1. The glands of the skin are derived from:

1. the epidermis
2. the dermis
3. both the epidermis and mesenchyme
4. mesenchyme
5. subcutaneous adipose tissue

2. Sebaceous glands, according to their structure and type of secretion, are:

1. simple branched alveolar (acinar) holocrine glands
2. simple straight tubular holocrine glands
3. complex alveolar merocrine glands
4. simple branched tubular apocrine glands
5. simple unbranched alveolar holocrine glands

3. In the basal and spinous layers of the epidermis, in addition to keratinocytes, the following cells are present:

1. melanocytes, dendritic (Langerhans) cells, lymphocytes
2. granulocytes, macrophages
3. melanocytes, macrophages
4. dendritic cells, granular macrophages
5. melanocytes, stem cells, neutrophils

4. The secretory portions of the sweat glands are located in the:

1. reticular layer of the dermis
2. basal layer
3. granular layer
4. spinous layer
5. stratum corneum

5. The layer of the epidermis containing keratin is the:

1. stratum corneum
2. stratum lucidum
3. stratum granulosum
4. stratum basale
5. stratum spinosum

6. The layer of the epidermis containing keratohyalin granules is the:

1. stratum granulosum
2. stratum basale
3. stratum lucidum
4. stratum spinosum
5. stratum corneum

7. The wall of the excretory duct of sebaceous glands is lined by:

1. stratified squamous epithelium

2. simple cuboidal epithelium
3. double-layered cuboidal epithelium
4. simple columnar epithelium
5. pseudostratified epithelium

8. The developmental sources of the skin are:

1. ectoderm and mesoderm (dermatome)
2. endoderm and mesoderm
3. mesoderm and dermatome
4. mesoderm and splanchnotome
5. ectoderm and sclerotome

9. Nerve endings located in the basal (germinative) layer of the epidermis are:

1. tactile (Merkel) discs
2. Meissner corpuscles
3. Krause end bulbs
4. Pacinian corpuscles
5. Ruffini corpuscles

10. According to their structure, sweat glands are:

1. simple unbranched tubular glands
2. simple branched tubular glands
3. simple branched alveolar glands
4. complex tubuloalveolar glands
5. simple unbranched alveolar glands

11. The granular layer of the epidermis is represented by:

1. 3–4 layers of flattened (diamond-shaped) cells containing keratohyalin granules
2. a single layer of flattened cells
3. 2–3 layers of prismatic cells
4. 3–4 layers of process-bearing cells
5. 2–3 layers of rounded or oval cells

12. In which layer of the skin are Meissner corpuscles located?

1. papillary layer of the dermis
2. epidermis
3. reticular dermis
4. subcutaneous adipose tissue
5. throughout the dermis

13. Characteristics of cells in the spinous layer of the epidermis:

1. polygonal cells with cytoplasmic processes connected by desmosomes; abundant tonofilaments (tonofibrils)
2. cells with secretory granules and epithelial fibrils
3. elongated cells with numerous organelles
4. polygonal cells with basophilic granules and epithelial fibrils

5. round cells containing pigment granules

14. Clara (Club) cells in the airways:

1. participate in detoxification and degradation of surfactant components
2. are modified macrophages
3. are located singly between alveolocytes
4. possess cilia
5. are found in the epithelium of large bronchi

15. In which bronchi does the cartilaginous layer disappear?

1. small bronchi (bronchioles lack cartilage)
2. lobar bronchi
3. main bronchi
4. large bronchi
5. medium-sized bronchi

16. Blood supply of the lungs – trophic supply of the bronchi is provided by:

1. bronchial arteries of the systemic circulation
2. pulmonary arterioles carry arterial blood
3. alveolar capillaries receive blood from systemic circulation
4. alveolar capillaries are fenestrated
5. pulmonary arteries carry oxygen-rich blood

17. Blood supply of the lungs – pulmonary circulation specifics:

1. bronchial arteries provide trophic supply
2. pulmonary arterioles carry arterial blood
3. alveolar capillaries receive systemic blood
4. alveolar capillaries are fenestrated
5. pulmonary arteries carry oxygen-rich blood

18. The general structural plan of the digestive tube consists of:

1. mucosa, submucosa, muscularis externa, and serosa or adventitia
2. mucosa, submucosa, serosa
3. mucosa, muscularis, adventitia
4. mucosa, muscularis, serosa
5. mucosa, submucosa, cartilaginous layer

19. Most of the cells of the pyloric glands are:

1. mucous cells (mucocytes)
2. enteroendocrine cells
3. serous cells
4. parietal cells
5. chief cells

20. Cells that form tooth enamel are:

1. ameloblasts (enameloblasts)
2. odontoblasts
3. dentinoblasts
4. cementoblasts
5. fibroblasts

21. The epithelium of the intralobular ducts of the pancreas is:

1. simple cuboidal
2. simple squamous
3. simple columnar
4. pseudostratified columnar
5. ciliated

22. Brunner's glands are located:

1. in the submucosa of the duodenum
2. in the submucosa of the ileum
3. in the mucosa of the jejunum
4. in the serosa of the colon
5. in the mucosa of the intestine

23. In the secretory end pieces of salivary glands, myoepithelial cells are located:

1. between the basement membrane and the secretory cells
2. between the basement membrane and adjacent connective tissue
3. within folds of the basement membrane
4. differently in various salivary glands
5. only in the excretory ducts

24. The epithelium of the striated ducts of salivary glands is:

1. simple columnar epithelium
2. simple cuboidal epithelium
3. stratified squamous epithelium
4. simple squamous epithelium
5. stratified cuboidal epithelium

25. The dental pulp consists of:

1. loose (areolar) connective tissue
2. dense irregular connective tissue
3. reticular tissue
4. adipose tissue
5. nervous tissue

26. The main differences between the duodenum and jejunum concern:

1. villi and glands (presence of Brunner's glands in the duodenum)
2. glands and muscularis externa
3. villi and crypts
4. crypts and submucosa

5. cellular composition of villi and crypts

27. PP-cells (pancreatic polypeptide cells) of the pancreas regulate:

1. secretion of gastric and pancreatic juices
2. secretion of gastric juice only
3. secretion of pancreatic juice only
4. secretion of duodenal glands
5. bile secretion

28. A large number of cells in the crypts of the colon are:

1. goblet cells
2. chief cells
3. M cells
4. endocrine cells
5. Paneth cells

29. The space of Disse is located between:

1. sinusoidal endothelial cells and hepatocytes
2. hepatocytes and Ito cells
3. adjacent plates of hepatocytes
4. adjacent hepatocytes
5. endothelial cells and Kupffer cells

30. The crypts of the small intestine contain the following cells:

1. enterocytes (absorptive/brush border cells), Paneth cells, undifferentiated (stem) cells, goblet cells, enteroendocrine cells
2. mucous, absorptive, goblet, Paneth
3. endocrine, Paneth, goblet, secretory
4. absorptive, endocrine, goblet, basal
5. absorptive, goblet, ciliated, cambial

31. Serous demilunes (Gianuzzi crescents) are present in:

1. submandibular and sublingual glands
2. parotid and sublingual glands
3. submandibular and parotid glands
4. only parotid glands
5. all three major salivary glands

32. Regeneration of the epithelium of the small intestine is stimulated by:

1. epidermal growth factor (EGF)
2. gastrin
3. serotonin
4. somatostatin
5. vasoactive intestinal peptide (VIP)

33. Acino-insular cells of the pancreas are characterized by:

1. presence of both zymogen granules and endocrine secretory granules
2. very large size
3. very small size
4. presence of large secretory vacuoles
5. location in the excretory ducts

34. The structural differences between various parts of the pharynx mainly concern the:

1. mucosa (type of epithelium varies by region)
2. submucosa
3. muscular layer
4. serosa
5. adventitia

36. In the secretory portions of Brunner's glands, the following cells are found:

1. mucous cells, goblet cells, Paneth cells, enteroendocrine cells, parietal-like cells
2. mucous, endocrine, columnar, goblet
3. serous, goblet, endocrine, absorptive
4. Paneth, goblet, endocrine, absorptive
5. undifferentiated, Paneth, endocrine, goblet

37. M cells and specialized epithelial (fold) cells of the small intestine are found:

1. in the epithelium overlying Peyer's patches
2. in the lamina propria
3. at the base of the villi
4. in the middle portion of crypts
5. at the bottom of crypts

38. Centroacinar cells of the pancreas belong to the epithelium of the:

1. intercalated ducts
2. interlobular excretory ducts
3. main pancreatic duct
4. acini
5. combined ducts

39. Which crypt cells correspond to the following description: "Low columnar cells with a thin brush border, basophilic cytoplasm, many free ribosomes, capable of division"?

1. undifferentiated (stem/cambial) cells
2. goblet cells
3. Paneth cells
4. endocrine cells
5. mature absorptive enterocytes

40. The structural and functional unit of the pancreas is the:

1. acinus
2. alveolus
3. lobule

4. follicle
5. segment

41. Gustatory papillae that decrease in number in adults:

1. foliate papillae
2. filiform papillae
3. fungiform papillae
4. circumvallate papillae
5. conical papillae

42. Endocrine cells in the salivary glands are located:

1. in the wall of the striated ducts
2. in the secretory end pieces
3. in the intercalated ducts
4. in the interlobular ducts
5. in all of these structures

43. The secretory end pieces of the esophageal proper glands consist of:

1. mucous cells
2. serous and mucous cells
3. endocrine cells
4. parietal and endocrine cells
5. serous cells

44. Cells with combined (exocrine and endocrine) secretion in the pancreas are:

1. acino-islet (acino-insular) cells
2. centroacinar cells
3. endocrine islet cells
4. acinar cells
5. goblet cells

45. The epithelium of the intermediate zone of the rectum is:

1. stratified squamous non-keratinized epithelium
2. simple columnar epithelium with brush border
3. stratified cuboidal epithelium
4. pseudostratified columnar epithelium
5. simple cuboidal epithelium

46. Cells involved in water reabsorption and urine concentration that possess vasopressin receptors:

1. cells of the collecting ducts (principal cells)
2. proximal tubule cells
3. distal tubule cells
4. cells of the descending limb of the loop
5. cells of the ascending limb of the loop

47. Nephron cells that reabsorb sodium and possess aldosterone receptors are located in the:

1. distal tubule
2. proximal convoluted tubule
3. loop of Henle
4. collecting ducts
5. proximal straight tubule

48. Which organelles predominate in proximal tubule cells?

1. mitochondria, lysosomes, pinocytotic vesicles
2. rough endoplasmic reticulum, Golgi complex
3. ribosomes, Golgi complex
4. smooth endoplasmic reticulum, Golgi complex
5. rough endoplasmic reticulum, mitochondria

49. Platelet-activating factor in the kidney is synthesized by:

1. mesangial cells
2. juxtaglomerular cells
3. interstitial cells
4. juxtavascular cells
5. podocytes

50. Urine acidification is carried out by:

1. intercalated cells of the collecting ducts
2. principal cells of the collecting ducts
3. loop of Henle cells
4. distal straight tubule cells
5. proximal tubule cells

51. The kidney synthesizes the following biologically active substances:

1. renin, prostaglandins, erythropoietin
2. renin, parathormone, vasopressin
3. erythropoietin, parathormone, vasopressin
4. somatostatin, renin, leukopoietin
5. antidiuretic hormone, renin, erythropoietin

52. The thin segment of the nephron loop is lined by:

1. simple squamous epithelium
2. simple cuboidal epithelium
3. simple columnar epithelium
4. brush border epithelium
5. mucociliary epithelium

53. The renal prostaglandin apparatus includes:

1. interstitial cells and nephrocytes of the collecting ducts

2. juxtaglomerular cells, interstitial cells, distal tubule cells
3. juxtaglomerular cells, podocytes
4. mesangial cells, podocytes, juxtaglomerular cells
5. interstitial cells, juxtaglomerular cells

54. The secretory phase of urine formation occurs mainly in the:

1. collecting ducts
2. proximal tubules
3. renal corpuscles
4. distal tubules
5. loop of Henle

55. Cells that produce extracellular matrix in the renal glomerulus are:

1. mesangial cells
2. fibroblasts
3. macrophages
4. podocytes
5. interstitial cells

56. The epithelium consisting of tall columnar ciliated cells and low cuboidal cells with microvilli is found in the:

1. efferent ductules (ductuli efferentes)
2. straight tubules
3. rete testis
4. duct of the epididymis
5. vas deferens

57. Final maturation (functional differentiation) of spermatozoa occurs in the:

1. duct of the epididymis
2. seminiferous tubules
3. efferent ductules
4. vas deferens
5. straight tubules

58. Correct sequence of stages of spermatogenesis:

1. multiplication (reproduction), growth, maturation, differentiation (spermiogenesis)
2. differentiation, growth, multiplication, maturation
3. replication, differentiation, growth, maturation
4. multiplication, growth, differentiation, maturation
5. growth, multiplication, maturation, differentiation

59. Formation of spermatozoa occurs in the:

1. convoluted seminiferous tubules of the testis
2. straight tubules
3. rete testis
4. both convoluted and straight tubules

5. all of these tubules

60. Reproduction of spermatogonia in the testes occurs by:

1. mitosis
2. amitosis
3. meiosis
4. both meiosis and mitosis
5. spermatogonia do not divide

61. Sustentocytes of the testis are:

1. supporting (Sertoli) cells
2. glandular cells
3. spermatogenic cells
4. fibroblasts
5. cambial cells

62. Cells that synthesize Müllerian (paramesonephric) inhibitory factor:

1. Sertoli cells
2. Leydig cells
3. primordial germ cells
4. hypothalamic neurosecretory cells
5. gonadotropic cells of the adenohypophysis

63. Androgen-binding protein is secreted by:

1. Sertoli cells
2. Leydig cells
3. seminal vesicles
4. prostate gland
5. bulbourethral glands

64. The prostate gland is structurally classified as:

1. complex tubuloalveolar gland
2. simple tubular gland
3. simple alveolar gland
4. branched tubular gland
5. complex alveolar gland

65. Endocrine cells of the testis (Leydig cells) are located:

1. in the interstitial connective tissue
2. in the fibrous tunic
3. in the septa of the testis
4. in the myoid layer
5. among spermatogonia

65. The components of the clear covering of the ovary (follicle) are secreted by:

1. Follicular cells and oocytes
2. Oocytes and luteal cells
3. Luteal cells and follicular cells
4. Oocytes and interstitial cells
5. Interstitial cells

66. The corpus albicans is formed in the ovary:

1. At the site of the corpus luteum after involution
2. As a result of follicular atresia
3. At the site of a mature follicle after ovulation
4. In the medulla
5. At the site of an atretic follicle

67. The cervical canal is lined with:

1. Simple cuboidal epithelium
2. Simple columnar epithelium
3. Simple squamous epithelium
4. Stratified epithelium
5. Pseudostratified epithelium

68. The corpus albicans in the ovary is:

1. The fibrous scar formed after regression of the corpus luteum
2. A structure formed at the site of the ruptured follicle with ovum loss
3. A structure formed at the site of the Graafian follicle
4. Ovarian atrophy
5. Metamorphosis of the corpus luteum

69. The correct sequence of corpus luteum development:

1. Proliferation and vascularization → glandular metamorphosis → peak → involution
2. Vascularization → peak → glandular metamorphosis
3. Proliferation → peak → glandular metamorphosis
4. Proliferation → lutein cell formation → involution
5. Glandular metamorphosis → proliferation → peak → involution

70. The main hormones regulating lactating mammary gland function:

1. Prolactin and oxytocin
2. Prolactin
3. Luteinizing hormone
4. Estrogen and prolactin
5. Progesterone and releasing hormones

71. Corpus albicans consists of:

1. Connective tissue and interstitial cells
2. Thecal cells

3. Decidual cells
4. Follicular cells
5. Epithelial cells

72. Mature ovarian follicles synthesize:

1. Estrogens and inhibin
2. Estrogen and lutein
3. Follicle-stimulating hormone and folliculin
4. Follitropin and progesterone
5. Progesterone and estrogen

73. Corpus luteum – correct statement:

1. During involution, progesterone concentration in blood decreases
2. Develops at the site of atretic follicles
3. Corpus luteum cells are modified thecal cells only
4. Is both exocrine and endocrine
5. Undergoes involution under hCG influence

74. In hypothyroidism, structural changes in the pituitary affect mainly:

1. Thyrotrophs
2. Mammotrophs
3. Gonadotrophs
4. Somatotrophs
5. Corticotrophs

75. Spongiocytes are cells of:

1. Zona fasciculata of the adrenal cortex
2. Zona glomerulosa
3. Zona reticularis
4. Adrenal medulla
5. Sudanophobic zone

76. The sudanophobic zone of the adrenal gland is located between:

1. Zona glomerulosa and zona fasciculata
2. Zona glomerulosa and zona reticularis
3. Zona reticularis and medulla
4. Zona fasciculata and zona reticularis
5. Cortex and medulla

77. Brain sand (corpora arenacea) is found in:

1. Pineal gland (epiphysis)
2. Neurohypophysis
3. Adenohypophysis
4. Hypothalamus
5. Adrenal medulla

78. The adenohypophyseal cells with greatest functional activity in early postnatal life:

1. Somatotrophs
2. Thyrotrophs
3. Corticotrophs
4. Basophils
5. Gonadotrophs

79. Pituitary cells with lobulated nucleus, many mitochondria, rough ER, and secretory granules:

1. Corticotrophs
2. Mammotrophs
3. Thyrotrophs
4. Gonadotrophs
5. Somatotrophs

80. Target cells for thyroid-stimulating hormone (TSH):

1. Thyroid follicular cells
2. C cells of thyroid
3. Parathyroid cells
4. Adrenal chromaffin cells
5. Glucocorticoid-producing cells

81. Glucocorticoid synthesis in adrenal glands is stimulated by:

1. ACTH (corticotropin)
2. TSH and somatoliberin
3. GnRH and antidiuretic peptides
4. Angiotensin II and ACTH
5. TRH and neurophysins

82. Steroid hormones are produced by:

1. Cells of zona fasciculata of the adrenal cortex
2. Chromaffin cells of adrenal medulla
3. Acidophilic adenohypophyseal cells
4. Thyrocytes
5. Beta cells of pancreatic islets

83. Developmental sources of the pituitary gland:

1. Oral ectoderm (Rathke pouch) and neuroectoderm
2. Neural tube
3. Placode and mesenchyme
4. Neural crest and endoderm
5. Chromaffin tissue and neuroglia

84. Rod outer segments contain:

1. Rhodopsin

2. Melanin
3. Iodopsin
4. Lipofuscin
5. Melatonin

85. Cone outer segments contain:

1. Iodopsin
2. Rhodopsin
3. Melanin
4. Lipofuscin
5. Melatonin

86. The site of highest visual acuity ("sweet spot"):

1. Fovea centralis of macula lutea
2. Blind spot
3. Optic disc
4. Macula lutea (general)
5. Peripheral macula

87. Main protein of the vitreous body:

1. Vitrein
2. Dynein
3. Elastin
4. Heparin
5. Eleidin

88. Photoreceptor cells of the retina are:

1. Neurosensory cells
2. Episensory cells
3. Cones neurosensory, rods episensory
4. Cones episensory, rods neurosensory
5. Epithelial cells

89. Main groups of cells of the spiral organ of Corti:

1. Sensory and supporting cells
2. Sensory and basal cells
3. Sensory, supporting, basal cells
4. Supporting and basal cells
5. Polar and basal cells

90. Hair cells of the macula are characterized by:

1. Kinocilium
2. Stereocilia
3. Microvilli
4. Flagella
5. Motile cilia

91. The muscles of the iris originate from:

1. Neuroectoderm
2. Epidermis
3. Mesenchyme
4. Somites
5. Coelomic epithelium

92. Anterior epithelium of the iris:

1. Simple squamous epithelium
2. Simple cuboidal
3. Simple columnar
4. Stratified non-squamous
5. Pseudostratified

93. The tunnel of Corti is formed by:

1. Pillar (columnar) cells
2. Phalangeal cells
3. Supporting cells
4. Inner hair cells and basilar membrane
5. Outer supporting cells and basement membrane

94. The stapes transmits sound vibrations:

1. Through the oval window into the scala vestibuli
2. Into the cochlear duct
3. Into the scala tympani
4. Through the round window into the scala vestibuli
5. Through the round window into the scala tympani

95. Auditory (Eustachian) tube epithelium:

1. Pseudostratified ciliated columnar
2. Simple cuboidal
3. Simple columnar
4. Stratified non-squamous
5. Simple squamous

96. Function of Schlemm's canal:

1. Outflow of aqueous humor from anterior chamber
2. Tear drainage
3. Vascularization of membranes
4. Renewal of vitreous
5. Nutrition of anterior retina

97. Structural basis of the epiglottis:

1. Elastic cartilage
2. Hyaline cartilage

3. Fibrocartilage
4. Dense regular connective tissue
5. Loose connective tissue

98. Epithelium of the vestibular region of the nasal cavity:

1. Stratified squamous
2. Simple ciliated cuboidal
3. Stratified ciliated cuboidal
4. Stratified squamous keratinized
5. Stratified columnar

99. Pulmonary acinus consists of:

1. Respiratory bronchioles, alveolar ducts, and alveolar sacs
2. Terminal bronchiole and respiratory bronchioles
3. Group of terminal bronchioles
4. Alveolar ducts and sacs only
5. Terminal bronchioles, alveolar ducts, alveolar sacs

100. Fibrocartilaginous layer of medium-sized bronchi consists of:

1. Cartilage islands
2. Cartilage plates
3. Incomplete cartilaginous rings
4. Complete cartilaginous rings
5. Cartilaginous plates and semicircular rings

101. The structural and functional unit of the respiratory portion is:

1. Acinus
2. Lobule
3. Segment
4. Follicle
5. Alveolus

102. Surfactant is synthesized by:

1. Type II alveolocytes
2. Type I alveolocytes
3. Limbic cells
4. Macrophages
5. Goblet cells

103. The structure of the air-blood barrier includes:

1. Type I alveolocytes
2. Type II alveolocytes
3. Type III alveolocytes
4. Clara (secretory) cells
5. Goblet cells

104. Diameter of the terminal bronchiole:

1. 0.5 mm
2. 1 mm
3. 2 mm
4. 2.5 mm
5. 1.5 mm

105. The wall of the trachea consists of:

1. Mucosa, submucosa, fibrocartilage, and adventitia
2. Mucosa, fibrocartilage, and adventitia
3. Mucosa, submucosa, and adventitia
4. Mucosa, submucosa, fibrocartilage, and muscular layer
5. Mucosa, submucosa, muscular layer, and adventitia

106. The epidermis develops from:

1. Ectoderm
2. Myotome
3. Dermatome
4. Sclerotome
5. Endoderm

107. Eleidin is found in the cells of:

1. Stratum lucidum
2. Stratum corneum
3. Basal layer
4. Spinous layer
5. Granular layer

111. The papillary dermis lacks:

1. Keratinocytes
2. Macrophages
3. Tissue basophils
4. Fibroblasts
5. Smooth muscle cells

112. Positive enzyme reaction to DOPA oxidase occurs in:

1. Melanocytes
2. Keratinocytes
3. Langerhans cells
4. T lymphocytes
5. Merkel cells

113. Sebaceous glands have the following structure:

1. Simple branched alveolar
2. Simple branched tubular

3. Simple unbranched tubular
4. Complex alveolar-tubular
5. Simple alveolar unbranched

114. The secretory portion of merocrine sweat glands contains:

1. Secretory cells and myoepithelial cells
2. Secretory and supporting cells
3. Secretory cells and ciliated cells
4. Secretory and excretory cells
5. Secretory cells only

115. Sebaceous glands secrete by:

1. Holocrine mechanism
2. Merocrine mechanism
3. Microapocrine mechanism
4. Macroapocrine mechanism
5. Mixed merocrine-apocrine mechanism

116. Renin is synthesized by:

1. Juxtaglomerular cells
2. Interstitial cells
3. Collecting tubule cells
4. Macula densa cells
5. Podocytes

117. Prostaglandins are synthesized by:

1. Interstitial cells
2. Juxtaglomerular cells
3. Mesangial cells
4. Juxtavascular cells
5. Juxtamedullary cells

118. Sodium reabsorption is primarily regulated by:

1. Aldosterone
2. Oxytocin
3. Vasopressin
4. Angiotensin
5. Renin

119. Main cellular elements of loose irregular connective tissue:

1. Fibroblasts, macrophages
2. Fibroblasts, basophils
3. Lymphocytes, monocytes
4. Neutrophils, macrophages
5. Macrophages, plasma cells

120. Dense connective tissue forms:

1. Tendons
2. Reticular dermis
3. Papillary dermis
4. Hypodermis
5. Retina

121. In mature fibroblasts, well-developed structures include:

1. Rough endoplasmic reticulum
2. Lysosomes and peroxisomes
3. Mitochondria and epitheliofibrils
4. Smooth endoplasmic reticulum
5. Vacuoles and myofibrils

122. The main function of plasma cells:

1. Production of immunoglobulins
2. Synthesis of heparin and histamine
3. Phagocytosis
4. Synthesis of amorphous substances and fibers
5. Hormone production

123. Cells that produce heparin and histamine:

1. Mast cells
2. Macrophages
3. Adipocytes
4. Fibroblasts
5. Melanocytes

124. T-dependent zone of lymph nodes:

1. Paracortex
2. Lymphoid follicles
3. Medullary cords
4. Medullary sinuses
5. Parafollicular zone

125. The blood-thymus barrier is formed by:

1. Endothelium, basement membrane, and reticuloepithelial cells
2. Macrophages, basement membrane, reticular cells
3. Endothelium, basement membrane, reticuloendothelial cells
4. Endothelium, basement membrane, reticular fibers
5. Endothelium and basement membrane only

126. At the center of an erythropoietic island is located:

1. Macrophage
2. Megakaryocyte

3. Platelet
4. Reticulocyte
5. Endothelial cell

127. Peyer's patches contain:

1. Dome, follicular zone, parafollicular zone
2. White and red pulp
3. Cortex and medulla
4. Cortex, medulla, paracortical zone
5. Dome, medulla, paracortical zone

128. White pulp of the spleen contains:

1. T- and B-lymphocytes
2. T-lymphocytes and macrophages
3. B-lymphocytes and reticular cells
4. Splenocytes and red blood cells
5. Plasma cells and reticular cells

129. During erythropoiesis, the nucleus leaves the cell at the stage of:

1. Oxyphilic normocyte
2. Basophilic normocyte
3. Polychromatic normocyte
4. Erythroblast
5. Pronormocyte

130. The youngest morphologically identifiable cell in thrombocytopoiesis is:

1. Megakaryoblast
2. Platelet
3. Promegakaryocyte
4. Monoblast
5. Megakaryocyte

131. At which stage of granulocytopoiesis do cells lose the ability to divide?

1. Metamyelocyte
2. Medullocyte
3. Progranulocyte
4. Myeloblast
5. Band leukocyte

132. Percentage of basophilic leukocytes in peripheral blood:

1. 0–1%
2. 4–8%
3. 2–5%
4. 65–75%
5. 0–0.5%

133. The myofibril segment between two Z lines is called:

1. Sarcomere
2. T-tubule system
3. M-line
4. N-zone
5. Sarcosome

134. Thin filaments (protofibrils) are composed of:

1. Actin
2. Myosin
3. Nebulin
4. Immunoglobulin
5. Albumin

135. The A-band (anisotropic band) contains:

1. Partially myosin and actin
2. T-system and myosin
3. Only myosin
4. Only actin
5. Nothing

136. The I-band (isotropic band) is formed from:

1. Actin, tropomyosin, troponin
2. Myosin, troponin, tropomyosin
3. Only actin
4. Actin and myosin, troponin
5. Partially actin and myosin

137. The origin of skeletal muscle tissue:

1. Myotome
2. Mesenchyme
3. Mesoderm
4. Ectoderm
5. Myoepicardial plate

138. Surfactant is produced by:

1. Type II alveolocytes
2. Type I alveolocytes
3. Bronchiolar epithelial cells
4. Goblet cells
5. Type III alveolocytes

139. The air-blood barrier includes:

1. Type I alveolocytes
2. Multi-row bronchial epithelium

3. Type II alveolocytes
4. Lung macrophages
5. Type III alveolocytes

140. Which cells are absent in the trachea epithelium?

1. Top cells
2. Goblet cells
3. Endocrine cells
4. Ciliated cells
5. Basal cells

141. The structural unit of the respiratory portion of the lung is:

1. Acinus
2. Lobule
3. Follicle
4. Sac
5. Island

142. Cells of the outer granular layer of the cerebral cortex:

1. Small pyramidal neurons
2. Spindle neurons
3. Ganglion neurons
4. Pseudounipolar neurons
5. Large stellate neurons

143. Which layer is not expressed in the motor cortex?

1. Inner granular layer
2. Molecular layer
3. Outer granular layer
4. Ganglionic layer
5. Polymorphic layer

144. Autonomic ganglia are not characterized by:

1. Consisting of radicular cells
2. Preganglionic cholinergic fibers
3. Postganglionic fibers terminating in organs
4. Multipolar neurons
5. Preganglionic fibers mostly myelinated

145. Cells lining the brain ventricles and central canal of the spinal cord:

1. Ependymogliocytes
2. Astrocytes
3. Oligodendrocytes
4. Endothelial cells
5. Microglia

146. Formation of the blood-brain barrier involves:

1. Astrocytes
2. Multipotent glia
3. Ependymocytes
4. Neurolemmocytes
5. Oligodendrocytes

148. Formation of a nerve fiber involves:

1. Neurolemmocytes
2. Ependymocytes
3. Microglia
4. Protoplasmic astrocytes
5. Fibrous astrocytes

149. Nissl (tigroid) substance in neurons is:

1. Aggregates of rough endoplasmic reticulum and ribosomes
2. Smooth endoplasmic reticulum and ribosomes
3. Golgi complex and mitochondria
4. Smooth endoplasmic reticulum and mitochondria
5. Peroxisomes and lysosomes

150. Main structural elements of the uveal tract of the eye:

1. Choroid, ciliary body, iris
2. Fibrous coat, ciliary body, sclera
3. Choroid, lens, iris
4. Iris, sclera, retina
5. Retina, sclera, vitreous

151. Cornea. Identify the incorrect statement:

1. Part of the accommodative apparatus of the eye
2. Outer layer covered by non-keratinized stratified squamous epithelium
3. Avascular
4. Part of the fibrous tunic
5. Contains free nerve endings

152. Transparency of the vitreous body is due to:

1. Vitrein
2. Hyaluronic acid
3. Eleidin
4. Lipoproteins
5. Crystallin

153. Organ of hearing is located in:

1. Cochlear duct
2. Saccule

3. Utricle
4. Vestibular membrane
5. Hearing scallops

154. Absent cells in the retina:

1. Pseudounipolar neurons
2. Bipolar neurons
3. Horizontal neurons
4. Ganglion neurons
5. Rod photoreceptors

155. Cells that destroy bone tissue are:

1. Osteoclasts
2. Fibroclasts
3. Osteoblasts
4. Osteocytes
5. Chondroclasts

156. Reticulofibrous bone tissue in adults is found:

1. At fused cranial sutures
2. Compact bone of long bones
3. Flat bones
4. Cancellous bone
5. Metaepiphyseal plate

157. Structural unit of compact bone:

1. Osteon
2. Osteocyte
3. Osteoblast
4. Osteoclast
5. Periosteum

158. Periosteum consists of:

1. Outer fibrous layer and inner cellular layer
2. Outer cellular layer and inner fibrous layer
3. Reticular cells and fibers
4. Osteocytes, osteoclasts, and basement membrane
5. Osteoblasts, osteocytes, osteoclasts

159. The epidermis develops from:

1. Ectoderm
2. Endoderm
3. Mesoderm
4. Coelomic epithelium
5. Dermatome

160. Melanin pigment is synthesized by:

1. Melanocytes
2. Spinous cells
3. Melanotropocytes
4. Basal epidermal cells
5. Melanophores

161. The cells of the granular layer of the epidermis contain:

1. grain keratohyalin
2. grain eleidin
3. solid keratin
4. air bubbles
5. soft keratin

162. The skin of the fingers is not peculiar:

1. does not contain sebaceous glands
2. contains sweat glands
3. epidermis consists of five layers
4. papillary dermis is well developed
5. is covered by stratified squamous epithelium nonsquamous

163. Langerhans cells of the epidermis are:

1. macrophages
2. lymphocytes
3. cells that synthesize melanin
4. cambial cells
5. cells that synthesize keratin

164. The structural-functional unit of the pancreas:

1. acinus
2. follicle
3. pancreatic islet
4. discount-islet cells
5. slice

165. Fundus glands do not contain:

1. goblet cells
2. parietal cells
3. parietal cells
4. endocrine cells
5. a main cell

166. Enamel is composed of:

1. prisms
2. fibers

3. ganoblast
4. tubules
5. plates

167. The cardiac gastric glands in the structure:

1. simple branched tubular
2. simple straight tube
3. simple alveolar
4. complex tubular
5. complex alveolar

168. Sinusoids of the liver are peculiar due to:

1. the absence of the basement membrane
2. the presence of continuous basal membrane
3. high blood pressure
4. contains pure arterial blood
5. contains pure venous blood

169. Cartilage tissue is formed by:

1. chondrocytes, chondroblasts, and intercellular substance
2. chondrocytes, reticular fibers, and vessels
3. chondrocytes and chondroblasts
4. chondrocytes and fibers with prechondroblasts
5. chondrocytes and amorphous material

170. An isogeneic group is:

1. chondrocytes lying in one cavity
2. osteocytes lying in the gaps
3. a group of mesenchymal cells
4. concentrated areas of the intercellular substance
5. a group of chondroblasts in perichondrium

171. Hyaline cartilage is found in:

1. trachea
2. ear
3. intervertebral disc
4. in the field of tendon-cartilage transition
5. small bronchi

172. Power cartilage of articular surfaces is supplied by:

1. synovial fluid
2. perichondrium
3. vessels in the outer surface of cartilage
4. vessels in the deepest part of cartilage
5. periosteum

173. The cartilaginous model of the future bone is made up of:

1. perichondrium surrounding hyaline cartilage
2. perichondrium surrounding elastic cartilage
3. perichondrium surrounding fibrocartilage
4. embryonic hyaline cartilage without perichondrium
5. elastic cartilage surrounded by periosteum

174. Endocrine cells produce:

1. hormones
2. enzymes
3. enzymes
4. hydrochloric acid
5. mucus

175. The hormone acts on:

1. target cells
2. stem cells
3. cambium cells
4. growing cells
5. basal cells

176. In the anterior hypothalamus are located:

1. supraoptic and paraventricular nuclei
2. arcuate nucleus (infundibular)
3. dorsomedial nucleus
4. premammillary nucleus
5. Clark's nucleus

177. C-cells of the thyroid gland produce:

1. calcitonin (thyrocalcitonin)
2. thyroxine
3. triiodothyronine
4. parathyrin
5. thyroid-stimulating hormone

178. The formation of tissue from its rudiments is called:

1. histogenesis
2. proliferation
3. metaplasia
4. gastrulation
5. hypertrophy

179. Genetically programmed differentiation of tissues is called:

1. determination
2. integration

3. differentiation
4. regeneration
5. metaplasia

180. Combining various tissues and organs in a single organism is called:

1. integration
2. determination
3. regeneration
4. metaplasia
5. differentiation

181. One characteristic of epithelial tissue is:

1. does not contain blood vessels
2. has a good blood supply
3. rich in intercellular substance
4. does not regenerate
5. does not contain nerve endings

182. Simple squamous epithelium covers:

1. bladder mucosa
2. serous membranes
3. bronchi
4. mucosa of the small intestine
5. rectal mucosa

183. Cardiac conduction system includes:

1. pacemaker cells, intermediate cells, Purkinje fibers
2. intercalated plate, pacemaker cells, intermediate cells
3. Purkinje fibers, bundle of His, and gusset plates
4. Purkinje fibers, bundle of His, and intermediate cells
5. bundle of His and Purkinje fibers

184. Pacemaker cells tend to:

1. contain few organelles
2. be rich in mitochondria
3. have a T-tubular system
4. be rich in sarcoplasmic reticulum
5. perform contractile function

185. Epicardium. Select the incorrect statement:

1. is covered with a single layer of cuboidal epithelium
2. consists of a thin plate of connective tissue
3. tightly adherent to the myocardium
4. is the visceral pericardium leaflet
5. the free surface is covered by mesothelium

186. Endocardium lacks:

1. external elastic membrane
2. subendothelium
3. musculo-elastic layer
4. endothelium
5. outer layer of connective tissue

187. A typical cardiomyocyte is not characterized by:

1. cytoplasm almost devoid of organelles
2. cytoplasm rich in myofibrils
3. cytolemma forms a T-tubular system
4. abundant sarcoplasmic reticulum
5. function – contraction

188. Double-membrane organelles include:

1. mitochondria
2. endoplasmic reticulum
3. Golgi complex
4. lysosomes
5. peroxisomes

189. A cell with well-developed granular endoplasmic reticulum is involved in the synthesis of:

1. protein
2. lipids
3. glycogen
4. pigments
5. lysosomes

190. Lysosomes are well-developed in:

1. macrophages
2. fibroblasts
3. plasma cells
4. myocytes
5. neurocytes

191. Lysosomes are formed by:

1. Golgi apparatus
2. smooth endoplasmic reticulum
3. granular endoplasmic reticulum
4. nucleus
5. mitochondria

192. Cilium consists of:

1. microtubules

2. microfilaments
3. myofibrils
4. neurofibrils
5. tonofibrils

193. Microtubules are formed from the protein:

1. filaggrin
2. actin
3. tubulin
4. myosin
5. keratin

194. Ribosomes are located on the surface of:

1. granular endoplasmic reticulum
2. agranular endoplasmic reticulum
3. Golgi complex
4. mitochondria
5. lysosomes

195. The nucleolus functions as:

1. synthesis of glycogen
2. transfer of genetic information
3. rRNA synthesis
4. genetic information storage
5. DNA synthesis

196. The main process occurring in the S period of interphase is:

1. doubling of the amount of DNA
2. synthesis and accumulation of energy
3. growth of cells
4. synthesis of tubulin
5. spindle formation

197. The chromosomes at anaphase of mitosis:

1. spiralize
2. move to opposite poles of the cell
3. are arranged in the equatorial plane
4. disappear
5. appear

198. The number of chromosomes in human somatic cells is:

1. 46
2. 28
3. 48
4. 23
5. 24

199. Identify sources of the yolk sac of human:

1. embryonic ectoderm
2. extraembryonic endoderm
3. germ mesenchyme
4. extraembryonic mesoderm

200. What germ layers develop epithelial tissue:

1. only ectoderm and mesoderm
2. only ectoderm and endoderm
3. ectoderm, mesoderm, and endoderm
4. all three germ layers

201. What epithelium belongs to the group of single-layer, according to the morphological and functional classification?

1. single row
2. stratum
3. pseudostratified
4. transition

202. What type of apocrine secretion is called?

1. the secret is released without destruction of glandulocyte
2. the secret is allocated by total destruction of glandulocyte
3. the secret is allocated by destruction of microvilli of glandulocyte
4. the secret is allocated by destruction of the tops of glandulocyte

203. What are the main functions of eosinophils?

1. inactivation of histamine
2. phagocytosis of microorganisms and particles
3. phagocytosis of the antigen-antibody complex
4. participation in allergic and anaphylactic reactions

204. The composition of hemoglobin in red blood cells of the adult:

1. HbA 98%
2. HbF 70%
3. HbA 30%
4. HbF 2%

205. Specify the main features of dense connective tissue:

1. prevalence of the main substance
2. monotony of the cells
3. prevalence of fibers
4. variety of cells

206. Determine the function of fibroblasts:

1. phagocytosis
2. participation in basic (amorphous) substance formation
3. antibodies
4. procollagen synthesis and elastin production

207. What are the functions of macrophages?

1. synthesis and formation of collagenous fibers
2. phagocytosis
3. presentation of antigens
4. antibody production

208. Determine the function of plasma cells:

1. production of antibodies
2. formation of intercellular substance
3. participation in inflammation
4. phagocytosis

209. Specify the cells capable of secreting histamine:

1. eosinophils
2. basophils
3. monocytes
4. mast cells

210. Select the cells that are actively involved in phagocytosis:

1. neutrophils
2. lymphocytes
3. macrophages
4. basophils

211. What processes ensure the growth of cartilage tissue after birth?

1. mesenchymal neoplasm
2. appositional growth
3. interstitial growth
4. intracellular regeneration

212. Hyaline cartilage is present in:

1. rib
2. site of attachment of tendon to bone
3. trachea and bronchi
4. intervertebral disc

213. What proteins are parts of the myofibrils?

1. myosin
2. actin
3. keratin

4. collagen

214. Which of the following is not an organelle found in cardiomyocytes?

1. total value of organelles
2. epitheliofibrillary
3. neurofibrillary
4. myofibrils

215. What is characteristic of cardiac muscle tissue?

1. muscle fibers are composed of cells
2. good cell regeneration
3. muscle fibers anastomose with each other
4. regulated by the somatic nervous system

216. What structures are formed by neurofibrils?

1. mitochondria
2. lysosomes
3. microtubules
4. neurofilament

217. What are the organelles involved in the active transport of substances in neuron processes?

1. microtubules
2. neurofilament
3. mitochondria
4. ribosomes

218. Structural components of nervous tissue:

1. neurons
2. glia
3. main (amorphous)
4. reticular fibers

219. Where are the oligodendrocytes located?

1. around perikaryonic neurons
2. around the processes of neurons
3. lining the ventricles of the brain and central canal
4. around the blood vessels of the brain

220. What is the function of microglia?

1. dividing the barrier
2. trophic
3. safety
4. engaged in phagocytosis of damaged nerve tissue

221. What is the function of axons of the nerve fiber?

1. transmission of nerve impulses
2. provision of cytoplasmic current
3. generation of nerve impulses
4. movement of neurocyte

222. What are the structural elements of nervous tissue that form nerve fibers?

1. oligodendroglial cells
2. microglial cells
3. fibrous astrocytes
4. processes of nerve cells

223. Which gliocytes play a major role in the regeneration of nerve fibers?

1. Schwann cells
2. lemmocytes
3. ependymocytes
4. fibrous astrocytes

224. Where are synaptic vesicles filled with mediator in peptidergic neurons?

1. neuronal perikarya
2. complex Golgi in perikaryon
3. during movement along the axon
4. in the synapse

225. How is the mediator removed from the synaptic cleft?

1. destroyed by postsynaptic membrane enzymes
2. captured by presynaptic membrane transporters
3. gradually disappears by passive diffusion
4. captured by postsynaptic part of synapse

226. The blood-brain barrier is:

1. perivascular spaces
2. totality of components of capillary walls and glial elements between blood and nerve cells
3. terminal expansion of axons of neurocytes
4. barrier between blood and brain neurons

227. The cerebellum performs the following functions:

1. role of central sympathetic nervous system
2. role as analyzer of all sensory information
3. coordination of movements
4. regulation of body balance in space

228. “Pottle form” pear-shaped cells around Purkinje neurons form:

1. scansorial fiber
2. axons of granule cells
3. axons of stellate cells of molecular layer
4. axons of pottle form cells

229. What are the neurons in the cerebellar cortex?

1. multipolar
2. intercalated, associative
3. bipolar
4. motor effector

230. What structures form synapses with Purkinje cells?

1. axons of granule cells
2. dendrites of stellate cells
3. scansorial fiber
4. spread mossy fiber

231. What are the sensory organs containing primary sensory cells?

1. the body of the organ of hearing
2. the body taste
3. body smell

232. What senses contain secondary sensory cells?

1. of the authority
2. the organs of hearing and balance
3. organ taste
4. the olfactory organ

233. What is the structure of the "blind spot" of the retina?

1. wands; little cones become rod-shaped
2. gathering the axons of ganglion cells from the optic nerve
3. cones are disappearing
4. formed by a layer of nerve fibers

234. How is the power of the cornea supplied?

1. own blood vessels
2. liquid anterior chamber
3. liquid posterior chamber of the eye
4. by diffusion from the limb vessels

235. What is the function of the macula utriculi in the inner ear?

1. the perception of linear acceleration
2. the perception of angular acceleration
3. the perception of vibrations
4. perception of gravity

236. What is the function of the macula sacculi in the inner ear?

1. the perception of linear acceleration
2. the perception of angular acceleration
3. the perception of vibrations
4. perception of gravity

237. Which cells are receptor cells of taste buds?

1. sensoepithelial
2. second jitteriness
3. sensorineural
4. fast jitteriness

238. What types of veins are separated?

1. muscle-elastic
2. muscle
3. the simple
4. unmuscle

239. What is the source of the heart?

1. mesenchyme
2. a piece of the parietal ventral mesoderm
3. visceral layer of ventral mesoderm
4. the endoderm

240. The capillaries are all true, except:

1. contain pericytes
2. contain smooth muscle cells
3. the exchange of substances between blood and tissues
4. contain mesothelium

241. What are the central blood-forming organs?

1. lymph nodes
2. thymus
3. the spleen
4. red bone marrow

242. What processes take place in the red bone marrow?

1. formation of erythrocytes, granulocytes, platelets, monocytes
2. education of lymphocyte precursors
3. conversion of precursor T-lymphoblasts into T-lymphocytes
4. reproduction of T and B lymphocytes and their specialization into effector cells

243. What morphological changes accompany the maturation of erythrocyte series cells?

1. reducing the size of the cell and the nucleus, disappearance of the nucleus

2. first increase and then decrease internal content of cells
3. accumulation of hemoglobin and growth of oxyphilic cytoplasm
4. segmentation of the nucleus

244. What morphological changes accompany the maturation of granulocytic series cells?

1. disappearance of the nucleus
2. accumulation in the cytoplasm of specific granules
3. change of the nuclear shape from rounded to segmented
4. accumulation of hemoglobin

245. What morphological changes during maturation occur in megakaryocytes?

1. reduction of the size of the cell
2. increase in the size of the cells
3. polyploidy and segmentation
4. disappearance of the nucleus

246. Where does the antigen differentiation of B lymphocytes begin?

1. in the paracortical area of the lymph node
2. in the red bone marrow
3. in the lymphoid follicles of the spleen
4. in lymphoid follicles in the cortical zone of the lymph node

247. What are the morphological characteristics of thymic involution with age?

1. growth of epithelial tissue
2. reduction of the number of lymphocytes
3. development of fat and connective tissue
4. increase in the number of lymphocytes

248. The stroma formed in hematopoiesis and immunogenesis consists of:

1. capsules and layers of connective tissue
2. reticular or epitelioreticular tissue
3. bone tissue
4. loose connective tissue

249. How does yellow marrow differ from red marrow?

1. lack of developing blood cells
2. strong development of adipose tissue
3. absence of fat cells
4. strongly developed reticulum

250. How does lymph flow inside the lymph node?

1. at the lymph sinuses
2. from the gate to the edge sinuses
3. by the lymphatic vessels
4. from the afferent lymphatic vessels in sinuses to the lymph node gate

251. The formula microtubule centrioles:
1. /9x3/0
2. /9x2/2
3. /9x3/3
4. /9x2/0
5. /9x3/2

252. In the process of cell division which occurs fold decrease in the number of chromosomes?
1. meiosis
2. mitosis
3. amitosis
4. endomitosis
5. for all of the methods of division

253. What organelle is involved in intracellular digestion of substances?
1. lysosomes
2. Golgi complex
3. the peroxisome
4. mitochondria
5. endoplasmic reticulum

254. What is a marker enzyme for peroxisomes :
1. catalase
2. amylase
3. lipase
4. peptidase
5. phosphatase

255. The transfer of macromolecules through plasmolemma as a solution, colloid or suspension is carried out by:
1. pinocytosis
2. phagocytosis
3. passive transport
4. active transport
5. exocytosis

256. Microtubules are composed of a protein:
1. tubulin
2. actin
3. the keratin
4. elastin
5. myosin

257. Large formations consisting of protoplasm with many nuclei:
1. symplasts
2. platelets
3. syncytia
4. cells
5. fibers

258. Presence of any organelle due basophilic of the cytoplasm of cells:
1. ribosomes

2. microtubules
3. mitochondria
4. lysosomes
5. centrioles

259. What organelles are involved in the formation of spindle cells:
1. centrioles
2. of the ribosome
3. endoplasmic reticulum
4. lysosomes
5. the Golgi apparatus

260. In which phase begins the formation of spindle:
1. prophase
2. metaphase
3. anaphase
4. telophase
5. interphase

261. The stage at which the implantation of the embryo in the uterine wall:
1. of the blast cyst
2. zygote
3. 2-cell stage
4. 4-cell stage
5. Morula

262. Crushing different from mitosis:
1. lack of growth, nondisjunction daughter cells
2. an increase in the size of the daughter cells
3. divergence of daughter cells
4. changing the number of chromosomes in the daughter cells
5. form a haploid sets of chromosomes in the cells

263. How many days after fertilization, the human embryo begins implanting into the uterus:
1. 7 days
2. 5 days
3. after 10 days
4. 3 days
5. after 1 day

264. From the endoderm forms:
1. intestinal tube
2. dermatome
3. sclerotome
4. chordal process
5. somites

265. Structural and functional unit formed by the placenta:
1. cotyledon
2. trophoblast
3. chorionic villi
4. vessels of the villi

5. gap

266. Which of the following is derived from embryonic sources ectoderm?
1. ganglion plate
2. somites
3. nefrotom
4. splanhnotom
5. dermatitis

267. A method of crushing a man:
1. complete, uneven, asynchronous
2. asynchronous uniform, complete
3. goloblasticheskoe, uneven
4. complete, synchronous
5. incomplete, uneven

268. Which of the developing tissue derived from mesenchyme splanchnotome:
1. red blood cells
2. striated muscle tissue
3. striated heart muscle tissue
4. epithelium viscera
5. skin epidermis

267. Type of human placenta:
1. gemohorial
2. epiteliohorial
3. desmohorial
4. endoteliohorial
5. vazohorial

268. What are the only answer mesoderm derivatives?
1. somites, nefrotom, splanhnotom
2. the epidermis and mesenchyme
3. the neural tube, nefrogonotom
4. splanhnotom, the wall of the yolk sac
5. the notochord, neural tube.

269. Acrosomal reaction occurs:
1. the selection of sperm hyaluronidase and trypsin
2. the penetration of sperm into the egg
3. fusion of the nuclei of sex cells
4. the formation of the zygote
5. selection of egg hydrolytic enzymes

270. Sources of chorionic:
1. trophoblast, extraembryonic mesoderm
2. embryonic knot
3. a piece of the parietal mesoderm
4. trophoblast and extraembryonic endoderm
5. extraembryonic ectoderm and trophoblast.

271. Plimbicary germ cells are formed:
1. to the endoderm of the yolk sac
2. in the wall of the allantois
3. into the seminiferous tubules
4. in the ovaries
5. in the mesoderm of the yolk sac

272. Allantois - is:
1. digitule endoderm grow into the amniotic stem
2. digital process ectoderm
3. villous proliferation of the trophoblast
4. elastic connective education
5. process mesoderm

273. Cortical reaction - is:
1. the formation of fertilization membrane
2. splitting fertilization membrane
3. the destruction of follicular cells
4. fusion of the sperm with the egg
5. the penetration of sperm into the egg

274. Which structure is absent in the mature egg?
1. centrosome
2. mitochondria
3. ribosomes
4. polysomes
5. lysosomes.

275. Initial streak during gastrulation is formed in the process:
1. immigration
2. epiboly
3. intussusception
4. delamination
5. implantation

276. Which structure is located between the epithelium and the connective tissue :
1. basal membrane
2. amorphous
3. collagen fibers
4. elastic membrane
5. an intermediate layer of cells

277. " edges " of the epithelial cells formed :
1. microvilli
2. cilia
3. epitheliofibril
4. desmosomes
5. processes

278. Pseudostratified ciliated epithelium refers to :
1. single layer
2. multilayer

3. flat stratum
4. a three-layer
5. to the cube

279. Stratified squamous epithelium not keratinizing found in :
1. oral
2. bladder
3. the gallbladder
4. epidermis
5. trachea

280. The morphological classification exocrine glands is based on:
1. the structure of the ductless and secretory department
2. the structure of the ductless
3. the structure of the end section
4. structure of cells ductless
5. the structure of the cell secretory department.

281. Which genetic type is a single-layer columnar epithelium limbic:
1. enterodermal
2. epidermal
3. tselonefrodermal
4. ependimoglial
5. angiodermal

282. What are the white blood cells can determine gender:
1. neutrophils
2. basophils
3. eosinophils
4. lymphocytes
5. monocytes

283. The marker enzymes specific neutrophil granules are:
1. alkaline phosphatase
2. acid phosphatase
3. arylsulfatase
4. peroxidase
5. beta glukuronidaza

284. Crystalloid structure found in specific grains:
1. eosinophils
2. neutrophils
3. of basophils
4. neutrophils and basophils
5. all granulocytes

285. Leukocyte involved in the inactivation of the histamine:
1. eosinophil
2. neutrophil
3. basophils
4. lymphocyte

5. monocyte

286. In which of the following bodies hematopoietic observed only in the embryonic period:
1. in liver
2. in the bone marrow
3. in the spleen
4. in the lymph nodes
5. in the thymus

287. The core of the majority of mature eosinophils is:
1. the two segments
2. more than 10 segments
3. one segment
4. 3 segments
5. 4 or more

288. At what stage of erythropoiesis is being forced kernel:
1. oxyphilic normocytes
2. erythroblasts
3. basophilic normocytes
4. proeritroblasta
5. polychromatic normocytes

289. The secondary granules of granulocytes appear during the following stages:
1. myelocyte
2. metamyelocytes
3. mieloblasts
4. stem cells
5. promyelocytes

290. Stage granulocytopoiesis, which stops cell division:
1. metamielotsit
2. myeloblast
3. progranulocyte
4. medullocell
5. segmented granulocyte

291. Osteon is:
1. the structural and functional unit of the tubular bones
2. bone cells
3. intercellular substance bone
4. a source of bone tissue
5. osteogenic cell

292. Cells macrophagial system :
1. macrophages, Kupffer cells , osteoclasts , fibroklasts , microglia
2. osteoclasts , fibroblasts , microglia cells , tissue basophile
3. macrophages , fibroblasts , plasma cells , lymphocytes
4. pericytes , Kupffer cells, osteoblasts , microglia
5. settled macrophages , basophils , lymphocytes, lymphoblast

293. Dense irregular connective tissue is in:

1. mesh layer of the skin
2. bone marrow
3. cancellous
4. tendons
5. ligaments

294. The most typical plasma cells are organelles:
1. endoplasmic reticulum granular type
2. ribosome, polysomes
3. the structure of the Golgi complex
4. mitochondria
5. lysosomes

295. List the most common cells of loose fibrous connective tissue
1. macrophages, fibroblasts, plasma cells, mast cells
2. fibroblasts, pericytes, macrophages, pigmentotsits
3. adventitial cells, plasma cells, leukocytes
4. adipocytes , reticulocytes, pericytes
5. fibroblasts, endothelial cells, lymphocytes, adventitial cells

296. The most typical organelles of macrophages are:
1. lysosomes
2. the type of granular endoplasmic reticulum
3. the structure of the Golgi complex
4. mitochondria
5. ribosomes, polysomes

297. The connective tissue cells that produce histamine and heparin:
1. fat
2. fibroblast
3. macrophage
4. plasma cell
5. adipocyte

298. Classification of proper connective tissue is based on:
1. ratio of cells and intercellular substance
2. the function performed
3. cellular composition
4. the composition of intercellular substance
5. the presence of fibers

299. The connective tissue cells non mesechyma origin:
1. pigment cells
2. pericytes
3. adventitial cells
4. mast cells
5. fibroblasts

300. The growth of long bones in length is provided:
1. metaepiphyseal cartilage plate
2. an increase in the intercellular substance

3. osteoblasts and osteocytes
4. a layer of fibrous periosteum
5. cell layer of the periosteum

301. The marker enzymes of fat cells:
1. gistidin dekarboksilaza
2. alkaline phosphatase
3. acid phosphatase
4. peroxidase
5. cytochrome oxidase

302. Apposition cartilage growth is due to:
1. chondroblast
2. chondrocytes
3. prehondrotsitov
4. groups of isogenic cells
5. perichondrium

303. Interstitial cartilage growth is ensured by
1. dividing chondrocyte
2. division chondroblast
3. increase in the intercellular substance
4. stretching perichondrium
5. increasing the number of groups of isogenic cells .

304. Isogeneic group formed by:
1. chondrocytes
2. chondroblast
3. two cells
4. prehondroblasts
5. osteoblasts

305. The classification of cartilage is based on:
1. the structure of the intercellular substance
2. the location of the cartilage in the organs
3. their origin
4. the presence of fibrous structures
5. composed of cellular elements

306. The growth of long bones in thickness is provided by:
1. the periosteum
2. metaepiphyseal cartilage plate
3. common external plates
4. internal records total
5. osteons

307. The bone cells with high alkaline phosphatase activity and a well-developed synthetic unit:
1. osteoblast
2. osteocyte
3. osteoclast
4. osteocyte and osteoclast

5. fibroblast

308. In which there is no cartilage perichondrium?
1. to the cartilage of the joints
2. in the cartilage of the trachea
3. into the cartilage of the ear
4. in the cartilage of the ribs
5. in the cartilage of the larynx

309. The connective tissue cells derived from blood monocytes:
1. osteoclast
2. fibroblast
3. osteoblast
4. chondroblast
5. osteocyte

310. Heart muscle tissue develops from:
1. mioepikardial plate
2. myotome
3. sclerotome
4. mesenchyma
5. nefrogonotoma

311. The sarcomere is limited:
1. Z-lines
2. isotropic disks
3. anisotropic discs
4. N-zones
5. M-lines

312. Types of connections that are typical of the contractile cardiomyocytes:
1. interdigital, desmosomes, nexus
2. interdigital, simple synaptic
3. tight, slit-like, simple
4. synaptic, desmosomes, slit
5. fingerlike, slit-like, simple

313. Myocytes with neural origin:
1. myocytes iris
2. myoepitheliocytes
3. smooth muscle wall of the internal organs
4. contractile cardiomyocytes
5. conductive cardiomyocytes

314. Some of the sarcomere consisting of myosin and actin from partially, with M-linear middle.
1. anisotropic drive
2. isotropic disk
3. telofragma
4. mesophragma
5. N-zone

315. Some of the sarcomere actin consisting of protofibrils in the middle which extends Z- line .

1. isotropic disc
2. anisotropic drive
3. H - zone
4. telofragma
5. mesophragma

316. Located in the middle of an isotropic disc attached thereto actin protofibrils. What is the structure of the sarcomere matches this description ?
1. telofragme
2. anisotropic disk
3. H - zone
4. mesophragma
5. T system

317. The beams are surrounded by muscle fibers:
1. pelimbicysium
2. epimiziem
3. endomysium
4. sarcolemma
5. endotenoniem

318. The plot of the sarcomere, busy M-line and the adjacent zones, which houses the only myosin filaments, called:
1. N-stripe
2. I-drive
3. A disk
4. telofragma
5. T-tubules.

319. The structural element of striated skeletal muscle tissue is:
1. muscle fiber
2. myocyte cross-striped
3. the muscle fiber and myocyte
4. myoepithelial cells
5. cardiomyocyte.

320. What structures provide the smooth muscle calcium ions:
1. caveolae and vesicles
2. pinocytic bubbles
3. mitochondria
4. smooth endoplasmic reticulum
5. lysosomes.

321. Intercellular substance of muscle tissue is represented by:
1. loose connective tissue
2. adipose tissue
3. reticulum
4. satellite cells
5. of dense connective tissue

322. What is the cell corresponds to the following description - "fusiform shape, length 200-500 mm, thickness 5-8 mm, rod-shaped core, Located in the center, there is no transverse striations ":

1. smooth myocyte
2. cardiomyocyte contractile
3. conducting cardiomyocyte
4. miosatellitotsit
5. mioepiteliotsit

323. Each skeletal muscle fiber is surrounded by:
1. endomysium
2. pelimbicysium
3. epimiziem
4. endotenoniem
5. peritenoniem.

324. Free nerve endings consist of:
1. of finite branching axons
2. branching axons and glial cells
3. in the axial cylinder surrounded by a connective tissue capsule
4. lemmotcytes
5. axons

325. Neuron T-shaped appendage fissile:
1. psevdounipolar
2. unipolar
3. bipolar
4. multipolar
5. neuroblast

326. Tigroid substance - is:
1. ribonucleoproteins
2. fat inclusions
3. carbohydrate inclusions
4. the secretory granules
5. deoxyribonucleoproteins

327. Neuroglial cells with secretory function:
1. ependimogliotcytes
2. protoplasmic astrocytes
3. fibrous astrocytes
4. microglia
5. oligodendrocytes

328. The nodes of Ranvier nerve fiber corresponds to:
1. border adjacent lemmotcite
2. mezaxon
3. contact of nerve fibers
4. nucleated zone lemmotcite
5. digital contact lemmotcite

329. Mezaxonom is:
1. duplikatur plasmolemma lemmotcite
2. lemmocite
3. duplikatur plasmolemma ependimotcite

4. derivative of microglia
5. duplikatur plasmolemma neurocyte

330. The ventricles of the brain and spinal canal lined with:
1. ependimotcytes
2. astrocytes
3. oligodendrocytes
4. epithelium
5. microglia

331. In myelinated nerve fibers contain:
1. one axial cylinder
2. 1-3 axons
3. many axons
4. a few axons
5. two axial cylinder

332. Spinal node is located :
1. along the dorsal root of the spinal cord
2. along the anterior spinal roots
3. along the front and rear spinal roots
4. along the lateral horn of the spinal cord
5. a rear spermatic cord spinal cord

333. The dendrites of neurons of the spinal unit sent to:
1. composed of a mixed peripheral nerve receptors and form
2. in the dorsal roots of the spinal cord to their own kernels
3. in the composition of mixed peripheral nerve and motor nerve form closure
4. in the center consisting of mixed nerve and synapse with neurons in the central
5. in the posterior horns of the spinal cord to effector neurons

334. In its own nucleus of the spinal cord are :
1. associative neurons that connect the spinal cord to the cerebellum and thalamus
2. associative neurons linking the front and rear horn
3. sensory neurons that communicate with the spinal cord hypothalamus
4. motor neurons that connect the spinal cord with large crust hemispheres
5. associative neurons that connect the spinal cord with the cerebellum

335. Stellate neurons of the cerebellum with short neurites:
1. block excitatory impulses from mossy fibers
2. cells transmit inhibitory impulses grains
3. transmit excitation pulses pear-shaped cells
4. block excitatory impulses from cells of the molecular layer
5. blocking the impulses from scansorial fibers

336. Outgrowth of spinal ganglion neurons are in:
1. the gray matter of the spinal cord through the dorsal roots
2. the white matter of the spinal cord
3. the gray matter of the spinal cord via the lateral horn
4. through the rear side horns roots
5. gray matter through the front horn

337. In the front horn of the spinal cord are:
1. the medial and lateral nuclei somatomotor
2. medial and intermediate nucleus
3. the intermediate and lateral nucleus
4. dorsal, medial and lateral nucleus
5. and medial dorsal nucleus sensitive

338. In the intermediate part of the spinal cord are distinguished:
1. the medial and lateral intermediate nucleus
2. own medial and intermediate nucleus
3. dorsal, medial and lateral nucleus
4. own, dorsal, lateral intermediate nucleus
5. dorsal, lateral and own kernel

339. Ganglia intramural plexus include:
1. efferent, afferent neurons and associative
2. and efferent neurons associative
3. receptor cells and associative local reflex arcs
4. and associative afferent neurons
5. long procession effectors neurons (the cell type I) and associative

340. In the cerebellar cortex distinguish layers:
1. molecular, ganglionic, granular
2. molecular, pyramidal, granular
3. the molecular, ganglionic, polymorphic
4. molecular, pear-shaped, pyramidal
5. the molecular, granular outer, inner granular

341. Sources of the ganglia of the autonomic nervous system :
1. ganglion plate
2. of trunk neural tube
3. front brain bubble
4. endoderm
5. placode

342. The main criterion, which is based on the classification of the arteries:
1. ratio of smooth muscle cells and elastic fibers
2. localization of arteries in the body
3. the diameter of the arteries
4. the presence of internal elastic membrane
5. the availability of graduate elastic membrane

343. Intercalated disks match:
1. the border of the adjacent contractile cardiomyocytes
2. the boundary of the adjacent conductive cardiomyocytes
3. in place of weaving myofibrils plasmolemma
4. section of the lateral connections between cardiomyocytes
5. zone of greatest congestion of glycogen

344. The source of the blood vessels:
1. blood islands of the yolk sac and chorionic wall
2. the yolk sac

3. colon plimbicary mesenchymal cells
4. wall chorionic
5. mioepikardial plate

345. In large arteries vessels are located in:
1. the outer and middle shells
2. the inner and middle membranes
3. the average shell
4. inner shell
5. in all three membranes

346. The efferent nerve endings in the capillaries end in:
1. pericytes
2. pericytes and endothelial cells
3. adventitial cells
4. endothelial cells
5. basal membrane

347. The sinusoids are found in :
1. liver
2. kidney
3. the skin
4. muscle
5. intestine

348. In the veins of the weak development of muscular elements :
1. poorly expressed podendotelial layer in the middle of the shell little myocyte
2. There are no myocytes in the middle shell
3. is well developed podendotelial layer and little myocyte in the outer shell
4. a little myocytes in the media and well-developed outer shell
5. low myocytes in the outer shell , but they are available in the inner shell

349. The venous valves are formed :
1. venous intima
2. the inner and middle sheath
3. layer podendotelial
4. all of the shells
5. smooth muscle cells

350. Gematotimic barrier formation involved:
1. capillary endothelium continuous and continuous basal membrane
2. capillaries with pores in the endothelium
3. fenestrated capillaries
4. sinusoidal capillaries
5. capillaries have no basement membrane

351. Features of blood capillaries type II:
1. fenestrated endothelium, basement membrane is a continuous
2. a continuous endothelium, basement membrane is discontinuous
3. has pores endothelium, basement membrane is discontinuous
4. continuous endothelium, basement membrane solid
5. fenestrated endothelium, the basement membrane is absent

352. The classification is based on the veins:
1. the degree of development of muscular elements
2. relationship of muscle and elastic fibers
3. ratio of muscle and collagen fibers
4. the presence of valves
5. caliber and location in the body

353. Veins with the average development of muscular elements include:
1. shoulder
2. femoral
3. inferior vena
4. superior vena
5. veins of the meninges

354. In any arteries no internal elastic membrane?
1. elastic type
2. muscular type
3. mixed type
4. arterioles
5. elastic and mixed type

355. Features of the structure of small lymphatic vessels:
1. there is no muscular elements
2. not of valves
3. are cross-fold
4. no tunica
5. muscle elements only tunica

356. Pericytes in the wall of the capillary are located in:
1. disintegrations basement membrane
2. the cracks of the basement membrane
3. endothelial layer
4. subendothelial layer
5. of the basal membrane

357. The structural features of the portal vein:
1. in the two layers of the tunica muscular fibers
2. in the outer shell –circular myofibers
3. is the most developed outer shell
4. in all the shells of the longitudinal muscle fibers
5. when the inner shell - the thickening of the longitudinal bundles of muscle fibers

358. As part of the valve attaching the endothelium of lymphatic vessels, as well as:
1. elastic membrane, myocytes, connective plate
2. collagen and elastic fibers
3. the internal elastic membrane and connective tissue
4. dense connective tissue, elastic fibers
5. smooth muscle cells

359. Determine the correct answer most defining feature thymus:
1. performs the reaction of cellular immunity and humoral immunity controls

2. provides the cellular immune response
3. carries out the reaction of humoral immunity
4. the reaction is performed as a cellular and humoral immunity
5. provides antigen-differentiation of T lymphocytes

360. Open type circulation in the spleen is characterized in that:
1. open capillaries in the reticular tissue
2. capillaries connect couplings
3. capillaries are opened in the sinuses
4. the capillary walls are thickened
5. capillary walls contain muscle cells

361. With insufficient education thymosin disturbed differentiation:
1. T lymphocytes
2. monocytes
3. B-lymphocytes
4. macrophages
5. plasma cells

362. In the preparation of the body you can see a lot of lymphocytes, reticular skeleton, no lymphoid follicles:
1. thymus
2. spleen
3. lymph node
4. red bone marrow
5. the tonsils

363. The accumulation of macrophages observed in the islands of the bone marrow, which are developing:
1. erythrocytes
2. granulocytes
3. lymphocytes
4. monocytes
5. megakaryocytes

364. The number and size of cells in the thymus Hassall age:
1. increase
2. decrease
3. decrease and disappear
4. disappear
5. does not change

365. The iron for hemoglobin synthesis erythroblasts comes:
1. macrophages
2. reticular cells
3. adventitial cells
4. blood plasma
5. endothelial cells

366. Closed-type blood circulation in the spleen characterized in that:
1. in the capillaries open venous sinuses
2. capillaries connect couplings

3. capillaries open in reticulum
4. the capillary walls are thickened
5. capillary walls contain muscle cells

367. Layered calf thymus is:
1. the accumulation of degenerated epithelial cells
2. the accumulation of degenerated lymphocytes
3. the deposition of calcium salts
4. place the maturation of T-lymphocytes
5. plate tactile nerves

368. Specify the phrase concerning only the medulla of lymph nodes:
1. takes the proliferation and maturation of plasma cells
2. bringing the lymphatic vessels flow into the marginal sinuses
3. arranged lymph nodules with a diameter of about 0.5-1 mm
4. center of breeding inhabited mainly lymphoblasts
5. thymus-dependent zone contains mainly T lymphocytes

369. The composition of the blood-thymic barrier consists of endothelial cells to the basement membrane, as well as:
1. macrophages pericapillary space epithelial cells, basal membrane
2. macrophages, adventitial cells, connective tissue
3. reticulocytes, basal membrane, macrophages
4. pericapillary space reticulocytes
5. macrophages, cells retikuloepitelial

370. The glands of the skin are derived:
1. epidermis
2. of the dermis of the skin
3. the epidermis and mesenchyme
4. mesenchyma
5. subcutaneous fat

371. The sebaceous glands in the structure and type of secretion:
1. simple alveolar branched holocrine
2. simple straight tubular holocrine
3. complex alveolar merocrine
4. simple branched tubular apocrine
5. simple alveolar straight holocrine

372. In the basal layers of the epidermis and the thorny addition to epithelial cells are found:
1. melanocytes dendrocytes lymphocytes
2. granulocytes, macrophages
3. melanocytes, macrophages
4. dendrocytes granular macrophages
5. melanocytes, stem cells, neutrophils

373. The end section skin sweat glands are located in:
1. reticular dermis
2. basal
3. granular

4. thorny
5. horny

374. A layer of the epidermis, containing keratin:
1. horn
2. brilliant
3. granular
4. basal
5. schipovaty

375. A layer of the epidermis, containing keratohyalin:
1. granular
2. basal
3. brilliant
4. prickly
5. horny

376. The wall of the excretory duct of the sebaceous glands is lined with epithelium:
1. stratified squamous
2. a single layer of cubical
3. double-layered cube
4. single-layered prismatic
5. multilane

377. The sources of the skin:
1. the ectoderm and dermatitis
2. endoderm and mesoderm
3. mesoderm and dermatitis
4. and mesoderm splanhnotom
5. and the ectoderm sclerotome

378. The nerve endings located in the sprout layer of the epidermis of the skin:
1. tactile discs
2. tactile corpuscles
3. the end of the flask
4. plate calf
5. Ruffini corpuscles

379. By the structure of the sweat glands are:
1. simple unbranched tubular
2. simple tubular branched
3. simple alveolar branched
4. complex alveolar-tubular
5. simple alveolar unbranched

380. The granular layer of the epidermis of the skin presented:
1. 3-4 layers of diamond-shaped cells
2. a single layer of flat cells
3. 2-3 layers of prismatic cells
4. 3-4 layers of process cells
5. 2-3 layers of rounded or oval cells

381. In what layer of the skin located Meissner corpuscles?
1. papillary
2. the epidermis
3. mesh
4. subcutaneous adipose tissue
5. when all the dermis

382. The characteristics of the cells thorny layer of the epidermis:
1. polygonal shape, have cytoplasmic processes, contain many tonofibrils
2. Process cell cytoplasm containing secretory granules and epitheliofibril
3. elongated form, multiple organelles
4. polygonal shape contains basophilic granules and epitheliofibril
5. the circular shape, and contain pigment granules secretion

383. Clara cells in the airways:
1. involved in the degradation of surfactant
2. is a modified macrophages
3. are located alone between alveolocytes
4. have cilia
5. are found in the epithelium of the large bronchi

384. What bronchus cartilaginous shell disappears?
1. bronchus small caliber
2. lobar bronchus
3. the main bronchus
4. major bronchi
5. bronchi medium caliber

385. Blood supply of light:
1. is derived from the power of the bronchi of the arteries of the systemic circulation
2. in the arterioles of the pulmonary circulation flowing arterial blood
3. into the capillaries of the alveoli enters the blood from the systemic circulation
4. fenestrated capillaries of the alveolar type
5. the pulmonary artery into the lungs bring oxygen-rich blood

386. The general plan of the structure of the digestive tube:
1. mucosa, submucosa, muscular and serous or adventitia
2. mucosa, submucosa, serous
3. mucosa, muscle, adventitia
4. mucous, muscular and serous
5. mucosa, submucosa, and cartilage shell

387. Most of the cells of the pyloric glands are:
1. mucocytes
2. endocrinocytes
3. serotsity
4. parietal cells
5. the main cell

388. The cells forming tooth enamel:
1. enameloblast

2. odontoblasts
3. dentinoblasty
4. cementoblasts
5. fibroblasts

389. Epithelium intralobular ducts of the pancreas single layer:
1. cubic
2. flat
3. cylindrical
4. prismatic
5. ciliated

390. Brunner's gland located:
1. into submucosa 12 duodenum
2. in the submucosa of the ileum
3. jejunal mucosa
4. in the serosa of the colon
5. in the mucous membrane of intestine

391. At the end secretory units of salivary gland myoepithelial cells are located:
1. between the basement membrane and secretory cells
2. between the basement membrane and the adjacent connective tissue
3. in the crevices of the basal membrane
4. various salivary glands are located differently
5. are found only in the excretory ducts

392. Epithelium striated ducts of the salivary glands:
1. simple columnar
2. a single-layer cubic
3. stratified squamous
4. single-layer flat
5. double-sided cube

393. The tooth pulp consists of:
1. loose irregular connective tissue
2. dense irregular connective tissue
3. reticulum
4. adipose tissue
5. nerve tissue

394. The main differences from the duodenum jejunum concern:
1. villi and glands
2. gland and the tunica muscularis
3. villi and crypts
4. crypts and submucosa
5. cellular composition of the villi and crypts

395. PP-cells in the pancreas is controlled:
1. secretion of gastric and pancreatic juice
2. secretion of gastric juice
3. pancreatic juice secretion
4. secretion duodenal glands

5. bile

396. A large number of crypts in the colon occur:
1. goblet cells
2. the main cell
3. M-cells
4. endocrinocytes
5. Paneth cells

397. Disse space limit:
1. endothelial cells and hepatocytes
2. hepatocytes and Ito cells
3. adjacent strands of hepatocytes
4. adjacent hepatocytes
5. the endothelial cells and Kupffer cells

398. In the crypts of the small intestine contains the following cells:
1. limbic, Paneth, nonlimbic cells, goblet, endocrine
2. mucous, limbic, goblet, Paneth
3. endocrine, Paneth, goblet, secretory
4. limbic endocrine, goblet, basal
5. limbic, goblet, ciliated, cambial

399. In any salivary glands are serous crescent:
1. the submandibular and sublingual
2. of the parotid and sublingual
3. the submandibular and parotid
4. only in the parotid
5. in all three glands

400. The regeneration of the epithelium of the small intestine stimulates:
1. epidermal growth factor
2. gastrin
3. serotonin
4. somatostatin
5. peptide vazointestinalny

401. Avilable atsinoinsulyarnyh cells of the pancreas:
1. the presence of zimogen and endocrine granules
2. very large
3. a very small size
4. the presence of large secretory cells
5. located in the outlet duct

402. The structure of a shell different various departments of the pharynx:
1. mucosa
2. submucosa
3. muscle
4. serous
5. adventitia

403. The end sections of Brunner's gland cells meet the following:
1. mucous, goblet, Paneth cells, endocrine, parietal
2. mucous, endocrine, columnar, goblet
3. serous, goblet, endocrine, limbic
4. Paneth cells, goblet, endocrine, limbic
5. nonlimbic cells, Paneth cells, endocrine, goblet

404. M cells and beam cells found in the small intestine:
1. Peyer's patches in the epithelium
2. in the lamina propria
3. on the basis of the villi
4. in the middle portion of the crypts
5. at the bottom of the crypts

405. Centroatsinoz pancreatic cells - this epithelium
1. intercalated ducts
2. interlobular excretory ducts
3. of the main duct
4. acini
5. cells are combined

406. What kind of crypt cells correspond to the following description: "Low prismatic, thin brush border, basophilic cytoplasm, many free ribosomes are able to divide"
1. columnar enterocytes
2. goblet cells
3. Paneth cells
4. endocrine cells
5. cambial cells

407. The structural and functional unit of the pancreas:
1. acinus
2. alveoli
3. slice
4. follicle
5. segment

408. Buds, reducing adult:
1. leaf
2. threadlike
3. mushroom
4. fluted
5. conical

409. Endocrine cells in the salivary glands located:
1. striated duct wall
2. in the end regions of secretory
3. in the wall of the gusset ducts
4. in the wall of the interlobular ducts
5. are found in all of these structures

410. The end section of their own glands of the esophagus are composed of:

1. mucosal cell
2. serous and mucous cells
3. endocrine cells
4. coating and endocrine cells
5. serous cells

411. Joint secretion in the pancreas have:
1. atsino-islet cells
2. centroatsinoz cells
3. endocrine cells
4. the acinar cells
5. goblet cells

412. The epithelium of the intermediate zone of the rectum:
1. stratified squamous not keratinizing
2. simple columnar limbic
3. multilayer cubic
4. pseudostratified prismatic
5. single-layer cubic

413. These cells are involved in the reabsorption of water and urine concentration are vasopressin receptors:
1. cells collecting ducts
2. proximal tubular cells
3. the cells of the distal tubules
4. cells downstream of the loop
5. cells of the ascending loop

414. The Department of nephron cells that reabsorb sodium, have aldosterone receptors:
1. distal tubule
2. proximal twisted tubule
3. the loop of Henle
4. collecting tubes
5. proximal tubule straight

415. Which structures prevalent in proximal tubule cells?
1. mitochondria, lysosomes, vesicles pinocytic
2. granular endoplasmic reticulum, Golgi complex
3. ribosome complex Golgi
4. of the smooth endoplasmic reticulum, Golgi complex
5. granular endoplasmic reticulum, mitochondria

416. The platelet-activating factor is synthesized in the kidney:
1. mesangial cells
2. juxtaglomerular cells
3. interstitial cells
4. jukstavaskular cells
5. podocytes

417. Urine acidification is carried out:
1. intercalated cells sobiratelnh tubes

2. the main cell sobiratelnh tubes
3. cells the loop of Henle
4. cells straight portion of the distal
5. cells proximal part

418. Kidney synthesized following active substances:
1. renin, prostaglandins, erythropoietin
2. renin parathyrin, vasopressin
3. erythropoietin parathyrin, vasopressin
4. somatostatin, renin, leykopoetin
5. antidiuretic hormone, renin, erythropoietin

419. The thin loop of the nephron is lined with a single layer:
1. squamous epithelium

2. a cubic epithelium

3. prismatic epithelium

4. the limbic epithelia

5. mucociliary

420. Renal prostaglandin apparatus includes:
1. and interstitial cells of collecting tubules nephrocytes
2. Gurmagtiga cells, interstitial cells, epithelial cells distal tubule
3. juxtaglomerular cells, podocytes
4. mesangial cells, podocyte cells Gurmagtiga
5. interstitial cells juxtaglomerular cell

421. The secretory phase of urine formation is carried out:
1. collecting tubes
2. proximal tubules of the nephron
3. of the renal corpuscles
4. of the distal tubule
5. the loop of Henle

422. The cells that produce extracellular matrix renal glomerulus:
1. mesangial
2. fibroblasts
3. macrophages
4. podocytes
5. interstitial

423. Seminiferous epithelium of any tract consists of high columnar cells with cilia and low cubic cells with microvilli:
1. efferent tubules
2. straight tubule
3. rete testis
4. duct of the epididymis

5. vas deferens

424. Where is the final differentiation of spermatozoa?
1. to the epididymis duct
2. in the seminiferous tubules
3. into the efferent tubules
4. in the vas deferens
5. in the straight tubules

425. Choose the correct answer from the sequence of periods of spermatogenesis
1. reproduction, growth, maturation, formation
2. formation, growth, multiplication, maturation
3. copying, formation, growth, maturation
4. reproduction, growth, formation, maturation
5. growth, reproduction, maturation, formation

426. The formation of sperm occurs:
1. to the convoluted tubules of the testis
2. in the straight tubules of the testis
3. in the network testis
4. in the convoluted and straight tubules
5. In all these tubules

427. The reproduction of spermatogonia in the testes is done by:
1. mitosis
2. amitosis
3. meiosis
4. and meiosis and mitosis
5. spermatogonia do not breed

428. What are the cells in the testes called sustentotcytes?
1. supports cells
2. glandulotsity
3. spermatogenic cells
4. fibroblast cells
5. cambial cells

429. The cells that synthesize Müller (paramezonefral) inhibitory factor:
1. Sertoli cells
2. Leydig cells
3. plimbicary sex cells
4. neurosecretory cells of the hypothalamus
5. gonadotropic cells of the adenohypophysis

430. The androgen-binding protein secreted by:
1. Sertoli cells
2. Leydig cells
3. the seminal vesicles

4. prostate
5. bulbourethral gland

431. Prostate gland structure are:
1. complex alveolar-tubular
2. simple tubular
3. simple alveolyarnymi
4. branched tubular
5. complex alveolyarnymi

432. The endocrine cells of the testis are located:
1. in the interstitium
2. a fiber layer
3. into the septum of the testis
4. in the layer mioidnom
5. in the layer of spermatogonia

433. Choose the most complete answer about the functions of Sertoli cells:
1. trophic, transportation, barrier, phagocytic
2. the support, trophic, secretory, phagocytosis
3. stimulation of spermatogenesis, trophic
4. support, trophic, endocrine
5. trophic lysis spermatogenic cells, endocrine

434. The wall of the seminal vesicles consists of the following layers:
1. mucous, muscular and adventitia
2. mucosa, submucosa and muscle
3. the mucosal, submucosal, muscular and adventitia
4. mucous, muscular and serosal
5. the mucosal, submucosal, muscular and serosal

435. View of the duct epithelium of the epididymis:
1. double row
2. a single-layer flat
3. multi-row ciliated
4. simple columnar
5. single-layer cubic

436. The period of growth stimulates oogenesis:
1. follitropin
2. progesterone
3. prolactin
4. luteinizing hormone
5. somatotropin

437. The components of the clear covering of the ovary to follicle secreted:
1. follicular cells and oocytes
2. oocytes and luteal cells

3. luteal cells and follicular cells
4. oocytes and interstitial cells
5. the interstitial cells

438. The white body is formed in the ovary:
1. on the site of the corpus luteum after involution
2. as a result of atresia of the follicle
3. on the site of a mature follicle after ovulation
4. in the medulla
5. in place atretic follicle

439. The cervical canal is lined with:
1. single-layer cubic epithelium
2. a single-layered prismatic epithelium
3. simple squamous epithelium
4. two-layer epithelium
5. dual inline epithelium

440. What is the corpus albicans in the ovary:
1. body formed on the site of the follicle and the lost egg
2. the involution of the corpus luteum
3. a body formed in situ bubble Graafova
4. ovarian atrophy
5. the metamorphosis of the corpus luteum

441. Identify the correct sequence of stages of development of the corpus luteum:
1. proliferation and vascularization, glandular metamorphosis, blossoming, involution
2. vascularization, the flourishing, glandular metamorphosis
3. proliferation, flourishing, glandular metamorphosis
4. proliferation, the formation of lutein cells, involution
5. glandular metamorphosis proliferation, blossoming, involution

442. The main hormones that regulate the function of the lactating mammary gland:
1. prolactin, oxytocin
2. prolactin
3. luteinizing hormone
4. estrogen and prolactin
5. progesterone liberiny

443. Corpus albicans in its structure comprises a transparent shell, connective tissue and
1. interstitial cells
2. teckal cells
3. decidual cells
4. follicular cells
5. epithelial cells

444. In mature ovarian follicles are formed:
1. estrogens and gonadokrinin

2. estrogen and lutein
3. follicle stimulating hormone folliculin
4. follitropin progestron
5. progesterone and estrogen

445. The corpus luteum. Indicate the correct answer:
1. as a result of involution in blood progesterone concentration falls
2. is developed on the site of atretic follicles
3. cells of the corpus luteum - modified cells tunica
4. is an exocrine and endocrine
5. under the influence of human chorionic gonadotropin undergoes involution

446. When hypothyroidism in the pituitary gland structure changes:
1. tireotropotcytes
2. mammotropotcytes
3. gonadotropotcytes
4. somatotropotcytes
5. kortikotropotcytes

447. Spongiotsity cells is:
1. of the adrenal zona fasciculata
2. glomerular zone of the adrenal gland
3. netted area overkidney gland
4. medulla
5. sudanofob area

448. Sudanophob form of adrenal gland is located between:
1. glomerular beam zones
2. glomerular and mesh zones
3. mesh and brain areas
4. beam and mesh zones
5. cortical brain areas

449. Which endocrine gland found brain sand:
1. epiphysis
2. neurohypophysis
3. adenohypophysis
4. the hypothalamus
5. adrenal medulla

450. In any adenohypophysis largest cell functional activity manifests itself in the early postnatal period?
1. somatotropic
2. thyritropic
3. kortikotrop
4. basophilic
5. gonadotropin

451. How does the pituitary cells corresponds to the following structure: "irregularly shaped lobed nucleus, many mitochondria, granular endoplasmic reticulum, limbicd granules":
1. kortikotropotcytes
2. mammotropotcytes
3. tireotropotcytes
4. gonadotropotcytes
5. somatotropotcytes

452. The target cells for thyroid-stimulating hormone:
1. cells that synthesize iodine-containing hormones
2. C cells of the thyroid gland
3. the cells that synthesize parathyrin
4. chromaffin cells of the adrenal glands
5. cells synthesizing glucocorticoids

453. The synthesis of glucocorticoids in the adrenal glands stimulate:
1. ACT, corticotropin
2. thyroid-stimulating hormone, somatoliberin
3. GnRH, antiopeptin
4. angiotensin II, ACT
5. tireoliberin, neyrofiziny

454. Hormones produce steroid nature:
1. cells of the zona fasciculata of the adrenal glands
2. chromaffin cells of the adrenal glands
3. acidophilus cells of the adenohypophysis
4. thyrocytes
5. B cells of islets of Langerhans

455. The sources of the pituitary gland:
1. ectodermal epithelium and neuroglia
2. the neural tube
3. placode and mesenchyme
4. neural crest and endoderm
5. and chromaffin tissue neuroglia

456. The rod outer segments contain:
1. rhodopsin
2. melanin
3. iodopsin
4. lipofuscin
5. melatonin

457. The outer segments of cone cells contained
1. iodopsin
2. rhodopsin
3. melanin
4. lipofuscin

5. melatonin

458. Place of visual stimuli sweet spot
1. central macular fovea
2. the blind spot
3. the optic disk
4. yellow spot
5. peripheral portion of the macula

459. The protein contained in the composition of the vitreous eye
1. vitrein
2. dynein
3. elastin
4. heparin
5. eleidin

460. The photoreceptor cells of the retina are
1. neurosensory
2. epiteliosensory
3. neurosensory cones, sticks epiteliosensory
4. epiteliosensory cones, sticks neurosensory
5. epithelial

461. The main groups of cells of the spiral organ of the ear
1. sensor supporting
2. sensor, basal
3. sensor supporting, basal
4. support, basal
5. cell poles, basal

462. The hair cells of the macula are distinguished by
1. kinocilia
2. stereocilia
3. microvilli
4. flagella
5. of the cilia

463. The muscles of the iris origin are
1. neural
2. epidermal
3. mesenchymal
4. somatic
5. coelomic

464. Front epithelium of iris:
1. single-layer flat
2. a single-layer cubic
3. simple columnar

4. layered nonsquamuos
5. single-layer, double-row

465. Tunnel of Corti in the cochlea is formed by:
1. columnar cells
2. phalanx cells
3. supporting cells
4. internal sensory cells and basilar membrane
5. outer supporting cells and the basement membrane

466. The stapes transmits sound vibrations:
1. through the oval window in the vestibular ladder
2. through the oval window into the cochlear canal
3. through the oval window into the scala tympani
4. through the round window in the vestibular ladder
5. through the round window into the scala tympani

467. View of the auditory epithelium of the tube:
1. multi-row ciliated
2. a single-layer cubic
3. Simple columnar
4. layered nonsquamuos
5. single-layer flat

468. The function of Schlemm's canal eyeball:
1. the fluid outflow from the anterior chamber
2. the outflow of tear fluid
3. membranes vascularization
4. update the vitreous
5. the power of the anterior part of the retina

469. The basis of the epiglottis is:
1. elastic cartilage
2. hyaline cartilage
3. fibrocartilage
4. dense connective tissue decorated
5. loose fibrous connective tissue unformed.

470. Epitely vestibule nose cavity:
1. multi-row cylindrical ciliated
2. single layer ciliated cubic
3. layered ciliated cubic
4. stratified squamous
5. layered cylindrical

471. Pulmonary acinus:
1. respiratory bronchioles, alveolar ducts and alveolar sacs
2. one terminal bronchioles and two respiratory

3. a group of terminal bronchiole
4. alveolar ducts and alveolar sacs vestibule
5. terminal bronchioles, alveolar ducts, alveolar sacs.

472. Fibrous-cartilaginous membrane of the bronchi medium caliber consists of:
1. cartilage islands
2. cartilage plates
3. is not closed cartilaginous rings
4. closed the cartilaginous rings.
5. cartilaginous plates and half-rings

473. The structural and functional unit of the respiratory department is easy:
1. acinus
2. slice
3. segment
4. follicle
5. alveolus

474. Surfaktant synthesized:
1. alveolocytes type 2
2. alveolocytes type 1
3. limbic cells
4. macrophages
5. goblet cells

475. The structure of the aero-hematic barrier include:
1. alveolocytes type 1
2. alveolocytes type 2
3. alveolocytes type 3
4. secretory cells (Clara)
5. goblet cells.

476. Terminal bronchiole diameter is:

1. 0.5 mm

2. 1 mm

3. 2mm

4. 2,5 mm

5. 1.5 mm

477. Wall trachea is:

1. mucosa, submucosa, fibro-cartilage and adventitia shells

2. mucous, fibrous cartilage and adventitia shells

3. the mucosa, submucosa and adventitia shells

4. mucosa, submucosa, fibro-cartilage and muscle membranes

5. the mucosa, submucosa, muscular and adventitia shells.

478. Epidermis develops from:

1. ectoderm

2. myotome

3. dermatome

4. sclerotome

5. endoderm.

479. Eleidin contained in the cells:

1. shiny layer

2. the stratum corneum

3. the basal layer

4. spinous layer

5. of the granular layer.

480. In the papillary dermis are missing:

1. keratinocytes

2. macrophages

3. tissue basophils

4. fibroblasts

5. of smooth muscle cells.

481. Positive enzyme reaction to give DOPA oxidase:

1. melanocytes

2. keratinocytes

3. cells Largengansa

4. T lymphocytes

5. Merkel cells

482. The sebaceous glands in the structure are:

1. simple alveolar branched

2. simple tubular branched

3. simple unbranched tubular

4. complex alveolar-tubular
5. simple alveolar unbranched

483. The end section merokrinovyh sweat glands are distinguished:

1. secretory cells and myoepithelial cells
2. the secretory cells and the support cells
3. secretory cells and ciliated cells
4. excretory secretory cells and cells
5. secretory cells.

484. The sebaceous glands secrete by:

1. holocrine type
2. merocrine type
3. mikroapocrine type
4. makroapocrine type
5. merocrine apocrine type

485. Renin is synthesized:

1. juxtaglomerular cell
2. interstitial cells
3. cells collecting tubules
4. cells tight spot
5. podocytes

486. The cells synthesize prostaglandin:

1. interstitial
2. juxtaglomerular
3. mesangial
4. jukstavaskular
5. jukstamedular

487. Optional regulates the reabsorption of sodium:

1. aldosterone
2. oxytocin
3. vasopressin

4. angiotensin
5. renin

488. Main cellular elements loose irregular connective tissue:

1. fibroblasts, macrophages
2. fibroblasts, bazophillic
3. lymphocytes, monocytes
4. neutropenia, macrophages
5. macrophages, plasma cells

489. In dense connective tissue is executed:

1. tendon
2. net dermis
3. papillary dermis
4. hypoderm
5. retina

490. In mature fibroblasts are well developed:

1. granular endoplasmic reticulum
2. lysosome, peroxisome
3. mitochondria epitheliofibril
4. smooth endoplasmic reticulum
5. vakuolly and myofibrils

491. The main function of plasma cells:

1. produce immunoglobulin *
2. synthesis of heparin histamine
3. phagocytosis
4. synthesis amarfnogo substances and fibers
5. production of hormones

492. The cells produce heparin and histamine:

1. mast cells
2. macrophages

3. adipocytes
4. fibroblasts
5. melanocytes

493. T-dependent area lymph node:

1. paracortex
2. lymphoid follicles
3. brain cords
4. brain sinuses
5. parafollicular zone

494. The blood-thymic barrier form:

1. endothelium, basement membrane, retikuloepitelial cells
2. macrophages, basal membrane, reticular cells
3. the endothelium, the basement membrane, reticuloendothelial cells
4. endothelium, basement membrane reticular fibers
5. Only the endothelium and basement membrane

495. In the center of erythropoietic island located:

1. macrophage
2. megakaryocyte
3. platelet
4. a reticulocyte
5. endotheliocyte

496. In Peyer's patches are distinguished:

1. dome, follicular zone parafollicular zone
2. white and red pulp
3. the cortex and medulla
4. cortex, medulla and paracortical zone
5. dome, medulla and paracortical zone

497. The white pulp of the spleen is:

1. T - and B-lymphocytes
2. T-lymphocytes and macrophages

3. B-lymphocytes and reticular cells
4. splenocytes and red blood cells
5. plasma and reticular cells

498. At what stage erythrogenesis nucleus out of the cage?

1. oxyphilic normotsit
2. basophilic normotsit
3. polychromatic normotsit
4. erythroblast
5. pronormotsit

499. Indicate the youngest morphologically identifiable cell thrombocytopoiesis:

1. megakaryoblasts
2. platelet
3. promegakariotsit
4. monoblast
5. megakaryocyte

500. Starting with a stage granulocytopoiesis cells lose their ability to reproduce?

1. metamielotsit
2. medullocell
3. progranulocyte
4. myeloblast
5. stab leukocytes