. What blood elements are formed from them?
- A. Platelets
 - B. Erythrocytes
 - C. Lymphocytes
 - D. Monocytes
 - E. Leucocytes
31. After exposure of a patient the stem cells of blood are destroyed. The renewal of what connective tissue cells will be disturbed?
- A. Macrophages

- B. Pericytes
 - C. Fibroblasts
 - D. Adipocytes
 - E. Pigment cells
32. For striated skeletal muscle tissue are characteristic all listed attributes, except for:
- A. Cellular structure
 - B. Ability to reduction
 - C. Presence of satellite cells
 - D. Presence of motor plaques
 - E. Presence of layers of connective tissue
33. During study of a striated muscle fiber after influence of hydrolytic enzymes the destruction of thick myofilaments is observed. Which structures were damaged?
- A. Myosin
 - B. Tonofibrils
 - C. T-system
 - D. Sarcoplasmic reticulum
 - E. Actin
34. During training the sportsman traumatized the leg. The doctor has put the diagnosis: break of a tendon. What type of a connective tissue does it belong to?
- A. Dense regular
 - B. Dense irregular
 - C. Loose
 - D. Reticular
 - E. Cartilage
35. During research of a blood the cells, which make 0 - 5 % from common number of leucocytes, have the S-shaped nucleus and acidophilic granules in cytoplasm are revealed. What cells are they?
- A. Eosinophils
 - B. Neutrophils
 - C. Basophils
 - D. Monocytes
 - E. Lymphocytes
36. During electro-microscopic research of a hyaline cartilage the cells with well advanced rough endoplasmic reticulum and Golgi apparatus are revealed. What function do these cells execute?
- A. Synthesis of intercellular substance
 - B. Nutrition of a cartilage
 - C. Deposition of a glycogen
 - D. Deposition of lipids
 - E. Destruction of a cartilage intercellular substance
37. On a slide the tissue is diagnosed, in which cells localized either individual or in isogenic groups, and fibers in its intercellular substance are not visible. What tissue is on slide?
- A. Hyaline cartilage
 - B. Fibrous cartilage

- C. Smooth muscle
 - D. Epithelial
 - E. Bone
38. In result of chondrodysplasia the fibrous cartilage is damaged. Where is it located?
- A. In intervertebral disks
 - B. In trachea
 - C. In an auricle
 - D. In a larynx
 - E. In bronchus
39. The convalescence of an organism from infectious disease is accompanied by neutralization of antigens by specific antibodies. What cells are they produced by?
- A. Plasmocytes
 - B. Fibroblasts
 - C. T-lymphocytes
 - D. Eosinocytes
 - E. Tissue basophils
40. After the use of honey at the teenager the allergic reaction, accompanying with a leukocytosis has appeared. What kind of a leukocytosis has arose in this case?
- A. Eosinophilia
 - B. Lymphocytosis
 - C. Neutrophilia
 - D. Basophilia
 - E. Monocytosis
41. At an experimental research of cartilage formation the sclerotome was damaged. What cells will be destroyed?
- A. Chondroblasts
 - B. Fibroblasts
 - C. Myoblasts
 - D. Epidermocytes
 - E. Smooth myocytes
42. The state when the contents of macro- and microerythrocytes in the blood is more than 25 % refers to as?
- A. Anisocytosis pathological
 - B. Erythropenia
 - C. Thrombocytopenia
 - D. Hyperglobulia
 - E. Anisocytosis physiological
43. What characteristics does the zone of hypertrophy in the epiphyseal plate have?
- A. Contains hypertrophy cells
 - B. Contains columns of actively divided cells
 - C. Contains sites of calcificated cartilage
 - D. Forms periosteal bone collar
 - E. Made of lamillar bone
44. What characteristics does zone of proliferation in the epiphyseal plate have?

- A. Contains columns of actively Divided cells
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45. What function from listed does the inner layer of perichondrium carry out?
- A. Regeneration and growth of Cartilage
 - B. Trophic and provision of Resilience
 - C. Protective
 - D. Secretory
 - E. Immunological
46. What determines cartilages mechanical properties?
- A. Extracellular matrix
 - B. Location of cells
 - C. Location of fibers
 - D. Plenty of fibers
 - E. Absence of blood vessels
47. What tissue is in places of an attachment of tendon to a bone?
- A. Fibrous cartilage
 - B. Loose fibrous
 - C. Epithelial
 - D. Hyaline cartilage
 - E. Ligament
48. The quality and quantity of fibers in cartilage are defined by:
- A. Direction and force of a load
 - B. Quantity of cells in chondrogenic islands
 - C. Level of an oxygenation germs of cartilage
 - D. Volume of a cartilage germ
 - E. Quantity of blood vessels
49. The appositional growth of a cartilage is carried out by:
- A. Applying from perichondrium
 - B. Formation of new isogenic groups of cells
 - C. Increase amount of cells in isogenic groups
 - D. Increase amount of intercellular substance
 - E. Chondrocytes
50. The interstitial growth of a cartilage is carried out by:
- A. Increase of amount of cells in isogenic groups
 - B. Applying from perichondrium
 - C. Formation of new isogenic groups of cells
 - D. Increase amount of intercellular substance
 - E. Chondroblasts
51. A distinctive attribute of a transitional epithelium in comparison with other stratified epithelia is:
- A. Presence in a superficial layer of domed shaped cells with a spherical nucleus

- B. Presence of flat cells in a superficial layer
 - C. Large number of divided cells in a basal layer
 - D. Ability to be transformed in simple type
 - E. Presence of basal cells
52. If gland has branched excretory duct, it concerns to type:
- A. Compound
 - B. Endocrine
 - C. Simple
 - D. Merocrine
 - E. Holocrine
53. In a stratified keratinized epithelium the cells are capable to mitotic division are located in a layer:
- A. Basal
 - B. Lucidum
 - C. Granulosum
 - D. Corneal
 - E. Spinosum
54. What layers does stratified keratinized epithelium contain?
- A. Basal, spinosum, granulosum, lucidum, corneum
 - B. Basal, spinosum, granulosum, corneum
 - C. Basal, intermediate, superficial
 - D. Basal, spinosum, squamous
 - E. Basal, lucidum, corneum
55. What layers does transitional epithelium contain?
- A. Basal, intermediate, superficial
 - B. Basal, spinosum, granulosum, corneum
 - C. Basal, spinosum, squamous
 - D. Basal, spinosum, granulosum, lucidum, corneum
 - E. Basal, transitional
56. Basic type of intercellular contacts in a superficial layer of a transitional epithelium:
- A. Dense contact
 - B. Desmosome
 - C. Hemidesmosome
 - D. Gap junction
 - E. Zonula occludens
57. If gland has branched secretory unit and unbranched excretory duct, it concerns to:
- A. Simple branched
 - B. Endocrine
 - C. Compound
 - D. Endoepithelial
 - E. Ccrine
58. What is the first phase of a secretory cycle of a glandulocyte:
- A. Entering initial substances in a basal part of a secretory cell
 - B. Synthesis of a secret on membranous organelles of a cell

- C. Secretion of a secretory product from a cell
 - D. Restoration of an initial condition of a glandular cell
 - E. Growth of a cell
59. What epithelium refers to as stratified?
- A. At which not all cells are connected to a basal membrane
 - B. At which the cells are not connected to a basal membrane
 - C. At which the cells differ under the form
 - D. At which all cells are connected to a basal membrane
 - E. Pseudostratified
60. What epithelium refers to as transitional?
- A. Changing a locating of layers of cells in the stretched and not
 - B. Stretched wall of organ turning from simple to stratified
 - C. Turning from squamous to columnar
 - D. Turning from non keratinized to keratinized
 - E. Pseudostratified
61. How does relation between thick and thin myofilaments of a sarcomere change at contraction?
- A. The fibrils of an actin slide between myosin fibrils
 - B. The fibrils of a myosin are shortened
 - C. The fibrils of an actin depart from strings of a myosin
 - D. The fibrils of an actin are shortened
 - E. Is not changed
62. Where are myosatellitocytes of a skeletal muscular tissue located?
- A. Between cytolemma and basal membrane of a muscular fiber
 - B. In a fibrous layer of sarcolemma
 - C. Within a basal membrane
 - D. In the central part of a muscular fiber
 - E. Near muscle fiber
63. Where is muscular tissue of coelomic origin located in?
- A. A myocardium
 - B. Skeletal muscles
 - C. An endocardium
 - D. An epicardium
 - E. Smooth muscle
64. What is the structural unit of a cardiac muscular tissue?
- A. Striated myocyte
 - B. Symplastum
 - C. Smooth myocyte
 - D. Myotube
 - E. Myoepithelial cell
65. How is the muscular fiber of a myocardium organized?
- A. Is formed by a chain of myocytes
 - B. Represents symplastum
 - C. Represents a sincytium

- D. Consists of several multinuclear cells
 - E. Consists of smooth myocytes
66. What is the intercalated disk of cardiac muscle?
- A. Contact of cytolemma of two Myocytes
 - B. Contact of two muscular fibers
 - C. Thicked telophragm
 - D. Thicked mesophragm
 - E. Z-line
67. What structural components the conducting system of heart consists of?
- A. Conducting cardiac myocytes
 - B. Nervous fibers
 - C. Collagen fibers
 - D. Neurons
 - E. Typical cardiomyocytes
68. Basic morphofunctional property of a smooth muscular tissue is:
- A. Ability to long contraction
 - B. Well advanced intercellular substance
 - C. Presence of cells - satellites
 - D. Ability to carry out metabolic reactions and to support a homeostasis
 - E. Ability to fast contraction
69. Smooth muscular tissue differs from skeletal muscular tissue on all below specified attributes, except for:
- A. Presence of contractile filaments
 - B. Embryogenesis
 - C. Innervation
 - D. Presence of nexuses
 - E. Cellular structure
70. Cardiac muscular tissue shows Similarity with skeletal muscular Tissue on all attributes, Except for:
- A. Cellular structure
 - B. Connective tissue layers between muscle fibers
 - C. Plentiful vascularisation
 - D. Transverse striation
 - E. Numerous mitochondria
71. It was observed 18% spherical, flattened, ball-shaped and spinous erythrocytes in the blood of 26 years old man. Others erythrocytes were biconcave form. What is the name of this case?
- A. Physiological poikilocytosis
 - B. Erythrocytosis
 - C. Pathological poikilocytosis
 - D. Physiological anisocytosis
 - E. Pathological anisocytosis
72. One of the reasons of hypoxia lessens of the organ's blood supply. Hypoxia activates functions of the fibroblasts. Volume of which elements increase?

- A. Intercellular substance
 - B. Parenchymatous elements
 - C. Lymphatic vessels
 - D. Nervous elements
 - E. Microcirculatory blood vessels
73. Which tissue will have damaged under arthritis, when interfacial slip of the joint are broken state?
- A. Hyaline catilage
 - B. Fibrocatilage
 - C. Bone tissue
 - D. Lose connective tissue
 - E. Reticular tissue
74. Which substance have the most important role in formation of scar after healing of the wound?
- A. Collagen
 - B. Keratansulfate
 - C. Chondroithinsulfate
 - D. Elastin
 - E. Hyaluronic acid
75. Patient with third-degree burn was transplanted donor's skin at 8-th day after transplantation the transplantate became swollen and changed colorant 11-th day begun destruction. Which cells took place in this process?
- A. T-lymphocytes
 - B. Eosinophils
 - C. Basophils
 - D. B-lymphocytes
 - E. Erythrocytes
76. During postembryonic hemopoiesis in one of the cell's differons slowly decrease of basophilia and pushed out of the nucleus. Which type of hemopoiesis have this morphological changes?
- A. Erythropoiesis
 - B. Eosinophilopoiesis
 - C. Basophilopoiesis
 - D. Neutrophilopoiesis
 - E. Lymphopoiesis
77. In the pericardial cavity of the patient with exudative pericarditis was found large amount of exudate. Malfunction of functional activity which cells are the reason of that condition?
- A. Mesotheliocytes
 - B. Fibroblasts
 - C. Typical cardiomyocytes
 - D. Atypical cardiomyocytes
 - E. Endotheliocytes
78. Structure of hyaline cartilage is changed under chondrodystrophy. What is the function of chondro blasts and chondrocytes?
- A. Synthesis of intercellular Substance

- B. Deposition of glycogen
 - C. Nourishment of tissue
 - D. Deposition of fat
 - E. Destruction of intercellular Substance
79. Avascular tissues are transplanted successfully. Which tissue has no blood vessels?
- A. Cartilage tissue
 - B. Muscle tissue
 - C. Bone tissue
 - D. Adipose tissue
 - E. Connective tissue proper
80. Vertebral column which stands strong load due to compression. Which peculiarities of cartilage tissue provide resistivity to compression?
- A. Composition of matrix
 - B. Strong development of fibers
 - C. Arrangement of cells
 - D. Arrangement of fibers
 - E. Perichondrium
81. Secretory cell has well developed organelles, complex Golgi contains many vacuoles and vesicles. Plasmalemma without damage. Which type of secretion has this cell?
- A. Merocrine
 - B. Macroapocrine
 - C. Holocrine
 - D. Endocrine
 - E. Microapocrine
82. Under examination of biopsy are found exocrine gland with branched excretory duct with several tubular secretory portion. What is the type of the gland?
- A. Compound branched tubular
 - B. Simple tubular
 - C. Compound branched alveolar
 - D. Simple alveolar
 - E. Compound unbranched tubular
83. In leukocyte's formula of the patient with acute cholecystitis are 89% of neutrophils. What is a name of this status?
- A. Neutrophilia
 - B. Monocytosis
 - C. Neutropenia
 - D. Lymphocytosis
 - E. Trombocytosis
84. In the blood smear is found big round shape cell without granules and with pale basophilic cytoplasm. Nucleus is large, pale, bean-like. What cell is it?
- A. Monocyte
 - B. Lymphocyte
 - C. Eosinophil
 - D. Neutrophil
 - E. Erythrocyte

85. Under investigation of biopsy of airways is found epithelium with horizontal anisomorphism. What is the type of the epithelium?
- A. Pseudostratified
 - B. Simple
 - C. Keratinized
 - D. Stratified non-keratinized
 - E. Transitional
86. One type of connective tissue has the best regeneration after injury. Amorphous substance is prevalent over chaotic located fibers and contains all types of cells. What tissue is it?
- A. Loose irregular
 - B. Dense irregular
 - C. Dense regular
 - D. Reticular
 - E. Mucous
87. Under investigation of stomach's mucosa are found many exocrine simple tubular glands. Which exocrine glands are simple?
- A. With unbranched excretory ducts
 - B. Unicellular endoepithelial
 - C. With branched excretory ducts
 - D. With branched secretory portion
 - E. With unbranched secretory portion
88. In the slides of all organs there are different types of connective tissue. What is the origin of embryonal development of connective tissues?
- A. Mesenchyme
 - B. Splanchnotome
 - C. Ectoderm
 - D. Entoderm
 - E. Intermediate mesoderm
89. Antigens are neutralized by antibodies, which are synthesized in:
- A. Plasmocytes
 - B. Fibroblasts
 - C. Tissue's basophils
 - D. Eosinophils
 - E. T-lymphocytes
90. Initial stage of inflammation is characterized by dilation of blood vessels in the place of injury and increasing of permeability of blood vessels wall. Which cells have most important role in this condition?
- A. Tissue's basophils
 - B. B-lymphocytes
 - C. Monocytes
 - D. Tissue's eosinophils
 - E. Tissue's neutrophils

91. In the blood smear of the human with inflammatory process it is possible to see many round cells with segmented nucleus, oxyphilic cytoplasm and small pink-violet granules. What is a name of these cells?
- A. Neutrophilic leukocytes
 - B. Erythrocytes
 - C. Basophilic leukocytes
 - D. Eosinophilic leukocytes
 - E. Lymphocytes
92. The regeneration of skeletal muscles after injury is possible. What cells from listed below are responsible for their regeneration?
- A. Sattelite cells
 - B. Myoblasts
 - C. Myofibroblasts
 - D. Fibroblasts
 - E. Myoepithelial cells
93. After heard attack the conducting system providing rhythmic contraction of cardiac muscle is often disturbed. What structural elements of a heard are damaged at that case?
- A. Untypical cardiomyocytes
 - B. Typical cardiomyocytes
 - C. Nerve endings
 - D. Microcirculation
 - E. Intercalated discs
94. On the cardiac muscle electrophotography are visible cells with processes, small amount of organelles, but good developed rough endoplasmic reticulum, secretory granules. Name these cells.
- A. Atrium secretory cardiomyocytes
 - B. Ventricle typical cardiomyocytes
 - C. Pace maker cells
 - D. Atrium contractile cardiomyocytes
 - E. Purkinje cells
95. X-ray examination shows that child has a fracture of long bone diaphysis. What tissue is damaged at that case?
- A. Compact bone
 - B. Woven bone
 - C. Spongy bone
 - D. Cancellous bone
 - E. Dense regular connective tissue
96. A child has bone abnormalities like softness and distortion of long bones. What basic step in bone formation is disturbed?
- A. Ossification
 - B. Mesenchymal condensation
 - C. Synthesis of matrix
 - D. Replacement by lamellar bone
 - E. Perichondral ossification

97. During early gastrulation of embryo somite myotomes were damaged. The subsequent development of which tissue is not possible?
- A. Skeletal muscle
 - B. Smooth muscle
 - C. Cartilage
 - D. Lamellar bone
 - E. Cardiac muscle
98. During endochondral ossification of long bone between epiphysis and diaphysis forms zone, providing the growth of the long bone in length. What is the term of this zone?
- A. Zone of proliferation
 - B. Zone of calcified cartilage
 - C. Bony collar
 - D. Osteon
 - E. Layer of inner circumferential lamellae
99. What determines separation of a dense fibrous connective tissue on regular and irregular?
- A. Arrangement of fibers
 - B. Type of fibers
 - C. Amount of fibers
 - D. Structure of amorphous substance
 - E. Types of cells
100. Epithelium of which organ is an ectoderm derivative?
- A. Skin
 - B. Respiratory system
 - C. Stomach
 - D. Kidney
 - E. Liver
101. Epithelium of which organ is an endoderm derivative?
- A. Stomach and intestine
 - B. Kidney
 - C. Skin
 - D. Respiratory system
 - E. Oral cavity
102. What structure is a derivative of myotome?
- A. Skeletal muscle tissue
 - B. Mesothelium
 - C. Epithelium of the kidney
 - D. Axial skeleton
 - E. Connective tissue
103. What structure is a derivative of sclerotome?
- A. Axial skeleton
 - B. Mesothelium
 - C. Epithelium of kidney
 - D. Skeletal muscle tissue
 - E. Connective tissue

104. After a long inflammation of the nasal cavity a patient has some changes in the epithelium. What epithelium lines inside the nasal cavity?
- A. Pseudostratified columnar ciliated
 - B. Simple squamous
 - C. Stratified squamous non-keratinized
 - D. Stratified cuboidal
 - E. Stratified columnar
105. An exocrine gland is visible on the diagram. It has an unbranched excretory duct with a secretory portion in the form of a single little bag. What is it called according to morphological classification of exocrine glands?
- A. Simple alveolar
 - B. Compound branched alveolar
 - C. Simple branched tubular
 - D. Compound alveolar
 - E. Compound alveolar-tubular
106. An artery is visible on the histological slide. One of its tunics contains flat cells that rest on the basal membrane. Give the name of this type of cells.
- A. Endothelium
 - B. Mesothelium
 - C. Smooth myocytes
 - D. Fibroblasts
 - E. Macrophages
107. A child was admitted to a hospital with a burn of the oral cavity. The doctor found lesions of the stratified squamous non-keratinized epithelium of the mucous membrane of the hard palate, the upper and the lower lips. Which layer of epithelial cells will be the source of regeneration of damaged areas?
- A. Basal layer
 - B. Stratum corneum
 - C. Granular layer
 - D. Stratum lucidum
 - E. Basal membrane
108. Patient's blood was taken for analysis: 30% of red blood cells have an irregular shape. What do you call this condition?
- A. Pathological poikilocytosis
 - B. Anisocytosis
 - C. Physiological poikilocytosis
 - D. Macrocytosis
 - E. Microcytosis
109. In the peripheral blood smear among leukocytes predominate rounded cells with segmented nuclei. Fine granularity in their cytoplasm is stained both with acidic and basic dyes. What are these cells called?
- A. Segmented neutrophils
 - B. Basophils
 - C. Eosinophils
 - D. Band neutrophils

- E. Monocytes
110. Histological examination of the bone marrow punctate revealed a significant decrease in the number of megakaryocytes. What changes in the peripheral blood can be found in this situation?
- A. Reduction of thrombocytes
 - B. Increase in the number of Leukocytes
 - C. Increase in the number of Thrombocytes
 - D. Reduction of granulocytes
 - E. Reduction of leukocytes
111. The function of the injured Achilles tendon restored after treatment in a patient. In what ways did the regeneration of a tendon happen?
- A. Collagen fibers synthesis
 - B. Hyaline cartilage synthesis
 - C. Adipose tissue formation
 - D. Fibrocartilage synthesis
 - E. Replacement of a rupture with a muscular tissue
112. A foreign body was embedded in the skin, which caused inflammation. Which connective tissue cells participate in the skin reaction to the foreign body?
- A. Neutrophils, macrophages, fibroblasts
 - B. Macrophages
 - C. Melanocytes
 - D. Lipocytes
 - E. Adventitial cells
113. Poor blood circulation of an organ gives rise to the development of hypoxia which activates the fibroblasts function. The activation of fibroblasts will result in the increase in ...
- A. Extracellular matrix
 - B. Vessels of microcirculatory bed
 - C. Nerves
 - D. Parenchyma of an organ
 - E. Lymphatic vessels
114. There is a disorder of a process of cartilage regeneration due to damage of low differentiated cartilage cells in a patient with a severe trauma of the upper extremity. Which cells were damaged?
- A. Cells of the inner layer of the perichondrium
 - B. Cells of the outer layer of the perichondrium
 - C. Cells which constitute isogenic groups
 - D. Zone of young cartilage cells
 - E. Cells from the blood vessels
115. Two slides are given to a student. The first one presents an elastic cartilage (stained by orcein), the second one presents a hyaline cartilage (stained by hematoxylineosin). What signs can help the student to tell the difference between them?
- A. Presence of elastic fibers in the elastic cartilage
 - B. Presence of isogenous groups of cells
 - C. Presence of young cartilage zone
 - D. Presence of perichondrium

- E. Presence of amorphous substance
116. Due to the chondrodysplasia (malformation of the cartilage) the fibrocartilage was damaged. Where is the fibro cartilage located in the body?
- A. In the intervertebral discs
 - B. In the pinna of the ear
 - C. In the trachea
 - D. In the larynx
 - E. In the bronchi
117. Restoration of the articular cartilage of the mandible after injury is still unsolved problem of traumatic surgeons and dentists. What factor causes limited regeneration of the hyaline cartilage of the articular surfaces of bones?
- A. Absence of perichondrium
 - B. Absence of isogenic cell groups
 - C. Presence of blood vessels
 - D. Significant mechanical stress
 - E. High content of inorganic compounds
118. On the biopsy slide of the larynx a tissue is visible which cells lie separately in the extracellular matrix, but also can form isogenic groups of cells. Collagen and elastic fibers are also present. What tissue is it?
- A. Elastic cartilage
 - B. Hyaline cartilage
 - C. Fibrocartilage
 - D. Smooth muscle tissue
 - E. Bone
119. In the process of calcification of the intercellular substance of bone, hydroxyapatite crystals are deposited along the collagen fibers. This process requires the presence of alkaline phosphatase in the intercellular substance. Which cell produces the enzyme?
- A. Osteoblast
 - B. Osteocyte
 - C. Osteoclast
 - D. Chondroblast
 - E. Chondrocyte
120. On a histological slide can be found a tissue which contains cells lacking processes and having several dozens of nuclei. One of the surfaces of these cells has a ruffled border through which secretion of hydrolytic enzymes happens. What tissue is presented on the slide?
- A. Bone
 - B. Cartilage tissue
 - C. Epithelial tissue
 - D. Nervous tissue
 - E. Muscle tissue
121. A patient presented to the hospital with a broken collarbone. What cells take part in the regeneration of the bone tissue?
- A. Osteoblasts
 - B. Osteoclasts

- C. Osteocytes
 - D. Chondrocytes
 - E. Fibroblasts
122. There is a tissue on a histological slide. Its basic structural unit is a fiber. The fiber consists of a symplast and satellite cells that are covered by a common basal membrane. For what tissue is this structure typical?
- A. Skeletal muscle tissue
 - B. Smooth muscle tissue
 - C. Cardiac muscle tissue
 - D. Loose connective tissue
 - E. Reticular tissue
123. Destruction of thin myofilaments is visible during the study of striated muscle fiber after the exposure to hydrolytic enzymes. What structures were damaged?
- A. Actin myofilaments
 - B. Tonofibrils
 - C. Ö-systems
 - D. Sarcoplasmic reticulum
 - E. Myosin myofilaments
124. On the microscopic slides of the heart rectangular cells are visible sized from 50 to 120 microns, with a centrally located nucleus, well-developed myofibrils, linking with each other by intercalated disks. What function is associated with these cells?
- A. Contraction of the heart
 - B. Conduction of impulses
 - C. Endocrine
 - D. Protective
 - E. Regenerative
125. Cells are visible on the electron micrograph. The cells have spindle shape, rod-shaped nucleus, a large number of intermediate microfilaments composed of protein desmin. What tissue is this?
- A. Muscular
 - B. Nervous
 - C. Epithelial
 - D. Connective
 - E. Bone
126. It is known that calcium ions provide muscle contraction. What do calcium ions interact during contraction with?
- A. With protein troponin of thin myofibrils
 - B. With protein myosin of thick myofibrils
 - C. With protein actin of thin myofibrils
 - D. With actomyosin complex of sarcolemma
 - E. With protein calsequestrin
127. Bundles of spindle-shaped cells with rod-shaped centrally located nuclei are visible on the histological slide of the pyloric stomach. What tissue do these cells form?
- A. Smooth muscle tissue
 - B. Loose connective tissue

- C. Skeletal muscle tissue
 - D. Epithelial tissue
 - E. Reticular tissue
128. Nucleated anastomosing fibers are visible in one of the layers of the hollow internal human organ. The fibers are made up of cells which are connected with each other by intercalated discs. What tissue does this layer form?
- A. Striated cardiac muscle tissue
 - B. Striated skeletal muscle tissue
 - C. Smooth muscle tissue
 - D. Loose connective tissue
 - E. Dense irregular connective tissue
129. Structural continuity of the heart wall was restored after a heart attack in a patient. What tissue helped in the regeneration of the heart wall?
- A. Connective tissue
 - B. Smooth muscle tissue
 - C. Striated muscle tissue
 - D. Epithelial tissue
 - E. Nervous tissue
130. In conditional experiment the action of toxic substance breaks the mechanism of spreading of a nerve impulse along the nerve cell. What frame does this function execute?
- A. Nerve cell membrane
 - B. Neurofibril
 - C. Synapse
 - D. Mitochondrion
 - E. Chromophilic substance
131. For myelinated nerve fibers are characteristic all attributes except for:
- A. Several axial cylinders
 - B. Neurofilaments
 - C. One axial cylinder
 - D. Nodes of ranvier
 - E. Schwann cells
132. What cells are the main in a nervous tissue?
- A. Neurons
 - B. Ependimocytes
 - C. Astrocytes
 - D. Microgliocytes
 - E. Macrogliocytes
133. What is the source of development of a macroglia?
- A. Neuroectoderm
 - B. Mesenchyme
 - C. Endoderm
 - D. Dorsal mesoderm
 - E. Ventral mesoderm

134. What type of cellular structures of a neuron does chromatophilic substance concern to?
- A. Organelle of protein synthesis
 - B. Mitochondrion
 - C. Lysosome
 - D. Cytoskeleton
 - E. Organelle of lipid synthesis
135. What structure of a neuron takes part in realization of a nervous impulse?
- A. Plasmolemma
 - B. Chromatophilia substance
 - C. Complex Golgi
 - D. Mitochondrion
 - E. Cytoplasm
136. What principle is at a basis of morphological classification of nerve fibers?
- A. Structure of sheaths
 - B. Structure of nerve process
 - C. Location
 - D. Carried out functions
 - E. Type of neuron
137. For myelinated nerve fibers are characteristic all attributes, except for:
- A. Several axial cylinders
 - B. One axial cylinder
 - C. Nodes of ranvier
 - D. Lemmocytes
 - E. Process of neuron
138. A neuron, which dendrites form reseptors in muscle, on function concerns to:
- A. Sensory
 - B. Neurosecretory
 - C. Motor
 - D. Association
 - E. Inhibiting
139. The neuroglia, lied ventricles of a brain and spinal canal, is called:
- A. Ependima
 - B. Protoplasmatic astrocytes
 - C. Fibrous astrocytes
 - D. Oligodendroglyocytes
 - E. Schwann cells
140. During degeneration and regeneration of nerve fibers participate:
- A. Schwann cells
 - B. Ependimocytes
 - C. Protoplasmatic astrocytes
 - D. Fibrous astrocytes
 - E. Microglia
141. Neurons, which axons form the motor nerve endings in a smooth muscular tissue, are called:

- A. Motor
 - B. Afferent
 - C. Intercalated
 - D. Sensory
 - E. Inhibitory
142. For neuro-muscular end plate which neurotransmitter is characteristic?
- A. Acetylcholine
 - B. Noradrenaline
 - C. Serotonin
 - D. Electrical
 - E. Dopamine
143. The realization direction of a nerve impulse in the field of a synapse is defined by:
- A. Presence of receptor protein on a postsynaptic membrane
 - B. System of neurofibrils
 - C. Presence of mitochondria
 - D. Axoplasmatic current of substances
 - E. Retrograde current of substances
144. During injury of a brain neuroglial cells are damaged. What type of neuroglial cells is predominantly arranged in the grey matter of the brain?
- A. Protoplasmic astrocytes
 - B. Microglia
 - C. Oligodendrocytes
 - D. Fibreous astrocytes
 - E. Schwann cells
145. The patient has degenerative pathology of spinal cord, which is followed by decreased amount of basophilic substance in the neurons of the anterior horn of spinal cord. How is this happening called?
- A. Chromatolysis
 - B. Degeneration
 - C. Hypobasophilia
 - D. Basophilia
 - E. Chromatosis
146. The patient has degenerative pathology of the spinal cord during which the neurons with 4-5 processes are damaged. What type of neurons do they belong to?
- A. Multipolar
 - B. Monopolar
 - C. Bipolar
 - D. Pseudounipolar
 - E. Unipolar
147. Epilepsy may be a result of pathologic growth of neuroglial cells of the brain temporal lobe. What cells from listed below belong to neuroglia?
- A. Oligodendrocytes
 - B. Multipolar
 - C. Unipolar
 - D. Neurocytes

- E. Betz cells
148. During biopsy examination of material with degenerative pathology of nervous system, the cells are from neural crest origin were studied. What are they?
- A. Neurons of sympathetic ganglion
 - B. Brain cortex neurons
 - C. Cerebellum neurons
 - D. Neurons of spinal cord
 - E. Astrocytes
149. Some degenerative diseases of nervous system are followed by pathology of cells, which provide myelinisation of nerve fibers in peripheral nervous system. What is the name of these cells?
- A. Oligodendroglia
 - B. Microglia
 - C. Protoplasmic astrocytes
 - D. Ependima
 - E. Bipolar neurons
150. During experiment on the chicken embryo, the neural crest was destroyed. Development of what cells will be damaged after this operation?
- A. Neurons of the spinal ganglion
 - B. Epithelium of the oesophagus mucosa
 - C. Neurons of the brain and spinal cord
 - D. Neurons of the retina
 - E. Epithelium of the organ of hearing and organ of equilibrium
151. A toxic substance breaks the mechanism of the transmission of nerve impulses from one neuron to other neuron in experiment. What structure provides this function?
- A. Synapse
 - B. Neurolemma
 - C. Neurofibrils
 - D. Mitochondrion
 - E. Nissl substance
152. Degeneration of the nerve fibers is possible after traumatic damage of the nerve. It is accompanied by the breakdown of axis cylinders, and myelin disintegration. What neural structures provide regeneration of myelin?
- A. Neurolemmocyte (schwann cell)
 - B. Mesaxon
 - C. Perineurium
 - D. Endoneurium
 - E. Astrocytes
153. Damaged nerve fibers can regenerate. What glial cells in the CNS take active part in this process?
- A. Oligodendrocytes
 - B. Microglia
 - C. Ependymocytes
 - D. Fibrous astrocytes
 - E. Protoplasmic astrocytes

154. Poliomyelitis is characterized by damage of the spinal cord, and skeletal muscle dysfunction. Destruction of which neurons can cause this problem?
- A. Motor neurons
 - B. Pseudounipolar neurons
 - C. Interneurons
 - D. Pseudounipolar neurons and interneurons
 - E. Interneurons and motor neurons
155. Sensitive nerve ganglion consists of spherical-shaped neurons with one process, which divides into the axon and dendrite at some distance from the perikaryon. What cells are they?
- A. Pseudounipolar neurons
 - B. Unipolar neurons
 - C. Bipolar neurons
 - D. Multipolar neurons
 - E. Apolar neurons
156. Inside certain cells of adult human individual mitosis is not observed and amount of DNA remains stable throughout their lives. These cells are:
- A. Neurons
 - B. Endothelial cells
 - C. Smooth muscle cells
 - D. Epidermal cells
 - E. Hematopoietic cells
157. A need to cut a nerve occurred during surgical procedure. Its integrity was restored after a while. Name the cells that provide regeneration of the nerve.
- A. Neurolemmocytes (schwann cells)
 - B. Astrocytes
 - C. Ependymocytes
 - D. Microglia
 - E. Mantle glial cells
158. For myelinated nerve fibers all the features are specific except for:
- A. Presence of several axial cylinders
 - B. Presence of one single axial cylinder
 - C. Presence of nodes of ranvier
 - D. Presence of neurofilaments
 - E. Presence of neurolemmocytes
159. A large number of multipolar neurons are visible on the histological slide of the gray matter of cerebellum. Which morphological features allowed to refer these cells to multipolar neurons?
- A. Number of processes
 - B. Length of processes
 - C. Shape of terminal buttons or axon terminals extensions
 - D. Shape of perikaryon
 - E. Cell size

160. On the histological slide of the nerve tissue is seen that the neurons are connected to each other with the contacts that are specialized for one-way transmission of nerve impulse. What type of intercellular junction is found on the slide?
- A. Synapse
 - B. Desmosome
 - C. Adhesive belt
 - D. Tight junction
 - E. Nexus