

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV

HISTOLOGY, CYTOLOGY AND EMBRYOLOGY

A GUIDE FOR KNOWLEDGE LEVEL CONTROL
FOR FOREIGN STUDENTS
OF SPECIALIZATION "MEDICINE"

Part 3. Special Histology

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H69**

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A guide for knowledge level control of discipline "Histology, Cytology and Embryology" contains questions that belong to Special Histology. The third part of the guide contains 11 chapters according to the number of organ systems in the human body. The questions are devoted to the peculiarities of the histological structure of organs that compose different systems: cardiovascular, endocrine, immune, nervous and sensory organs, integumentary, digestive, respiratory, urinary, male and female reproductive systems. The questions allow monitoring the level of assimilation of the material.

For students of specialty 222 "Medicine" of the educational qualification level "Master".

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INTRODUCTION

The third part of a guide for knowledge level control for foreign students of specialization "Medicine" "HISTOLOGY, CYTOLOGY, EMBRYOLOGY" provides questions on the topics that belong to Special Histology.

The third part of this guide contains 11 chapters according to number of organ systems in human body. The questions in each chapter are grouped in small subtopics dedicated to separate organs. The questions help to clarify and test students' knowledge concerning the morphological structure and functions of various organs, peculiarities of their blood supply and innervation as well as their disorders.

The first chapter provides questions about Cardiovascular system including those about general structure of tubular organs and wall of blood vessels, difference between the structure of the walls in various types of arteries, veins and hemo-microcirculatory bed elements; structure and functioning of the heart.

The second chapter describes Endocrine system and is subdivided according to glands: hypothalamus, pituitary, thyroid, pineal and adrenal. The questions refer to cells arrangements, blood supply, types of hormones produced by these glands and their regulative functions.

The third chapter includes questions about Immune system and is subdivided to two main parts – about central and peripheral immune organs respectively. Each part contains questions about morphology and function of corresponding immune organs as well as their dysfunctions and consequences of these dysfunctions for human organism.

The fourth chapter deals with Nerve system and subdivides to 2 parts: central and peripheral Nerve system. The questions contain information about morphology of the cells in cerebrum, cerebellum, spinal cord, ganglia and nerves, their location, interactions and functions, the way they regulate each other etc.

The fifth chapter is about organs of sense and provides questions about eye, ear, organs of taste and smell. This chapter deals with structure of these organs and the way they provide perception, for example the way that the light makes through the eye and the sound through the outer, middle and inner ear.

The sixth chapter contains questions about human skin. It deals with all layers of skin: epidermis, dermis and hypodermis and asks about tissues that make each layer. There are also questions about changes that happen to cells in 5 layers of epidermis during keratinization and about various glands located in skin.

The seventh chapter is devoted to Digestive system. It is the most extensive one and is subdivided into 10 subunits: first one about general characteristics of tubular organs, second and third about tooth and oral cavity, the next four are about the rest of digestive tube: esophagus, stomach, small and large intestine respectively; the last 3 subunits refer to large digestive glands: salivary, pancreas and liver.

The eighth chapter includes questions about Respiratory system and draws students' attention to the structure of the airways, the way epithelial tissue and cartilage structures change along them; the structure and functioning of alveoli; air-blood barrier and immune system represented in lungs.

The ninth chapter has questions about Urinary system and concentrates on structure and function of the kidney cortex and medulla and their role in all stages of production of urine as well as structure of ureter and urinary bladder and tissues that make them. Some questions deal with disorders connected with kidney dysfunction and clinical expression of these disorders.

The last two chapters contain questions about male and female reproductive systems. Chapter 10 deals with structure and function of organs of male reproductive system: testis, prostate, etc. Chapter 11 describes organs of female reproductive system, their changes during the cycle and pregnancy.

The set of questions provided in this guide helps students to understand the corresponding topics better as it draws their attention to different problematic and possibly confusing issues and provides a possibility to train and improve their knowledge after studying a certain topic. The questions also require the knowledge from previous semesters so they help to revise studied material.

In order to make the self-checking easier for students the correct answer is the last one in every question (meaning answer "E").

CHAPTER 1

CARDIOVASCULAR SYSTEM

1.1. Structure of blood vessels wall

1. Cardiovascular system includes:
 - A. Nerve tissue, blood tissue, vessels
 - B. Heart, muscle tissue, nerve tissue
 - C. Heart, blood, blood vessels
 - D. None of the above
 - E. Heart, blood vessels, lymphatic vessels
2. As a general rule, vascular wall includes _____ layers.
 - A. 1
 - B. 2
 - C. 4
 - D. 5
 - E. 3
3. Which structure does NOT compose tunica media?
 - A. Epithelium and basal membrane (lamina)
 - B. Subendothelial layer of loose connective tissue
 - C. Internal elastic membrane
 - D. Smooth muscle cells and elastic lamina
 - E. A, B, C
4. Arteries of which type contain much more elastic lamellae than smooth muscle cells?
 - A. Muscular
 - B. Muscular-Elastic
 - C. Reticular
 - D. Arteriole
 - E. Elastic
5. Tunica intima of a vessel is composed by endothelium and pericytes. This vessel is ...
 - A. Muscular venule
 - B. Small vein

- C. Medium vein
 - D. Large vein
 - E. Postcapillary venule
6. Sinusoidal capillaries are located in:
- A. Skin
 - B. Brain
 - C. Gut
 - D. Endocrine glands
 - E. Bone marrow
7. Arteriovenous anastomosis is the synonym of:
- A. Continuous capillaries
 - B. Fenestrated capillaries
 - C. Discontinuous capillaries
 - D. Portal systems
 - E. Arteriovenous shunts
8. Choose the most complete list of blood vessels:
- A. Arteries, arterioles, blood, capillaries, veins
 - B. Arteries, blood, capillaries, arteriovenous anastomosis, venules, veins
 - C. Heart, blood, blood vessels
 - D. Heart, blood vessels, lymphatic vessels
 - E. Arteries, arterioles, capillaries, arteriovenous anastomosis, venules, veins
9. Which are the layers of vascular wall?
- A. Tunica intima
 - B. Tunica media
 - C. Tunica adventitia
 - D. A and B only
 - E. A, B, C
10. Which structure does NOT compose tunica adventitia?
- A. Epithelium and basal membrane (lamina)
 - B. Internal elastic membrane
 - C. Smooth muscle cells
 - D. Elastic lamina
 - E. All the above

11. Vasa vasorum are located in:
 - A. Tunica intima
 - B. Tunica media
 - C. Basement membrane
 - D. Endothelium
 - E. Tunica adventitia
12. Tunica media is absent in a particular vessel. This vessel is
 - A. Muscular venule
 - B. Small vein
 - C. Medium vein
 - D. Large vein
 - E. Postcapillary venule
13. Sinusoidal capillaries are located in:
 - A. Skin
 - B. Brain
 - C. Gut
 - D. Endocrine glands
 - E. Spleen
14. Which of the following describes the structure of portal rete mirabile ("wonderful net")?
 - A. arteriole-capillary-arteriole
 - B. arteriole-capillary-venule
 - C. venule -capillary- arteriole
 - D. arteriole-venule-capillary
 - E. venule-capillary-venule
15. Coronary arteries are located in:
 - A. brain
 - B. kidney
 - C. liver
 - D. skin
 - E. heart
16. Which layer of vascular wall does NOT exist?
 - A. Tunica intima
 - B. Tunica media
 - C. Tunica adventitia

- D. None of the above
 - E. Tunica circumferential
17. Which structures can be found in tunica media?
- A. Epithelium and basal membrane (lamina)
 - B. Subendothelial layer of loose connective tissue
 - C. Internal elastic membrane
 - D. Skeletal muscle cells and elastic lamina
 - E. Smooth muscle cells and elastic lamina
18. Arteries of which type contain much more smooth muscle cells than elastic lamellae?
- A. Elastic
 - B. Muscular-Elastic
 - C. Reticular
 - D. Arteriole
 - E. Muscular
19. Internal elastic membrane is located in:
- A. Tunica media
 - B. Tunica adventitia
 - C. Basement membrane
 - D. Endothelium
 - E. Tunica intima
20. In a particular vessel tunica media is composed by only one layer of smooth muscle cells. This vessel is
- A. Postcapillary venule
 - B. Small vein
 - C. Medium vein
 - D. Large vein
 - E. Muscular venule
21. Fenestrated capillaries are located in:
- A. Skin
 - B. Bone marrow
 - C. Spleen
 - D. Liver
 - E. Endocrine glands

22. Which of the following does NOT belong to microcirculatory bed:
- A. Arterioles
 - B. Capillaries
 - C. Arteriovenous anastomosis
 - D. Venules
 - E. Vein
23. Microcirculatory bed includes:
- A. Arteries, arterioles, capillaries, veins
 - B. Arterioles, capillaries, arteriovenous anastomosis, veins
 - C. Heart, blood, blood vessels
 - D. Heart, blood vessels, lymphatic vessels
 - E. Arterioles, capillaries, arteriovenous anastomosis, venules
24. Which layers does NOT compose tunica intima of blood vessels?
- A. Epithelium
 - B. Internal elastic membrane
 - C. Basal membrane (lamina)
 - D. Subendothelial layer
 - E. Collagenous lamina
25. Which cells compose tunica adventitia?
- A. Fibroblasts
 - B. Smooth muscle cells
 - C. Macrophage
 - D. B and C only
 - E. A, B, C
26. Which types of arteries does NOT exist?
- A. Elastic
 - B. Muscular
 - C. Muscular-Elastic
 - D. B and C
 - E. Reticular
27. Tunica adventitia is absent in a particular blood vessel. This vessel is
- A. Small vein
 - B. Muscular venule

- C. Medium vein
 - D. Large vein
 - E. Postcapillary venule
28. Sinusoidal capillaries are located in:
- A. Skin
 - B. Brain
 - C. Gut
 - D. Endocrine glands
 - E. Liver
29. Which of the following describes the structure of rete mirabile ("wonderful net") in renal glomeruli?
- A. arteriole-capillary-venule
 - B. venule-capillary-venule
 - C. venule-capillary-arteriole
 - D. arteriole-venule-capillary
 - E. arteriole-capillary-arteriole
30. Pulmonary valve is located between
- A. right atrium and pulmonary arteries
 - B. left atrium and pulmonary arteries
 - C. right atrium and right ventricle
 - D. right ventricle and pulmonary arteries
 - E. left ventricle and pulmonary arteries
31. What tissue composes tunica adventitia?
- A. Epithelium and basal membrane (lamina)
 - B. Subendothelial layer of loose connective tissue
 - C. Internal elastic membrane
 - D. Smooth muscle cells and elastic lamina
 - E. Longitudinally arranged loose connective tissue
32. Which fibers of extracellular matrix do compose tunica media of large and medium vessels?
- A. Collagen fibers
 - B. Reticular fibers
 - C. Purkinje fibers
 - D. None of the above
 - E. Elastic fibers

33. Which of the following does NOT belong to cardiovascular system?
- A. Heart
 - B. Arteries
 - C. Lymphatic vessels
 - D. Veins
 - E. Blood
34. Which types of arteries do exist?
- A. Elastic
 - B. Reticular
 - C. Muscular-Elastic
 - D. A and B
 - E. A and C
35. The diameter of a vessel is about 15mm. This vessel is...
- A. Postcapillary venule
 - B. Muscular venule
 - C. Small vein
 - D. Medium vein
 - E. Large vein
36. Fenestrated capillaries are located in:
- A. Skin
 - B. Bone marrow
 - C. Spleen
 - D. Liver
 - E. Brain (in the choroid plexus)
37. Which of the following describes the structure of microvascular bed in pulmonary circulation?
- A. arteriole-capillary-arteriole
 - B. venule-capillary-venule
 - C. venule-capillary-arteriole
 - D. arteriole-venule-capillary
 - E. arteriole-capillary-venule
38. The smallest lymphatic vessels are called:
- A. right lymphatic trunk
 - B. the thoracic duct

- C. lymphatic veins
 - D. lymphatic arteries
 - E. lymphatic capillaries
39. Which does NOT belong to microcirculatory bed?
- A. Arterioles
 - B. Capillaries
 - C. Arteriovenous anastomosis
 - D. Venules
 - E. Arteries
40. Which layers do compose tunica intima?
- A. Epithelium and basal membrane (lamina)
 - B. Subendothelial layer
 - C. Internal elastic membrane
 - D. A and B only
 - E. A, B, C
41. The diameter of a vessel is about 5mm. This vessel is...
- A. Postcapillary venule
 - B. Muscular venule
 - C. Small vein
 - D. Large vein
 - E. Medium vein
42. Which organ contains only continuous capillaries?
- A. Bone marrow
 - B. Spleen
 - C. Brain (in the choroid plexus)
 - D. Liver
 - E. Skin
43. Which of the following describes the structure of microvascular bed in the systemic circulation?
- A. arteriole-capillary-arteriole
 - B. venule-capillary-venule
 - C. venule -capillary- arteriole
 - D. arteriole-venule-capillary
 - E. arteriole-capillary-venule

44. The largest lymphatic vessel, that drains most of the body and opens into the veins on the left side, is
- A. right lymphatic trunk
 - B. lymphatic veins
 - C. lymphatic arteries
 - D. lymphatic capillaries
 - E. the thoracic duct
45. The diameter of a vessel is about $10\mu\text{m}$. This vessel is...
- A. Muscular venule
 - B. Small vein
 - C. Medium vein
 - D. Large vein
 - E. Postcapillary venule
46. On the electronogram we can see a capillary with numerous perforations of endothelial layer, while basement membrane remains intact. This is:
- A. Continuous capillary
 - B. Discontinuous capillary
 - C. Arteriovenous shunt
 - D. Portal system
 - E. Fenestrated capillary

1.2. Valves

47. Valves are composed of _____ layers.
- A. 2
 - B. 4
 - C. 5
 - D. 6
 - E. 3
48. Aortic valve is located between:
- A. right atrium and aorta
 - B. left atrium and aorta

- C. right atrium and right ventricle
 - D. left ventricle and aorta
 - E. right ventricle and aorta
49. Tricuspid valve is located between:
- A. right atrium and left ventricle
 - B. right atrium and right ventricle
 - C. right atrium and left atrium
 - D. right ventricle and left ventricle
 - E. left atrium and left ventricle
50. Mitral valve is located between:
- A. right atrium and left ventricle
 - B. left atrium and left ventricle
 - C. right atrium and left atrium
 - D. right ventricle and left ventricle
 - E. right atrium and right ventricle

1.3. Heart

51. How many chambers does the heart contain?
- A. 2
 - B. 3
 - C. 5
 - D. 6
 - E. 4
52. The endocardium does NOT consist of:
- A. endothelium
 - B. subendothelial layer
 - C. muscular-elastic layer
 - D. subendocardial layer
 - E. striated cardiac muscle tissue
53. Chordae tendineae connect to the:
- A. atrial surface only
 - B. right atrium only

- C. left atrium only
 - D. mitral valve
 - E. papillary muscles
54. Cardiac conduction system does NOT consist of:
- A. Sinoatrial node
 - B. Atrioventricular node
 - C. Purkinje fibers
 - D. Atrioventricular bundle of His
 - E. Chordae tendineae
55. The _____ consists of striated cardiac muscle tissue.
- A. endocardium
 - B. epicardium
 - C. pericardial cavity
 - D. pericardium
 - E. myocardium
56. The inner layer of heart is called:
- A. myocardium
 - B. epicardium
 - C. pericardial cavity
 - D. pericardium
 - E. endocardium
57. The parietal layer of mesothelial epithelium is located in the
- A. endocardium
 - B. myocardium
 - C. epicardium
 - D. pericardial cavity
 - E. pericardium
58. The visceral layer of mesothelial epithelium is located in:
- A. endocardium
 - B. myocardium
 - C. pericardial cavity
 - D. pericardium
 - E. epicardium

59. The interatrial septum separates:
- A. the right and left ventricles
 - B. the left atria and left ventricle
 - C. the right ventricle and left atrias
 - D. the right atria and the right ventricle
 - E. the right and left atrias
60. _____ contains a 15-50 ml of serous fluid between the visceral and parietal layers of the mesothelial epithelium.
- A. endocardium
 - B. myocardium
 - C. epicardium
 - D. pericardium
 - E. pericardial cavity
61. The interventricular septum separates:
- A. the right and left atrias
 - B. the left atria and left ventricle
 - C. the right ventricle and left atrias
 - D. the right atria and the right ventricle
 - E. the right and left ventricles

CHAPTER 2

ENDOCRINE SYSTEM

2.1. Pituitary gland

62. Which part does NOT belong to adenohypophysis?
- A. Pars distalis
 - B. Pars intermedia
 - C. Pars tuberalis
 - D. Distal part
 - E. Pars nervosa
63. Which part does NOT belong to neurohypophysis?
- A. Pars nervosa
 - B. Infundibulum
 - C. Median eminence
 - D. All of the above
 - E. Pars intermedia
64. Which of the following statements concerning the pituitary gland is CORRECT?
- A. Adenohypophysis includes pars distalis, pars nervosa and pars tuberalis
 - B. Neurohypophysis includes pars nervosa, pars intermedia and pars tuberalis
 - C. Adenohypophysis develops from neuroectoderm of the forebrain
 - D. Neurohypophysis develops from oral ectoderm of Rathke's pouch
 - E. Neurohypophysis develops from neuroectoderm of the forebrain
65. Which of the following statements concerning the pituitary gland is CORRECT?
- A. Adenohypophysis includes pars distalis, pars nervosa and pars tuberalis
 - B. Neurohypophysis includes pars nervosa, pars intermedia and pars tuberalis

- C. Neurohypophysis develops from oral ectoderm of Rathke's pouch
 - D. Adenohypophysis develops from neuroectoderm of the forebrain
 - E. Adenohypophysis develops from oral ectoderm of Rathke's pouch
66. Neurohypophysis (posterior pituitary) develops from:
- A. Oral ectoderm of Rathke's pouch
 - B. Endoderm of digestive tube
 - C. Mesenchyme
 - D. Mesoderm of the notochord
 - E. Neuroectoderm of the forebrain
67. Adenohypophysis (anterior pituitary) develops from:
- A. Neuroectoderm of the forebrain
 - B. Endoderm of digestive tube
 - C. Mesenchyme of the embryo
 - D. Mesoderm of the notochord
 - E. Oral ectoderm of Rathke's pouch
68. Which of the following statements concerning the embryology of the pituitary gland is CORRECT?
- A. The anterior pituitary is derived from the mesencephalon
 - B. Rathke's pouch is derived from the posterior pituitary
 - C. The Pars Distalis is derived from endoderm
 - D. Mesoderm gives rise to the anterior pituitary
 - E. Neuroectoderm gives rise to the neurohypophysis
69. Which of the following statements concerning the pituitary gland is CORRECT?
- A. TSH is derived from the hypothalamus
 - B. TSH is stored in the pars nervosa of the pituitary gland
 - C. Herring bodies store oxytocin and FSH
 - D. Chromophobes secrete oxytocin and vasopressin
 - E. Somatotrophs are acidophils and they produce GH
70. Which of the following statements concerning the pituitary gland is CORRECT?
- A. ACTH is derived from the hypothalamus
 - B. TSH is stored in the pars nervosa of the pituitary gland
 - C. Acidophils produce FSH and ACTH
 - D. Chromophils secrete oxytocin and vasopressin
 - E. Herring bodies store oxytocin and vasopressin

71. Which cell type produces growth hormone (GH)?
- A. Neurosecretory cells of paraventricular nuclei
 - B. Pituicytes
 - C. Corticotrophs
 - D. Hepatocytes
 - E. Somatotrophs
72. Which cells produce prolactin?
- A. Neurosecretory cells of paraventricular nuclei
 - B. Corticotrophs
 - C. Somatotrophs
 - D. Hepatocytes
 - E. Mammotrophs
73. Which cells produce thyroid-stimulating hormone (TSH)?
- A. Mammotrophs
 - B. Corticotrophs
 - C. Somatotrophs
 - D. Hepatocytes
 - E. Thyrotrophs
74. Which cells produce follicle-stimulating hormone (FSH) and luteinizing hormone (LH)?
- A. Thyrotrophs
 - B. Mammotrophs
 - C. Somatotrophs
 - D. Hepatocytes
 - E. Gonadotrophs
75. Which of the following statements concerning the pituitary gland is CORRECT?
- A. TSH is stored in the pars nervosa of the pituitary gland
 - B. Herring bodies store oxytocin and FSH
 - C. Somatotrophs are basophils and they produce GH
 - D. Chromophobes secrete oxytocin and vasopressin
 - E. TSH is produced in the pituitary gland
76. Which of the following about pituitary gland is CORRECT?
- A. Basophils are stained pink
 - B. Acidophils are stained blue

- C. Chromophobes are well-stained
 - D. Chromophobes are stained red
 - E. Basophils are stained blue
77. Which of the following about pituitary gland is CORRECT?
- A. Basophils are stained pink
 - B. Acidophils are stained blue
 - C. Chromophobes are well-stained
 - D. Chromophobes are stained red
 - E. Chromophobes are poorly-stained
78. Which of the following about pituitary gland is CORRECT?
- A. Basophils are stained with eosin
 - B. Basophils are poorly-stained
 - C. Acidophils are stained with haematoxylin
 - D. Chromophobes are well-stained
 - E. Acidophils are stained pink
79. Which of the following about pituitary gland is CORRECT?
- A. Basophils are poorly-stained
 - B. Acidophils are stained blue
 - C. Acidophils are stained with haematoxylin
 - D. Chromophobes are well-stained
 - E. Basophils are stained with haematoxylin
80. Which of the following about pituitary gland is CORRECT?
- A. Basophils are stained with eosin
 - B. Basophils are poorly-stained
 - C. Acidophils are stained blue
 - D. Acidophils are stained with haematoxylin
 - E. Chromophobes are poorly-stained
81. Which of the following about pituitary gland is CORRECT?
- A. Basophils are stained with eosin
 - B. Basophils are poorly-stained
 - C. Acidophils are stained blue
 - D. Chromophils are poorly-stained
 - E. Chromophils are well-stained

2.2. Thyroid gland

82. What is NOT included in thyroid follicles?
- A. Follicular cells
 - B. Parafollicular C cells
 - C. Colloid
 - D. Thyrocytes
 - E. Interfollicular islets
83. What is NOT CORRECT about follicular cells?
- A. They are simple epithelium
 - B. They are located on Basal lamina
 - C. They produce T3 and T4
 - D. They can be squamous or cuboidal
 - E. They release colloid in the capillaries
84. What is NOT CORRECT about follicular cells?
- A. They are located on Basal lamina
 - B. They produce T3 and T4
 - C. They can be squamous or cuboidal
 - D. They release colloid in the center of the follicle
 - E. They are made of stratified epithelium
85. Follicular cells of thyroid gland are located on Basal lamina, have squamous shape and dark nucleus. What does it mean?
- A. The cells are actively producing hormones
 - B. The cells have high level of functioning
 - C. The cells have signs of pathology
 - D. These are stem cells
 - E. The cells are inactive
86. Follicular cells of thyroid gland are located on Basal lamina, have cuboidal shape. What does it mean?
- A. The cells have low level of functioning
 - B. The cells are inactive
 - C. The cells have signs of pathology
 - D. These are old cells
 - E. The cells are actively producing hormones

87. Which statement is CORRECT about thyroid gland?
- A. It is tubular organ
 - B. It consists of three layers
 - C. Stroma is made of follicular cells and colloid
 - D. Parenchyme is made of loose connective tissue
 - E. It has stroma and parenchyma
88. Which statement is NOT CORRECT about thyroid gland?
- A. It is parenchyme organ
 - B. It consists of stroma and parenchyma
 - C. It consists of follicles
 - D. Stroma includes connective tissue and capillaries
 - E. Stroma is made of follicular cells and colloid
89. A group of single layer cuboidal epithelial cells is forming a circle filled with colloid. Which structure is described?
- A. Zona reticularis of adrenal gland
 - B. Zona glomerulosa of adrenal gland
 - C. Zona fasciculate of adrenal gland
 - D. Interfollicular space of thyroid gland
 - E. Follicle of thyroid gland
90. Parenchyme organ has a capsule and septa that divide it into lobules, that consist of follicles and interfollicular spaces that are composed of reticular connective tissue, adipose tissue and blood vessels. Which organ is described?
- A. Pituitary gland
 - B. Adrenal gland
 - C. Pineal gland
 - D. Parathyroid gland
 - E. Thyroid gland
91. Which information about thyroid follicle is NOT CORRECT?
- A. It is surrounded by simple epithelium on Basal lamina
 - B. It is filled with colloid
 - C. Colloid contains thyroglobulin
 - D. It has round shape
 - E. It is filled with loose connective tissue

92. Which information about thyroid follicle is CORRECT?
- A. It is surrounded by stratified epithelium
 - B. It is filled with dense irregular connective tissue
 - C. Colloid contains calcitonin
 - D. It is filled with loose connective tissue
 - E. It is filled with colloid
93. Which structure CANNOT we find in thyroid gland?
- A. Follicles
 - B. Trabecula
 - C. Capsule
 - D. Interstitium
 - E. Tunica media
94. Which statement about thyroid gland is NOT CORRECT?
- A. The follicles are surrounded by simple epithelium on Basal lamina
 - B. The follicles are filled with colloid
 - C. The gland produces T3, T4 and calcitonin
 - D. The gland regulates basic methabolic level of the organism
 - E. It is tubular organ with 3 layers in the wall
95. Which statement about thyroid gland is CORRECT?
- A. The follicles are surrounded by stratified epithelium
 - B. The follicles are filled with calcitonin
 - C. The gland produces thyroid-stimulating hormone
 - D. It is tubular organ
 - E. The gland is regulated by thyroid-stimulating hormone
96. Which statement about hormones of thyroid gland is NOT CORRECT?
- A. Calcitonin decreases level of calcium in blood plasma
 - B. Calcitonin is located in the colloid
 - C. T3 and T4 are produced by C-cells
 - D. T3 and T4 regulate the blood pressure
 - E. Calcitonin increases level of calcium in blood plasma

2.3. Hypothalamus

97. Which statement about hypothalamus is CORRECT?

- A. It is exocrine gland
- B. Its work is regulated only by nervous system
- C. It is a tubular organ
- D. It produces growth hormone and prolactin
- E. It belongs to the endocrine system

98. What is the main difference between hormone-producing neurons in hypothalamus and typical neurons?

- A. They don't produce neuromediators
- B. They have no dendrites
- C. They have no axons
- D. None of the above
- E. Their axons make Herring bodies in neurohypophysis

99. Choose the CORRECT information about hypothalamus.

- A. Paraventricular nucleus releases hormones in blood
- B. Supraoptic nucleus produces oxytocin
- C. Paraventricular nucleus produces vasopressin
- D. Supraoptic nucleus releases hormones in blood
- E. Supraoptic nucleus produces vasopressin

100. Which statement about hypothalamic hormones is CORRECT?

- A. Vasopressin decreases the blood pressure
- B. Vasopressin activates releasing of milk in mammary gland
- C. Oxytocin decreases the blood pressure
- D. Oxytocin increases the blood pressure
- E. Vasopressin increases the blood pressure

101. Which statement about hypothalamic hormones is CORRECT?

- A. Vasopressin decreases the blood pressure
- B. Oxytocin decreases the blood pressure
- C. Vasopressin activates releasing of milk in mammary gland
- D. Oxytocin increases the blood pressure
- E. Oxytocin activates releasing of milk in mammary gland

102. Which gland stores its hormones in neurohypophysis in the Herring bodies?

- A. Thyroid gland
- B. Adrenal gland
- C. Parathyroid gland
- D. Pineal gland
- E. Hypothalamus

103. Herring bodies are...

- A. Golgi body in neurons of hypothalamus
- B. Rough endoplasmic reticulum in neurons of hypothalamus
- C. Lysosomes in neurons of hypothalamus
- D. Modification of dendrites in neurons of hypothalamus for storage of hormones
- E. Modification of axons in neurons of hypothalamus for storage of hormones

2.4. Pineal gland

104. Which statement about pineal gland is CORRECT?

- A. It's tubular organ
- B. This organ has interstitium with somatic capillaries
- C. This organ has capsule made of loose connective tissue
- D. This organ has trabecula made of loose connective tissue
- E. It's parenchymal organ

105. Which statement about pineal gland is CORRECT?

- A. It's tubular organ
- B. It produces oxytocin and vasopressin
- C. This organ has interstitium with somatic capillaries
- D. This organ has trabecula made of loose connective tissue
- E. This organ has capsule made of dense irregular connective tissue

106. The cells with slightly basophilic cytoplasm are surrounded by interstitium of the endocrine gland and produce melatonin. Which cells are described?

- A. Norepinephrocytes
- B. Hepatocytes
- C. Thyrocytes
- D. Epinephrocytes
- E. Pinealocytes

107. Which of the following hormones are secreted by the pineal gland?

- A. Mineralcorticoids
- B. Epinephrine
- C. Androgens
- D. Glucocorticoids
- E. Melatonin

108. Which of the following best describes melatonin secretion?

- A. It is secreted in greater amounts during exposure to bright lights
- B. It is not secreted during the wintertime
- C. It is not produced during sleeping
- D. It is mostly secreted during the day
- E. It is inhibited by light and triggered by darkness

109. Which of the following best describes serotonin secretion?

- A. It is secreted in greater amounts during night
- B. It is not secreted during the summertime
- C. It is inhibited by light and triggered by darkness
- D. It is produced during sleeping
- E. It is secreted under the influence of the daylight

110. Its production is activated by daylight and increases the mood of the person. Which hormone of pineal gland is described?

- A. Cortisol
- B. Calcitonin
- C. Epinephrine
- D. Melatonin
- E. Serotonin

2.5. Adrenal gland

111. Which statement about adrenal gland is NOT correct?
- A. It has cortex and medulla
 - B. Inner zone of cortex is called zona reticularis
 - C. Cortex has three zones
 - D. Outer zone of cortex is called zona glomerulosa
 - E. Cortex includes four zones
112. Which statement about adrenal gland is NOT correct?
- A. It's parenchymal organ
 - B. Cortex includes three zones
 - C. Cortex surrounds medulla
 - D. Outer zone of cortex is called zona glomerulosa
 - E. Outer zone of cortex is called zona fasciculata
113. Which statement about adrenal gland is CORRECT?
- A. It's tubular organ
 - B. Cortex includes four zones
 - C. Medulla surrounds cortex
 - D. Outer zone of cortex is called zona fasciculata
 - E. Outer zone of cortex is called zona glomerulosa
114. Which statement about adrenal gland is CORRECT?
- A. Medulla has three zones
 - B. Cortex has four zones
 - C. Zona glomerulosa is located between zona fasciculata and zona reticularis
 - D. Zona reticularis is located between zona fasciculata and zona glomerulosa
 - E. Zona fasciculata is located between zona glomerulosa and zona reticularis
115. Which statement describes adrenal gland?
- A. Tubular organ that has stroma and parenchyma
 - B. Parenchymal organ that consists of lobules
 - C. Parenchymal organ that is located below each kidney

- D. Tubular organ that is located at the superior pole of each kidney
 - E. Parenchymal organ that is located at the superior pole of each kidney
116. Which statement about adrenal gland is NOT CORRECT?
- A. It's parenchymal organ that has stroma and parenchyma
 - B. It's parenchymal organ that is located at the superior pole of each kidney
 - C. It's parenchymal organ that has cortex and medulla
 - D. It's parenchymal organ surrounded by capsule made of dense connective tissue
 - E. It's tubular organ that is located at the superior pole of each kidney
117. Which statement about adrenal gland is CORRECT?
- A. Medulla surrounds cortex
 - B. Zona fasciculata is located near medulla
 - C. Zona glomeruloza is located near medulla
 - D. Zona reticularis is located outside of cortex
 - E. Cortex surrounds medulla
118. What is TRUE about zona glomeruloza?
- A. Cells are located in round groups
 - B. Cells produce mineralcorticoids
 - C. It is located under the capsule
 - D. None of the above
 - E. All of the above
119. What is TRUE about zona fasciculata?
- A. None of the answers
 - B. Cells produce mineralcorticoids
 - C. It is located under the capsule
 - D. All of the answers
 - E. Cells are located in rows/columns
120. What is true about zona reticularis?
- A. Cells are located in round groups
 - B. Cells produce protein hormones

- C. It is located under the capsule
 - D. All of the above
 - E. None of the above
121. What is CORRECT about zona glomerulosa?
- A. Cells are located in the form of a network
 - B. Cells produce gonadocorticoids
 - C. It is located near medulla
 - D. All of the above
 - E. None of the above
122. What is true about zona fasciculata?
- A. Cells are located in round groups
 - B. None of the above
 - C. It is located under the capsule
 - D. All of the above
 - E. Cells produce glucocorticoids
123. What is CORRECT about medulla?
- A. It is located outside of cortex
 - B. It is located under the capsule
 - C. None of the answers
 - D. All of the answers
 - E. It produces epinephrine and norepinephrine
124. What is CORRECT about medulla?
- A. None of the answers
 - B. It is located under the capsule
 - C. It produces glucocorticoids
 - D. All of the answers
 - E. It is surrounded by cortex
125. What is CORRECT about mineralcorticoids?
- A. They are produced in medulla of adrenal gland
 - B. They have protein nature
 - C. They are produced in zona reticularis
 - D. They are produced in pituitary gland
 - E. They have steroid nature

126. What is CORRECT about aldosterone?
- A. It is glucocorticoid
 - B. None of the answers
 - C. It is produced in zona reticularis
 - D. It has protein nature
 - E. It is mineralcorticoid
127. This hormone is produced in zona glomerulosa of adrenal gland. It has steroid nature and regulates water-salt balance in the organism. Which hormone is described?
- A. Norepinephrine
 - B. Cortisol
 - C. Corticosterone
 - D. Epinephrine
 - E. Aldosterone
128. These hormones are produced in medulla of adrenal gland. They are made of amino-acids and regulate "fight or flight reaction" in the organism. Which 2 hormones are described?
- A. Aldosterone and cortisol
 - B. Cortisol and corticosterone
 - C. Corticosterone and epinephrine
 - D. Norepinephrine and aldosterone
 - E. Epinephrine and norepinephrine
129. What is correct about hormones of medulla of adrenal gland?
- A. They are responsible for basic exchange in the organism
 - B. One of them is cortisol
 - C. None of the answers
 - D. All of the answers
 - E. They cause "fight or flight reaction"
130. This hormone is produced in zona fasciculata and zona reticularis of adrenal gland. It has steroid nature and regulates carbohydrate balance in the organism. Which hormone is described?
- A. Aldosterone
 - B. Norepinephrine

- C. Calcitonin
- D. Epinephrine
- E. Cortisol

131. What is correct about cortisol?

- A. None of the answers
- B. It is responsible for mineral exchange in the organism
- C. It is produced in medulla of adrenal gland
- D. All of the answers
- E. It has steroid nature

CHAPTER 3

IMMUNE SYSTEM

3.1. Central organs of immune system

3.1.1. Red bone marrow

132. The autopsy red bone marrow material sampled from the patient that died of cancer in the hospital at the age of 35 was studied under the microscope. What type of capillaries is typical for this organ?

- A. Fenestrated
- B. Somatic (Continuous)
- C. Visceral
- D. Lymphatic
- E. Sinusoidal (Discontinuous)

133. A 35-year old patient with clinical symptoms of acute leukemia is sent for examination of red bone marrow. Where the sample for future study CANNOT be taken from?

- A. Epiphysis of long bones
- B. Hip bone
- C. Sternum
- D. All of the answers
- E. Diaphysis of long bones

134. The population of myeloid stem cells was severely damaged due to red bone marrow degenerative processes in elderly patient. What type of cells in different tissues of the patient will not be regenerating properly?

- A. Osteocytes
- B. Adipose cells
- C. Fibroblasts
- D. Chondrocytes
- E. Macrophages

135. The inflammatory process in red bone marrow of 45-year old patient has led to destruction of gentle stroma. What cells have been damaged?

- A. Osteoclasts
- B. Osteocytes
- C. Mesothelium cells
- D. Brown adipose cells
- E. Reticular cells

136. The study of the histological specimen of red bone marrow showed islets of red blood cells precursors at different stages of differentiation. What type of cells provides iron supply for normal development of red blood cells?

- A. Plasma cells
- B. Reticular cells
- C. Adipose cells
- D. Megakaryocytes
- E. Macrophages

137. With the purpose of future transplantation the parenchyma of hematopoietic organ, which contains megakaryocytes, was taken from potential donor. Name this organ.

- A. Thymus
- B. Spleen Thymus
- C. Lymph node
- D. Tonsil
- E. Red bone marrow

138. The analysis of 25-year old patient's histological specimen of red bone marrow was conducted in the hospital for diagnostic reasons. In what sites of red bone marrow is it possible to observe precursors of platelets?

- A. Near the cells of endosteum
- B. In contact with the macrophages
- C. In contact with reticular and adipose cells
- D. In the centre of medullar cavity
- E. Near the sinusoidal capillaries

139. A 54-year old patient with autoimmune disease has addressed the hospital for treatment. The examination of his blood has shown normal B-lymphocytes but their antigen- dependent differentiation in peripheral lymphoid organs was impaired. The formation of which cells is disordered?

- A. T-lymphocyte
- B. Pericyte
- C. Macrophage
- D. Mast cell
- E. Plasma cell

140. The examination of patient's blood has shown decrease in number of blood cells that don't finish their determination in red bone marrow. Which cells are these?

- A. Monocytes
- B. Erythrocytes
- C. Platelets
- D. Granulocytes
- E. T-lymphocytes

141. A worker in the nuclear power station has received a high radiation dose that led to lymphoid system disorders as well as destruction of many lymphocytes. Which immune organ will be responsible for restoration of blood cells population?

- A. Hypophysis
- B. Parathyroid
- C. Liver
- D. Pancreas
- E. Red bone marrow

142. It is known that B-lymphocytes in birds come from the bursa of Fabricius, which is the central organ of their differentiation. Name the bursa-equivalent organ in mammals (including humans).

- A. Spleen
- B. Lymph node
- C. Tonsils
- D. Thymus
- E. Bone marrow

143. A 30-year old patient with chronic bone inflammation has attended the hospital. The illness led to suppression of blood development function because of damaged stroma of red bone marrow. What tissue is damaged?

- A. Epithelial
- B. Nervous
- C. Muscular
- D. Dense connective
- E. Reticular

144. A female 27-year old patient has been suffering from multiple autoimmune processes. The examination has revealed disorders in process of antigen-independent proliferation and differentiation of B-lymphocytes. Which organ is not functioning properly in this case?

- A. Spleen
- B. Thymus
- C. Liver
- D. Appendix
- E. Red bone marrow

145. The elderly patient was taken to the hospital with severe red bone marrow dysfunction. Which cells make parenchyma of red bone marrow?

- A. Adipose cells
- B. Reticular cells
- C. None of the answers
- D. All of the answers
- E. Blood cells on different stages of development

146. The red bone marrow smear was analyzed by laboratory assistant under the light microscope. Unfortunately the examination didn't allow the employee to analyze the arrangement of the cells in the organ. If the cross-section of red bone marrow was taken for analysis what location of blood cells would the laboratory assistant see?

- A. All of the answers
- B. Trabecula
- C. Follicules
- D. Nuclei
- E. Islands

147. A 40-year old patient came to the hospital with prolonged bleeding. The examination of his red bone marrow has shown severe decrease in number of huge cells (up to 140 μm) with polyploid nucleus and many cytoplasmic processes which go through the wall of sinusoidal capillary and are buried in blood flow. What is the name of this cell?

- A. Erythrocyte
- B. Adipose cell
- C. None of the above
- D. All of the above
- E. Megakaryocyte

3.1.2. Thymus

148. The histological examination of thymus biopsy taken during surgery operation has shown round structures – Hassall corpuscles. Which of the following statements concerning these structures is true?

- A. They are located in the white pulp
- B. They are located in the thymic cortex of young individuals
- C. They are located in the thymic cortex of old individuals
- D. They are located in the red pulp
- E. They are located in the thymic medulla

149. A 39-year old patient's thymus was analysed under light microscope during autopsy. Parenchyma of the organ has decreased and substituted by elements of stroma: adipose and loose connective tissue. Multiple Hassall's corpuscles were observed in the medulla of the organ. What process leads to such changes in thymus?

- A. Accidental involution
- B. Hypotrophy
- C. Atrophy
- D. Dystrophy
- E. Age involution

150. A 45-year old patient with autoimmune disease has addressed the hospital for treatment. The examination has shown disorder in antigen-independent proliferation and differentiation of T-lymphocytes. What organ is not working properly?

- A. Spleen
- B. Thyroid gland
- C. Liver
- D. Appendix
- E. Thymus

151. The examination of a 15-year old patient has shown abnormal level of thymosin. What cells of thymus don't perform their function properly?

- A. T-lymphocytes
- B. Fibroblasts
- C. Granulocytes
- D. Macrophages
- E. Epithelioreticular cells

152. A 42-year old patient with thymus disorder has addressed the hospital. The light microscopy study of his thymus shows the signs of acute/stress thymic involution. What morphological signs of this process were observed?

- A. Development of connective and adipose tissue
- B. Active proliferation of T-lymphocytes
- C. Phagocytosis of T-lymphocytes by macrophages
- D. Growth of stroma, increase in number of lymphocytes
- E. Greatly increased lymphocyte death, growth of stroma

153. Histological specimen from biopsy material of immune organ of 45-year old patient revealed lobules with medullar substance that was colored lighter than cortex and contained Hassall's corpuscles. What organ are these morphological properties typical for?

- A. Lymph node
- B. Red bone marrow
- C. Spleen
- D. Liver
- E. Thymus

154. Histological examination of immune organ shows lobules that consist of cortex and medulla. Parenchyma of lobules is formed by lymphoid tissue, in which T-lymphocytes on different stages of differentiation are found, stroma consists of epithelioreticular cells. Medulla contains Hassal's corpuscles. What organ has such morphological structure?

- A. Lymph node
- B. Adrenal glands
- C. Spleen
- D. Red bone marrow
- E. Thymus

155. A 33-year-old patient suffers from acute autoimmune processes as a result of increase of permeability of blood-thymus barrier. Disorder of what cells resulted in development of this pathology?

- A. Adipose cells
- B. Myofibroblasts
- C. Macrophages
- D. Fibroblasts
- E. Endothelio-reticular cells

156. A 29-year old patient's thymus was analysed under light microscope during autopsy. The signs of thymic involution associated with ageing were revealed. What morphological signs of this process can be observed at microscopy of thymus?

- A. Growth of epithelial stroma, decrease in number of lymphocytes
- B. Growth of epithelial stroma, development of adipose tissue
- C. Increase in number of lymphocytes, increase of number of mast cells
- D. Increase in number of lymphocytes, increase of adipose tissue
- E. Decrease in number of lymphocytes, development of adipose tissue

157. The light microscope analysis of thymus biopsy material from surgery has not revealed any morphological disorders. What is NOT CORRECT about morphology of thymus?

- A. It has lobules
- B. It has capsule

- C. It has medullas
- D. It has cortex
- E. It has red pulp

158. A histological study of thymus autopsy material from 45-year old deceased patient has not revealed any morphological disorders in stroma of the organ. Which structure belongs to stroma of thymus?

- A. Capsule
- B. Trabecula
- C. Reticuloepithelial cells
- D. None of the above
- E. All of the above

159. The analysis of thymus autopsy material from 76-year old deceased patient who died from acute autoimmune process showed no morphological signs of any disorders. The part of thymus that was studied consisted of T-lymphocytes that were located in high density on the periphery of the thymic lobule. Which structure is described?

- A. None of the answers
- B. Medulla
- C. Capsule
- D. All of the answers
- E. Cortex

160. The histological study of thymus autopsy material from a patient deceased from chronic autoimmune process showed no morphological signs of any disorders. The part of thymus that was studied consisted of T-lymphocytes that were located in low density in the center of the thymic lobule. Which structure is described?

- A. Cortex
- B. None of the answers
- C. Capsule
- D. All of the answers
- E. Medulla

161. A 35-year old patient with autoimmune disease has addressed the hospital for treatment. The examination of the immune organ that provides antigen-independent differentiation of T-lymphocytes was conducted. What organ was studied?

- A. Liver
- B. Lymph node

- C. None of the answers
- D. All of the answers
- E. Thymus

162. An elderly patient with autoimmune disease has addressed the hospital for treatment. The examination of the patient's thymus has shown violation of hemato-thymic barrier. Which cells provide support, microenvironment and participate in formation of this barrier?

- A. Adipose cells
- B. Fibroblasts
- C. T-lymphocytes
- D. B-lymphocytes
- E. Reticulo-epithelial cells

3.2. Peripheral organs of immune system

3.2.1. Spleen

163. A 35-year old patient's biopsy material was studied under the light microscope. The doctor investigate two parenchymal immune organs that contain lymphatic nodules. But in one of them lymphatic nodules have central arteries. For what organs are they specific?

- A. Tonsil
- B. Red bone marrow
- C. Lymph node
- D. Thymus
- E. Spleen

164. Histological specimen prepared from the autopsy material of deceased 80-year old patient shows organ whose parenchyma consists of white and red pulp. What organ is studied under the microscope?

- A. Tonsil
- B. Lymph node
- C. Red bone marrow
- D. Thymus
- E. Spleen

165. The histological study of spleen autopsy material from a patient deceased from chronic autoimmune process showed no morphological signs of any disorders. Which statement about red pulp of spleen is CORRECT:

- A. It is comprised of lymphatic nodules
- B. It is comprised of adipose cells
- C. It is made up of muscle tissue
- D. It is comprised of elastic connective tissue
- E. It consists of splenic cords, venous sinuses, reticular fibers

166. White pulp of spleen from the deceased patient has been studied under light microscope. Periarterial lymphatic sheath were observed in white pulp. What cells are they made of?

- A. B-lymphocytes
- B. Epithelial reticular cells
- C. Neutrophils
- D. Plasma cells
- E. T- lymphocytes

167. The histological study of spleen autopsy material from a patient deceased from chronic autoimmune process showed no morphological signs of any disorders. Which one of the following characteristics concerning the spleen is FALSE?

- A. It has the ability to produce lymphocytes
- B. It plays a major role in the defense of the organism
- C. Destruction of red blood cells occurs in this organ
- D. It has the ability to retrieve iron from haemoglobin
- E. The cords of Billroth are found in white pulp

168. The study of autopsy material from 82-year old patient deceased from sepsis showed the damage of a white pulp of spleen. What functions of spleen were disturbed?

- A. Antigen-independent proliferation and differentiation of T-lymphocytes
- B. Antigen-independent proliferation and differentiation of B-lymphocytes
- C. Differentiation of erythrocytes
- D. Removing from blood of the damaged erythrocytes and platelets
- E. Antigen-dependent proliferation of T- and B-lymphocytes

169. The histological study of autopsy material from a patient deceased from sepsis showed severe spleen damage. Which functions were impaired?

- A. Antigen-dependent proliferation of T- and B-lymphocytes
- B. Removing from blood of the damaged erythrocytes and platelets
- C. Synthesis of splenin and other biologically active substances
- D. Storage of blood
- E. All of the answers

170. The histological study of autopsy material from a patient deceased from autoimmune disorder showed severe spleen damage. Which function was NOT impaired because of dysfunctional spleen?

- A. Antigen-dependent proliferation of T- and B-lymphocytes
- B. Removing from blood of the damaged erythrocytes and platelets
- C. Synthesis of splenin and other biologically active substances
- D. Storage of blood
- E. Differentiation of erythrocytes

171. The light microscope study of spleen autopsy material from a patient deceased from sepsis showed no morphological signs of any disorders. Which one of the following characteristics concerning the spleen is CORRECT?

- A. It's parenchymal organ
- B. It has white and red pulp
- C. It provides antigen-dependent proliferation of T- and B-lymphocytes
- D. None of the above
- E. All of the above

172. The light microscope study of spleen biopsy material obtained from a 27-year old patient during surgery showed no morphological signs of any disorders. Which statement about spleen is NOT CORRECT?

- A. It's parenchymal organ
- B. It has white and red pulp
- C. It provides antigen-dependent proliferation of T- and B-lymphocytes
- D. It has parenchyma and stroma
- E. It's a tubular organ

173. The histological examination of a peripheral immune organ obtained from the autopsy of a 48-year old woman demonstrated lymphatic nodules with T and B lymphocytes. Which structure is under study?

- A. Paracortex of lymph nodes
- B. Red pulp of spleen
- C. Medulla of lymph node
- D. Cortex of lymph node
- E. White pulp of spleen

174. The light microscope study of an immune parenchymal organ biopsy material obtained from a 49-year old patient during surgery showed no morphological signs of any disorders. This organ provides storage of blood as well as elimination of erythrocytes and antigen-dependent proliferation of T- and B-lymphocytes. Which organ is that?

- A. Lymph node
- B. Tonsils
- C. Red bone marrow
- D. Thymus
- E. Spleen

175. The histological study of spleen biopsy material obtained from 54-year old female patient during operation has shown T-lymphocytes. Where can these immune cells be found in spleen?

- A. Are located in the white pulp
- B. Are located in the red pulp
- C. Are located in periarterial sheath
- D. None of the above
- E. All of the above

176. The light microscope study of spleen biopsy material obtained from a female patient during surgery showed no morphological changes in the white pulp of the organ. What statement is correct about the white pulp?

- A. Consists of sinuses with blood
- B. All of the answers
- C. Provides storage of blood
- D. Provides elimination of erythrocytes and platelets
- E. Consists of nodules with lymphocytes

177. The light microscope study of spleen biopsy material obtained from a male patient during surgery showed no morphological changes in the red pulp of the organ. What statement is correct about the red pulp of spleen?

- A. Consists of sinuses with blood
- B. Provides storage of blood
- C. Provides elimination of erythrocytes and platelets
- D. None of the above
- E. All of the above

3.2.2. Lymph node

178. The histological examination of lymph node obtained from the autopsy of a 77-year old woman demonstrated morphological changes in paracortex. What cells does paracortex of lymph node include?

- A. B-cells
- B. Monocytes
- C. Adipose cells
- D. Erythrocytes
- E. T-cells

179. The light microscopy study of peripheral immune organ obtained from the autopsy of a woman who suffered from autoimmune disease demonstrated lymphatic nodules made ONLY of B lymphocytes. Which structure is under study?

- A. White pulp of spleen
- B. Red pulp of spleen
- C. Medulla of lymph node
- D. Paracortex of lymph nodes
- E. Cortex of lymph node

180. Acute stress reaction led to accidental involution of thymus in 35-year old patient. This resulted in decreasing amount of lymphocytes in peripheral blood. Where do T-lymphocytes migrate after they leave thymus and get to circulation?

- A. Hilus of lymph nodes
- B. Cortical lymphoid nodules of lymph nodes

- C. Medullary cords of lymph nodes
- D. Red pulp of the spleen
- E. Paracortex of lymph nodes

181. The blood examination of 46-year old patient who suffers from autoimmune processes showed increase in amount of B-lymphocytes. After their maturation in the red bone marrow and release into the circulation, B-lymphocytes migrate preferentially to which of the following sites?

- A. Medullary lymphoid nodules of lymph nodes
- B. Trabecula of lymph nodes
- C. Paracortex of lymph nodes
- D. Capsule of lymph nodes
- E. Cortical lymphoid nodules of lymph nodes

182. A histological study shows an immune parenchymal organ that has capsule and trabeculae made of dense irregular connective tissue. The organ's parenchyma consists of cortex with lymph nodules and medulla with cords made of lymphoid cells. What organ is under study?

- A. Thymus
- B. Spleen
- C. Red bone marrow
- D. Tonsils
- E. Lymph node

183. A patient who has immune disorder has addressed the hospital for treatment. Histological study of his lymph nodes showed absence of follicular dendrite cells which was a result of anomaly of development. Name the type of these cells.

- A. Lymphocytes
- B. Fibroblasts
- C. Epitheliocytes
- D. Erythrocytes
- E. Macrophages

184. The light microscope study of lymph node biopsy material obtained from a 40-year old female patient during surgery showed no morphological changes in the structure of the organ. Which of the following statements regarding lymph nodes is CORRECT?

- A. Lymph nodes provide antigen-independent differentiation of T- and B-cells
- B. Medullary cords contain thymic corpuscles
- C. Epithelial cells protect the stroma of lymph nodes
- D. Lymphatic nodules are in cortical and medullary regions
- E. T-lymphocytes are primarily found in para-cortex

185. An immune organ taken during autopsy from 27-year old woman was studied under light microscope. The histological slide showed the outer cortex, the inner cortex (paracortex) and medulla. What organ has such morphological signs?

- A. Spleen
- B. Kidney
- C. Thymus
- D. Red bone marrow
- E. Lymph node

186. An immune organ taken during biopsy from 20-year old female patient was studied under the microscope. The histological slide showed clusters of lymphocytes arranged in nodes and bands that along with stroma elements composed cortex and medulla. What organ has such morphological signs?

- A. Palatine tonsil
- B. Thymus
- C. Spleen
- D. Red bone marrow
- E. Lymph node

187. A cross-section of a peripheral immune organ obtained from autopsy of a deceased 69-year old male patient shows dense irregular connective tissue capsule and septa radiating inside the organ. The organ's medulla includes cortex made of lymph nodules; there are cords in medulla made of lymphoid cells. What organ is under study?

- A. Red bone marrow
- B. Thymus

- C. Tonsils
- D. Spleen
- E. Lymph node

188. The histological examination of lymph node biopsy material shows severe changes in parenchyma of paracortex / inner cortex of the organ. What process will be damaged?

- A. Destruction of T-lymphocytes
- B. Antigen-independent proliferation of T-lymphocytes
- C. Antigen-independent proliferation of B-lymphocytes
- D. Phagocytosis of antibodies
- E. Antigen-dependent proliferation of T-lymphocytes

189. A 35-year old male patient has addressed the hospital and was diagnosed with lymphadenitis (inflammatory process in a lymph node). The histological examination has demonstrated severe damage of gentle stroma in the lymph node. What tissue was damaged?

- A. Dense connective
- B. Muscle
- C. Epithelial
- D. Loose connective
- E. Reticular connective

190. A histological examination of a lymph node biopsy material in elderly male patient shows well-stained cells with large nuclei in para-cortex. Name these cells.

- A. Plasma cells
- B. B-cells
- C. Mast cells
- D. Adipose cells
- E. T-cells

3.2.3. Immune response

191. A patient came to the hospital because of immune disorders and was diagnosed with defective process of B-lymphocytes development. Which immune organs may not be working properly?

- A. None of the answers
- B. Red bone marrow and thyroid gland

- C. Pituitary gland and thymus
- D. All of the answers
- E. Red bone marrow, lymph node and spleen

192. A patient came to the hospital because of immune disorders and was diagnosed with defective process of T-lymphocytes development. Which immune organs may not be working properly?

- A. Pituitary gland and thymus
- B. Red bone marrow and thyroid gland
- C. None of the answers
- D. All of the answers
- E. Red bone marrow, thymus and spleen

193. The histological examination of a tissue taken from patient with immune disorder demonstrated lymphatic nodules. Which structure CANNOT be under the microscope?

- A. Cortex of lymph nodes
- B. Tonsils
- C. Spleen
- D. Respiratory and gastrointestinal mucosa
- E. Thymus

194. The laboratory worker studied a biopsy taken from a female patient with autoimmune disease under the microscope and found lymphatic nodules. Which structure may be under the microscope?

- A. Cortex of lymph nodes
- B. Tonsils
- C. Spleen
- D. Respiratory and gastrointestinal mucosa
- E. All of the above

195. After recovering from an infectious disease a young woman was diagnosed with dysfunction of peripheral lymphoid organs. What processes in her body will be disturbed?

- A. Antigen-independent proliferation of T-lymphocytes
- B. Erythropoiesis
- C. Megakaryocytopoiesis
- D. Granulocytopoiesis
- E. Antigen-dependent proliferation of T- and B-lymphocytes

196. An elderly male patient applied to the hospital and was diagnosed with an autoimmune disorder. Which one of the following cell types is responsible for decreasing of immune response?

- A. Helper T-cells
- B. Mast cells
- C. Memory T-cells
- D. B-lymphocyte cells
- E. Suppressor cells

197. A secondary immune response to a proteinaceous antigen was observed in 25-year old male patient in the hospital. Which of the following cell types is converted to a plasma cell during this process?

- A. Helper T-cells
- B. Natural killer cells
- C. Macrophages
- D. Antigen presenting cells
- E. B-lymphocytes

198. A biopsy material from intestinal tract of a 30-year old patient was obtained during operation. The histological analysis showed lymphoid tissue. What arrangement of immune tissue is typical for intestinal mucosa?

- A. Tonsils
- B. Lymph nodes
- C. Crypts
- D. Splenic cords
- E. Lymph nodules

199. A 20-year old woman was taken to hospital with signs of immunodeficiency state. The examination has shown no changes in amount or activity of B and T cells. The molecular analysis has shown dysfunction in the process of antigen-presentation to the immune-competent cells. What cells are most probably not functioning properly?

- A. T-lymphocytes
- B. NK-cells
- C. Adipose cells
- D. Fibrocytes
- E. Macrophages

200. The dysfunction of humor immune response was diagnosed in 34-year old patient. Which of the following cell types is primarily involved in this process?

- A. Eosinophils
- B. Macrophages
- C. Killer T-cells
- D. Neutrophils
- E. Plasma cells

201. The examination of samples from the patient showed increased number of plasma cells in response to presence of the antigen in the body. Which blood cells proliferate and differentiate into plasma cells?

- A. Monocytes
- B. Eosinophils
- C. Basophils
- D. T-lymphocytes
- E. B-lymphocytes

202. A patient applied to the hospital with immune disorder. The examination showed dysfunction of antigen-dependent proliferation of lymphocytes. Which organ/organs are not working properly?

- A. Spleen
- B. Lymph nodes
- C. Tonsils
- D. None of the above
- E. All of the above

203. A 30-year old patient applied to the hospital with immune disorder. The examination showed dysfunction of antigen-dependent proliferation of lymphocytes. Which organ/organs are not working properly?

- A. Pineal gland
- B. Red bone marrow and thyroid gland
- C. Thymus
- D. Thyroid gland
- E. Spleen and red bone marrow

204. A 50-year old woman was taken to hospital with signs of immunodeficiency state. The examination has shown disorders in antigen-dependent proliferation of T-cells. Which cells will not be formed properly?

- A. T-killers
- B. T-helpers
- C. T-suppressors
- D. None of the above
- E. All of the above

205. A 40-year old male patient expressed clinical signs of immunodeficiency state. The examination has shown disorders in antigen-dependent proliferation of B-cells. Which cells will not be formed properly?

- A. T-killers
- B. T-helpers
- C. T-suppressors
- D. Monocytes
- E. Plasma cells

CHAPTER 4

NERVE SYSTEM

4.1. Central nerve system

206. Which statement about cerebellum is correct?
- A. It regulates breathing and blood pressure
 - B. Grey matter is located inside
 - C. None of the answers
 - D. All the answers
 - E. Grey matter is located outside
207. Which statement about cerebellum is correct?
- A. It regulates breathing and blood pressure
 - B. None of the answers
 - C. Grey matter is located inside
 - D. All the answers
 - E. It regulates coordination
208. Which statement about cerebellum is NOT correct?
- A. It regulates breathing and blood pressure
 - B. It consists of cortex and medulla
 - C. White matter is located outside of grey matter
 - D. None of the answers
 - E. All the answers
209. Which statement about cerebellum is NOT correct?
- A. It regulates coordination
 - B. It consists of cortex, white matter and deep nuclei below white matter
 - C. None of the answers
 - D. All the answers
 - E. White matter is located outside of grey matter
210. Which statement about cerebellar cortex is correct?
- A. It consists of four layers
 - B. Mollecular layer produces output signals
 - C. Mollecular layer receives signals from the climbing fibers

- D. It consists of two layers
 - E. Purkinje layer produces output signals
211. The narrowest layer in cerebellar cortex consisting of 1 row of cells is
- A. Molecular
 - B. Granular
 - C. Pyramidal
 - D. Polymorphic
 - E. Purkinje
212. What is CORRECT about cortex of cerebellum?
- A. Molecular layer is located between ganglionic and granular
 - B. Granular layer is the surface layer of cerebellum cortex
 - C. Granular layer is located between ganglionic and molecular
 - D. Ganglionic layer is the surface layer of cerebellum cortex
 - E. Ganglionic layer is located between granular and molecular
213. What is the CORRECT order of cerebellum parts from the center of the organ to the surface?
- A. White matter–Granular layer–Molecular layer–Ganglionic layer
 - B. Molecular layer–Granular layer–Ganglionic layer–White matter
 - C. Granular layer–Ganglionic layer–Molecular layer–White matter
 - D. Ganglionic layer–Molecular layer–Granular layer–White matter
 - E. White matter–Granular layer–Ganglionic layer–Molecular layer
214. The layer of cerebellum cortex that includes basket cells is...
- A. Ganglionic layer
 - B. None of the answers
 - C. Granular layer
 - D. All the answers
 - E. Molecular layer
215. The layer of cerebellum cortex that provides the main function of cerebellum – coordination, is...
- A. None of the answers
 - B. Molecular layer
 - C. Granular layer
 - D. All the answers
 - E. Ganglionic layer

216. The layer whose cells INHIBIT the function of Purkinje's cells
- A. Ganglionic layer
 - B. None of the answers
 - C. Granular layer
 - D. All the answers
 - E. Molecular layer
217. The layer whose cells ACTIVATE the function of Purkinje's cells
- A. Ganglionic layer
 - B. Molecular layer
 - C. None of the answers
 - D. All the answers
 - E. Granular layer
218. The layer whose cells transmit signals from outside of cerebellum is
- A. Ganglionic layer
 - B. Molecular layer
 - C. None of the answers
 - D. All the answers
 - E. Granular layer
219. Main cells of cerebellum that provide coordinating function, have pear-shaped cell bodies with numerous dendrites and one axon that goes down to nuclei of white matter. Which cells are described?
- A. Basket cells
 - B. Stellate cells
 - C. Granule cells
 - D. Molecular cells
 - E. Purkinje's cells
220. Which of the cells in cerebellum are output – transfer the signal OUT of cerebellum?
- A. Basket cells
 - B. Stellate cells
 - C. Granule cells
 - D. Ganglionic cells
 - E. Purkinje's cells

221. Basket cells and stellate cells

- A. Are located in Molecular layer
- B. Inhibit the function of Purkinje's cells
- C. Regulate the activity of Ganglionic layer
- D. None of the answers
- E. All the answers

222. Basket cells have their name due to:

- A. Form of the pericarion
- B. Form of the dendrite
- C. Arrangement of the cells
- D. Location of dendrites
- E. Form of the axon

223. The cells have many short branching dendrites and a single long axon that gives collaterals that form baskets around Purkinje's cells. Which cells are described?

- A. Ganglionic cells
- B. Stellate cells
- C. Granule cells
- D. Pear-shaped cells
- E. Basket cells

224. The cells of cerebellum located in molecular layer can be of two types – small and large. They have synapses on axons and dendrites of Purkinje's cells and inhibit them. Which cells are these?

- A. Basket cells
- B. Ganglionic cells
- C. Granule cells
- D. Purkinje's cells
- E. Stellate cells

225. Very small cells in the bottom layer of cerebellum cortex interact with mossy fibers and forward the signal from them with axons that make parallel fibers to regulate many Purkinje's cells. Which cells are these?

- A. Basket cells
- B. Stellate cells

- C. Ganglionic cells
 - D. Purkinje's cells
 - E. Granule cells
226. Which statement about granule cells is CORRECT?
- A. One granule cell can regulate the activity of more than one Purkinje's cell
 - B. Their dendrites are in contact with mossy fibers
 - C. They are located in granular layer of cerebellar cortex
 - D. None of the answers
 - E. All the answers
227. Inhibitory interneurons in cerebellum are:
- A. Basket cells
 - B. Small stellate cells
 - C. Large stellate cells
 - D. None of the answers
 - E. All the answers
228. Excitatory neurons in cerebellum are:
- A. Basket cells
 - B. Small stellate cells
 - C. Large stellate cells
 - D. All the answers
 - E. Granule cells
229. What is correct about mossy fibers?
- A. None of the answers
 - B. They interact with axons of granule cells
 - C. They directly interact with Purkinje's cells
 - D. All the answers
 - E. They interact with dendrites of granule cells
230. What is correct about climbing fibers?
- A. None of the answers
 - B. One fiber can regulate many Purkinje's cells
 - C. The fiber interacts with Purkinje's cell via granule cell
 - D. All the answers
 - E. One fiber can regulate only one Purkinje's cell

231. What is correct about climbing fibers?
- A. One fiber can regulate many Purkinje's cells
 - B. None of the answers
 - C. The fiber interacts with Purkinje's cell via granule cell
 - D. All the answers
 - E. The fiber directly interacts with Purkinje's cell
232. The cells that transmit the signal from mossy fibers to Purkinje cells:
- A. Basket cells
 - B. Stellate cells
 - C. Ganglionic cells
 - D. Purkinje's cells
 - E. Granule cells
233. The fibers that come to cerebellum and can regulate many Purkinje's cells thanks to granule cells are...
- A. Climbing fibers
 - B. None of the answers
 - C. Parallel fibers
 - D. All the answers
 - E. Mossy fibers
234. The fibers that come to cerebellum, go up to Purkinje's cells and interact directly with them are...
- A. None of the answers
 - B. Mossy fibers
 - C. Parallel fibers
 - D. All the answers
 - E. Climbing fibers
235. The fibers made of axons of granule cells, basket cells and stellate cells located in molecular layer are...
- A. Climbing fibers
 - B. Mossy fibers
 - C. None of the answers
 - D. All the answers
 - E. Parallel fibers

236. What is CORRECT about cerebral cortex?
- A. It is covered by white matter
 - B. All the neurons are of the same morphology
 - C. It is made of white matter
 - D. Cells are arranged in follicular structures
 - E. Cells are arranged in layers
237. What is CORRECT about cerebral cortex?
- A. It is covered by pia mater
 - B. Its sickness is different in gyli and sulki
 - C. It includes neurons of various morphology
 - D. None of the answers
 - E. All the answers
238. How many layers does cerebral cortex include?
- A. It has 3 layers
 - B. It has 8 layers
 - C. It has 4 layers
 - D. It is not arranged it layers
 - E. It has 6 layers
239. What is CORRECT about cerebral cortex?
- A. The cells are arranged in nuclei
 - B. Stellate cells can give output signals
 - C. The cells are arranged in Trabecula
 - D. All the answers are wrong
 - E. Pyramid cells can give output signals
240. What is CORRECT about cerebral cortex?
- A. It makes gyri and sulki
 - B. It has laminar arrangement
 - C. It can be 15-45 mm thick
 - D. None of the answers
 - E. All the answers
241. What is CORRECT about pyramidal cells?
- A. They can give output signals
 - B. They can be of 3 sizes in different layers
 - C. They have apical dendrite
 - D. The biggest of them are called Betz cells
 - E. All the answers

242. What is CORRECT about pyramidal cells?
- A. Their axons go up from apical part of pericaryon
 - B. They have 1 dendrite
 - C. Their axons go up to molecular layer
 - D. Their dendrites go to the multiform layer
 - E. None of the answers
243. Which statement is true about size of pyramidal cells?
- A. The biggest cells are over 100 μm
 - B. The smallest ones are up to 12 μm
 - C. Medium-size cells can be up to 50 μm
 - D. None of the answers
 - E. All the answers
244. What is true about location of pyramidal cells?
- A. The middle-sized cells are located in external pyramidal layer
 - B. The small pyramidal cells are located in external granular layer
 - C. Large pyramidal cells of Betz are located in ganglionic layer
 - D. None of the answers
 - E. All the answers
245. The Betz cells are located in...
- A. Molecular layer
 - B. External granular layer
 - C. Internal granular layer
 - D. Multiform layer
 - E. Ganglionic layer
246. The smallest pyramidal cells are typical for:
- A. Molecular layer
 - B. Internal pyramidal layer
 - C. Ganglionic layer
 - D. Multiform layer
 - E. External granular layer
247. The medium pyramidal cells can be found in...
- A. Molecular layer
 - B. Internal granular layer
 - C. Ganglionic layer
 - D. Multiform layer
 - E. External pyramidal layer

248. The cells of cerebral cortex cross-section have triangular pericaryons, single apical and multiple basal dendrites, one basal axon. Which cells are described?

- A. Satellite cells
- B. Stellate cells
- C. Spiny cells
- D. Granular cells
- E. Pyramidal cells

249. Betz cells are:

- A. Satellite cells
- B. Stellate cells
- C. Medium pyramidal cells
- D. Small pyramidal cells
- E. Large pyramidal cells

250. What is true about stellate neurons?

- A. They can be spiny or non-spiny
- B. They are interneurons
- C. They are mostly found in external and internal granular layer
- D. None of the answers
- E. All the answers

251. Interneurons with star-like shape of pericaryons mostly located in external and internal granular layers are:

- A. Satellite cells
- B. Pyramidal cells
- C. All the answers
- D. None of the answers
- E. Stellate cells

252. The cells of cerebral cortex cross-section have star-like pericaryons with multiple dendrites and axon, dark condensed nucleus. Which cells are described?

- A. Satellite cells
- B. Pyramidal cells
- C. Spiny cells
- D. Purkinje's cells
- E. Stellate cells

253. Spiny stellate neurons:
- A. Are mostly located in internal granular layer
 - B. Are multipolar neurons
 - C. Usually have polygonal pericaryons
 - D. Don't send output signals
 - E. All the answers are true
254. Spiny non-stellate cells can be of the following type(s)...
- A. Basket
 - B. Chandelier
 - C. Bouquet
 - D. None of the answers
 - E. All the answers
255. Which statement gives COMPLETELY correct description of basket cells in cerebral cortex?
- A. They are stellate non-spiny moto-neurons
 - B. They are satellite interneurons
 - C. All the answers
 - D. None of the answers
 - E. They are stellate non-spiny interneurons that make synapses with pyramidal cells
256. The molecular layer of cerebral cortex mostly consists of:
- A. Basal axons of pyramidal cells
 - B. Basal dendrites of pyramidal cells
 - C. Apical axons of pyramidal cells
 - D. Lateral dendrites of pyramidal cells
 - E. Apical dendrites of pyramidal cells
257. Ganglionic layer of cerebral cortex mostly consists of:
- A. Small pyramidal cells
 - B. Medium pyramidal cells
 - C. Stellate non-spiny neurons
 - D. Stellate spiny neurons
 - E. Large pyramidal cells
258. The multiform layer has its name due to...
- A. Location of cells
 - B. Function of cells

- C. Morphology of processes of cells
 - D. None of the answers is correct
 - E. Morphology of pericaryons of cells
259. Which layer of cerebral cortex DOESN'T contain pyramidal cells?
- A. External granular
 - B. External pyramidal
 - C. Ganglionic
 - D. Internal pyramidal
 - E. Molecular
260. Which layers include pyramidal cells?
- A. External granular
 - B. External pyramidal
 - C. Ganglionic
 - D. Internal pyramidal
 - E. All the options
261. Macrophages in Central Nervous System belong to:
- A. Macroglia
 - B. Astrocytes
 - C. Oligodendrocytes
 - D. Ependymal cells
 - E. Microglia
262. Haemato-cerebral barrier is provided by:
- A. Macroglia
 - B. Oligodendrocytes
 - C. Ependymal cells
 - D. Schwann cells
 - E. Astrocytes
263. The movement of cerebro-spinal fluid is provided by...
- A. Macroglia
 - B. Astrocytes
 - C. Oligodendrocytes
 - D. Schwann cells
 - E. Ependymal cells

264. The cells whose processes surround walls of blood vessels and stop any foreign substances from entering central nervous system are...

- A. Macroglia
- B. Oligodendrocytes
- C. Ependymal cells
- D. Schwann cells
- E. Astrocytes

265. Immune system representatives in central nervous system are...

- A. Macroglia
- B. Astrocytes
- C. Oligodendrocytes
- D. Ependymal cells
- E. Microglia

266. Which structures belong to CENTRAL nervous system:

- A. Receptors
- B. Nerve
- C. Spinal ganglion
- D. Nerve terminations
- E. Spinal cord

4.2. Peripheral nerve system

267. Which structure DOESN'T belong to PERIPHERAL nervous system:

- A. Receptors
- B. Nerve
- C. Spinal ganglion
- D. Nerve terminations
- E. Spinal cord

268. How many neurons are included in the typical reflex arc?

- A. Four
- B. Five
- C. One
- D. Six
- E. Three

269. Which neuron does the reflex arc start with?
- A. Efferent
 - B. Intermediate
 - C. Associative
 - D. Moto-neuron
 - E. Afferent
270. Which neuron does the reflex arc finish with?
- A. Receptor
 - B. Afferent
 - C. Associative
 - D. Intermediate
 - E. Moto-neuron
271. Which neuron is located in the middle of reflex arc?
- A. Receptor
 - B. Afferent
 - C. Efferent
 - D. Moto-neuron
 - E. Associative
272. What is the synonym to moto-neuron?
- A. Receptor
 - B. Afferent
 - C. Associative
 - D. Intermediate
 - E. Efferent
273. What is the synonym to afferent neuron?
- A. Efferent
 - B. Moto-neuron
 - C. Associative
 - D. Intermediate
 - E. Receptor
274. What is CORRECT about somatic reflex arc?
- A. It typically includes 2 neurons
 - B. All the answers
 - C. Afferent neuron changes to associative in the anterior horns
 - D. Afferent neuron changes to associative in the lateral horns
 - E. It usually regulates contractions of skeletal muscles

275. What is CORRECT about vegetative reflex arc?
- A. It typically includes 2 neurons
 - B. It usually regulates contractions of skeletal muscles
 - C. Afferent neuron changes to associative in the anterior horns
 - D. All the answers
 - E. Afferent neuron changes to associative in the lateral horns

276. Perikaryons of which neurons of reflex arc are located in the spinal ganglia?

- A. Efferent
- B. Moto-neuron
- C. Associative
- D. Intermediate
- E. Receptor

277. Which type of neurons makes parenchyma of the spinal ganglia?

- A. Unipolar
- B. None of the answers
- C. Multipolar
- D. Apolar
- E. Pseudounipolar

278. What is NOT included in stroma of spinal ganglion?

- A. Capsule
- B. Capillaries
- C. Trabeculas
- D. Loose connective tissue
- E. Pseudounipolar neurons

279. What is included in parenchyma of spinal ganglion?

- A. Capsule
- B. Capillaries
- C. Trabeculas
- D. Loose connective tissue
- E. Pseudounipolar neurons

280. Which cells surround pseudounipolar neurons in spinal ganglia?

- A. None of the answers
- B. Fibroblasts and ependymal cells
- C. Ependymal cells and oligodendrocytes

- D. All the answers
- E. Oligodendrocytes and fibroblasts

281. Which cells surround pseudounipolar neurons in spinal ganglia?

- A. Oligodendrocytes
- B. Fibroblasts
- C. Schwann's cells
- D. None of the answers
- E. All the answers

282. Synonym to sensory ganglion:

- A. All the answers are correct
- B. Ventral root ganglion
- C. Vegetative ganglion
- D. Autonomic ganglion
- E. Dorsal root ganglion

283. The nuclei of pseudounipolar neurons in spinal ganglia are located...

- A. None of the answers
- B. In the periphery of the cell
- C. Between dendrites of the cell
- D. All of the answers
- E. In the centre of the cell

284. The processes of pseudounipolar neurons in spinal ganglia are located...

- A. In the centre
- B. In the periphery
- C. None of the answers is correct
- D. Under the capsule
- E. All of the answers are correct

285. Oligodendrocytes in the spinal ganglia...

- A. All the answers
- B. Make the capsule
- C. Make trabecula
- D. Make stroma
- E. Surround pericytes and processes of pseudounipolar cells

286. What is included in the nerve?
- A. Afferent fibers
 - B. Efferent fibers
 - C. Myelinated fibers
 - D. Non-myelinated fibers
 - E. All of the above
287. What is NOT included in the nerve?
- A. All of the above
 - B. Axial cylinder
 - C. Neurolemma
 - D. Basal lamina
 - E. Body of the neuron
288. Which statement is correct?
- A. Cross-section of axon is called axial cylinder
 - B. Nerve fiber is surrounded by neurolemma
 - C. Nerve fiber is surrounded by basal lamina
 - D. None of the above
 - E. All of the above
289. Neurolemma is made of:
- A. Axons
 - B. Dendrites
 - C. Ependymal glia
 - D. Microglia
 - E. Schwann cells
290. The structure that surrounds the nerve outside is...
- A. None of the answers
 - B. Endoneurium
 - C. Perineurium
 - D. Dianeurium
 - E. Epineurium
291. Which of the structures in the nerve is made of dense connective tissue?
- A. All of the answers
 - B. Endoneurium

- C. None of the answers
- D. Dianeurium
- E. Epineurium

292. Which of the structures in the nerve is made of loose connective tissue?

- A. None of the answers
- B. Axial cylinder
- C. Perineurium
- D. Epineurium
- E. Endoneurium

293. The membrane that is made of LCT (loose connective tissue) surrounds every nerve fiber inside of nerve bundle is...

- A. Epineurium
- B. None of the answers
- C. Perineurium
- D. Dianeurium
- E. Endoneurium

294. The nerve includes:

- A. Axons
- B. Dendrites
- C. Epineurium
- D. Endoneurium
- E. All the answers

295. Which structure is NOT present in the nerve?

- A. Axons
- B. Dendrites
- C. Schwann's cells
- D. Oligodendrocytes
- E. Ependymal cells

296. How are the pericaryons located in vegetative ganglion?

- A. In the centre
- B. On the edge/periphery
- C. None of the answers
- D. Outside of the capsule
- E. Everywhere

297. What DOESN'T belong to stroma of vegetative ganglion?
- A. Capsule
 - B. Interstitium
 - C. Somatic capillaries
 - D. Loose connective tissue
 - E. Axons of neurons
298. In vegetative ganglion there are synapses between...neurons
- A. Afferent and efferent
 - B. Afferent and motor
 - C. All the answers
 - D. Afferent and associative
 - E. Associative and efferent
299. What is CORRECT about vegetative ganglion?
- A. It is called sensitive ganglion
 - B. It consists of pseudounipolar cells
 - C. It is located in spinal cord
 - D. All the answers
 - E. It consists of multipolar neurons
300. What is true about neurons in vegetative ganglion?
- A. All the answers
 - B. The nucleus is located in the centre
 - C. The cells have one process
 - D. The cells have two processes
 - E. The nucleus is located eccentrically
301. What is true about neurons in vegetative ganglion?
- A. The nucleus is located eccentrically
 - B. None of the answers
 - C. The pericaryons are located in both centre and on the periphery of the organ
 - D. The cells have many processes
 - E. All the answers
302. What is the synonym to vegetative ganglion?
- A. Sensory ganglion
 - B. Dorsal root ganglion
 - C. None of the answers is correct

- D. All the answers are correct
 - E. Autonomic ganglion
303. What is correct about sympathetic autonomic ganglia?
- A. They are located in the stroma of internal organs
 - B. They form dorsal chain
 - C. None of the answers is correct
 - D. All the answers are correct
 - E. They form prevertebral and collateral chains
304. What is correct about parasympathetic autonomic ganglia?
- A. None of the answers is correct
 - B. They form dorsal chain
 - C. They form prevertebral and collateral chains
 - D. All the answers are correct
 - E. They are located in the stroma of internal organs
305. Where can autonomic ganglia be located?
- A. In the stroma of internal organs
 - B. Form prevertebral chains
 - C. Form collateral chains
 - D. None of the answers is correct
 - E. All the answers are correct
306. What is included in the white matter of spinal cord?
- A. Unmyelinated axons and dendrites
 - B. None of the answers is correct
 - C. Pericaryons of neurons
 - D. All the answers are correct
 - E. Myelinated axons and dendrites
307. What is included in the grey matter of spinal cord?
- A. Myelinated dendrites
 - B. Myelinated axons
 - C. None of the answers is correct
 - D. All the answers are correct
 - E. Pericaryons of neurons
308. Which structures are distinguished in the white matter of spinal cord?
- A. Anterior, posterior, and lateral tracts (fasciculi)
 - B. Median fissure

- C. Posterior median sulcus
- D. None of the answers is correct
- E. All the answers are correct

309. Which structures are distinguished in the grey matter of spinal cord?

- A. Anterior, posterior, and lateral tracts (fasciculi)
- B. Median fissure
- C. Posterior median sulcus
- D. All the answers are correct
- E. None of the answers is correct

310. Which structures are distinguished in the grey matter of spinal cord?

- A. Ventral horns
- B. Dorsal horns
- C. Lateral horns
- D. None of the answers is correct
- E. All the answers are correct

311. Which structures are distinguished in the white matter of spinal cord?

- A. Ventral horns
- B. Dorsal horns
- C. Lateral horns
- D. All the answers are correct
- E. None of the answers is correct

312. What is located in central canal of spinal cord?

- A. Blood
- B. Lymphatic fluid
- C. None of the answers is correct
- D. All the answers are correct
- E. Cerebrospinal fluid

313. The pericaryons of which neurons are located in anterior horns?

- A. Receptors
- B. Sensory
- C. Interneurons
- D. Afferent neurons
- E. Motoneurons

314. The pericaryons of which neurons are located in lateral horns?
- A. Receptor neurons of autonomic reflex arc
 - B. Sensory of somatic reflex arc
 - C. Moto-neurons of autonomic reflex arc
 - D. Afferent neurons of somatic reflex arc
 - E. Interneurons of autonomic reflex arc
315. The pericaryons of which neurons are located in lateral horns?
- A. Receptor neurons of autonomic reflex arc
 - B. Sensory of somatic reflex arc
 - C. Interneurons of somatic reflex arc
 - D. Afferent neurons of somatic reflex arc
 - E. No answer is correct

CHAPTER 5

ORGANS OF SENSE

5.1. Eye

316. The wall of eye consists of:
- A. Cornea
 - B. Sclera
 - C. Choroid
 - D. Retina
 - E. All of them
317. The wall of eye DOES NOT include:
- A. Cornea
 - B. Sclera
 - C. Choroid
 - D. Retina
 - E. Vitreous body
318. Anterior chamber of eye IS NOT restricted by
- A. Cornea
 - B. Lens
 - C. Iris
 - D. All of them
 - E. Vitreous body
319. Posterior chamber of eye IS NOT restricted by
- A. Ciliary body
 - B. Ora serrata
 - C. All of them
 - D. Dilator pupillae
 - E. Cornea
320. Vitreous chamber IS NOT surrounded by
- A. Ora serrata
 - B. Retina

- C. Fovea centralis
 - D. Optic disc
 - E. Uvea
321. Which layer of wall of eye is transparent?
- A. Sclera
 - B. Choroid
 - C. Retina
 - D. None of them
 - E. Cornea
322. Cornea consists of :
- A. Corneal epithelium and corneal endothelium
 - B. Bowman's membrane
 - C. Corneal stroma
 - D. Descemet's membrane
 - E. All of them
323. Cornea DOES NOT have:
- A. Corneal endothelium
 - B. Bowman's membrane
 - C. Corneal stroma
 - D. Descemet's membrane
 - E. Basilar membrane
324. Which layer of cornea DOES NOT regenerate
- A. Corneal epithelium
 - B. Bowman's membrane
 - C. Corneal stroma
 - D. Descemet's membrane
 - E. Corneal endothelium
325. Corneal epithelium is
- A. Simple squamous
 - B. Simple cuboidal
 - C. Simple columnar
 - D. Stratified squamous parakeratinized
 - E. Stratified squamous non-keratinized
326. Corneal endothelium is
- A. Simple cuboidal
 - B. Simple columnar

- C. Stratified squamous non-keratinized
 - D. Stratified squamous parakeratinized
 - E. Simple squamous
327. Corneal stroma is made up of:
- A. Collagen type III fiber
 - B. Reticular fiber
 - C. Elastic fiber
 - D. Purkinje fiber
 - E. Collagen type I fiber
328. Which type of cells can be recognized in corneal stroma?
- A. Macrophages
 - B. Lymphocytes
 - C. Reticular cells
 - D. Myoepithelial cells
 - E. Fibroblasts
329. Sclera is made of
- A. Dense regular connective tissue
 - B. Loose connective tissue
 - C. Reticular connective tissue
 - D. Adipose tissue
 - E. Dense irregular connective tissue
330. Sclera contains:
- A. Collagen type III fiber and Elastic fiber
 - B. Reticular fiber and Elastic fiber
 - C. Reticular fiber
 - D. Purkinje fiber
 - E. Collagen type I fiber and Elastic fiber
331. Which type of cells can be recognized in sclera?
- A. Macrophages
 - B. Lymphocytes
 - C. Reticular cells
 - D. Myoepithelial cells
 - E. Fibroblasts

332. External surface of the sclera is
- A. Tenon's capsule
 - B. Substantia propria
 - C. Suprachoroid lamina
 - D. Lamina fusca
 - E. Episclera
333. Schlemm's canal locates in
- A. Choroid
 - B. Iris
 - C. Ciliary body
 - D. Retina
 - E. Corneoscleral junction
334. Function of Schlemm's canal is
- A. Photoreception
 - B. Production of aqueous humor
 - C. Photoprotection
 - D. Transport of blood
 - E. Conveying of aqueous humor
335. Vascular coat of eye forms
- A. Ciliary body
 - B. Iris
 - C. Choroid
 - D. Uvea
 - E. All of them
336. Functions of ciliary body are
- A. Accomodation
 - B. Production of aqueous humor
 - C. Anchoring of lens
 - D. Only B and C
 - E. All A, B, C
337. Ciliary zonule (Zonular fiber) provides
- A. Production of aqueous humor
 - B. Conveying of aqueous humor
 - C. Photoreception
 - D. Transport of blood
 - E. Anchoring of lens

338. Ciliary zonule (Zonular fiber) produced by

- A. Lens epithelium
- B. Melanocytes of skin
- C. Keratinocytes
- D. Fibroblast
- E. Epithelium of ciliary processes

339. Which layer of eye wall is the most capillaryzed and contains highly pigmented epithelium?

- A. Cornea
- B. Sclera
- C. Retina
- D. Vitreous body
- E. Uvea

340. Iris is most anterior part of

- A. Cornea
- B. Sclera
- C. Retina
- D. Vitreous body
- E. Uvea

341. Which surface of Iris is not covered with epithelium?

- A. Posterior
- B. Lateral
- C. Near the pupil
- D. All of them
- E. Anterior

342. Lens capsule is

- A. Dense irregular connective tissue
- B. Loose connective tissue
- C. Areolar connective tissue
- D. None of them
- E. Basal lamina of epithelium

343. Lens is covered with

- A. Simple squamous epithelium
- B. Stratified squamous non-keratinized epithelium
- C. Stratified squamous parakeratinized epithelium

- D. Transitional epithelium
 - E. Simple columnar or cuboidal epithelium
344. Lens fibers are derived from
- A. Simple squamous epithelium
 - B. Collagen fiber
 - C. Reticular fiber
 - D. Elastic fiber
 - E. Simple columnar or cuboidal epithelium
345. Lens capsule is composed of
- A. Collagen type I fiber
 - B. Collagen type III fiber
 - C. Reticular fiber
 - D. Elastic fiber
 - E. Collagen type IV fiber
346. Lens fibers are filled with protein
- A. Collagen type I
 - B. Collagen type III
 - C. Collagen type IV
 - D. Elastic fiber
 - E. Crystallins
347. Photosensitive layer of eye wall is
- A. Cornea
 - B. Sclera
 - C. Uvea
 - D. Vitreous body
 - E. Retina
348. Retina includes such layers
- A. Neural nonphotosensitive part
 - B. Neural photocensitive part
 - C. Retinal pigment epithelium
 - D. Only A and B
 - E. All of them
349. Fovea centralis has
- A. Largest density of cones
 - B. Greatest visual acuity

- C. Best color vision
 - D. None of them
 - E. All of them
350. Fovea centralis does not have
- A. Largest density of cones
 - B. Greatest visual acuity
 - C. Best color vision
 - D. None of them
 - E. Largest density of rods
351. Which structure of eye does not contain photosensitive cells?
- A. Fovea centralis
 - B. Retina
 - C. All of them
 - D. None of them
 - E. Optic disc
352. Which type of retinal cells is not neuron cell?
- A. Rods
 - B. Cones
 - C. Amacrine cells
 - D. Horizontal cells
 - E. Pigmented epithelium cells
353. Which type of retinal cells is not neuron cells?
- A. Amacrine cells
 - B. Rods
 - C. Cones
 - D. Horizontal cells
 - E. Muller's cells
354. Which layer of retina contains outer and inner segments of photoreceptor cells?
- A. Retinal pigment epithelium layer
 - B. Outer limiting membrane
 - C. Outer plexiform layer
 - D. Inner plexiform layer
 - E. Layer of rods and cones

355. Which layer of retina contains nucleus of photoreceptor cells?

- A. Retinal pigment epithelium layer
- B. Layer of rods and cones
- C. Outer plexiform layer
- D. Inner nuclear layer
- E. Outer nuclear layer

356. Which layer of retina contains nucleus of horizontal, amacrine, bipolar and Muller's cells?

- A. Retinal pigment epithelium layer
- B. Layer of rods and cones
- C. Outer nuclear layer
- D. Outer plexiform layer
- E. Inner nuclear layer

5.2. Ear

357. The part of the ear that is responsible for transmitting sound waves in vibrations of fluid is...

- A. Auricle
- B. External ear
- C. Internal ear
- D. Tympanic membrane
- E. Middle ear

358. External ear consists of...

- A. External auditory meatus, tympanic membrane and tympanic cavity
- B. Auricle, auditory tube and tympanic membrane
- C. Auricle, external auditory meatus and auditory tube
- D. Tympanic cavity, auditory ossicles and auditory tube
- E. Auricle, external auditory meatus and tympanic membrane

359. Which part is NOT included in external ear?

- A. Auricle
- B. External auditory meatus
- C. Tympanic membrane
- D. Pinna
- E. Auditory tube

360. Which structure belongs to Middle ear?
- A. Auricle
 - B. External auditory meatus
 - C. Tympanic membrane
 - D. Pinna
 - E. Auditory tube
361. A fluid-filled membranous labyrinth within labyrinth of spaces in bones is...
- A. External ear
 - B. Middle ear
 - C. Auditory tube
 - D. Tympanic membrane
 - E. Internal ear
362. Bone labyrinth belongs to...
- A. External ear
 - B. Middle ear
 - C. Auditory tube
 - D. Tympanic membrane
 - E. Internal ear
363. Three auditory ossicles transmitting the signal from tympanic membrane to the fluid-filled membranous labyrinth belong to...
- A. External ear
 - B. Internal ear
 - C. Auditory tube
 - D. Tympanic membrane
 - E. Middle ear
364. Auricle is made of elastic cartilage covered with...
- A. Stratified non-keratinized epithelium
 - B. Simple squamous epithelium
 - C. Simple cuboidal epithelium
 - D. Stratified transitional epithelium
 - E. Stratified keratinized epithelium
365. Which structures can be found in external auditory meatus?
- A. Sebaceous glands
 - B. Cerumen glands

- C. Hair
 - D. None of the answers
 - E. All the answers
366. What is tympanic membrane lined with?
- A. Outer surface – with simple squamous epithelium, inner – with stratified keratinized epithelium
 - B. Outer surface – with stratified non-keratinized epithelium, inner – with simple squamous epithelium
 - C. Outer surface – with stratified keratinized epithelium, inner – with simple columnar epithelium
 - D. Outer surface – with simple keratinized epithelium, inner – with simple squamous epithelium
 - E. Outer surface – with stratified keratinized epithelium, inner – with simple squamous epithelium
367. What is middle layer of tympanic membrane made of?
- A. Loose connective tissue
 - B. Stratified epithelium
 - C. Simple epithelium
 - D. All the answers are correct
 - E. Collagen fibers
368. The main function of tympanic membrane is...
- A. Produce nerve impulses from soundwaves
 - B. Changes sound waves into liquid vibrations
 - C. All the answers
 - D. None of the answers
 - E. Change sound waves into mechanical vibrations
369. Auricle is covered by skin. What is under skin and forms auricle?
- A. Fibrous cartilage
 - B. Dense connective tissue
 - C. Loose connective tissue
 - D. Hyaline cartilage
 - E. Elastic cartilage

370. The wall of some part of the ear is made of cartilage in the outer third and bone in the inner part, is covered by hairy skin. Which part is described?

- A. Auricle
- B. Tympanic membrane
- C. Tympanic cavity
- D. Auditory tube
- E. External auditory meatus

371. Auditory ossicles are covered with...

- A. Stratified non-keratinized epithelium
- B. Simple cuboidal epithelium
- C. Stratified transitional epithelium
- D. Simple columnar epithelium
- E. Simple squamous epithelium

372. What is NOT CORRECT about auditory ossicles?

- A. They are covered with simple squamous epithelium
- B. They are articulated by synovial joints
- C. They transmit mechanical vibrations caused by sound to internal ear
- D. They belong to middle ear
- E. They are part of internal ear

373. What is CORRECT about auditory ossicles?

- A. They are covered with simple squamous epithelium
- B. They are articulated by synovial joints
- C. They transmit mechanical vibrations caused by sound to internal ear
- D. They belong to middle ear
- E. All the answers

374. What is NOT CORRECT about auditory tube?

- A. It connects tympanic and nasopharynx cavities
- B. It equalizes pressure changes with external environment
- C. It is covered by pseudo-stratified columnar epithelium
- D. It protects tympanic membrane from excessive pressure
- E. It connects external and internal ear

375. What is CORRECT about auditory tube?

- A. It connects tympanic and nasopharynx cavities
- B. It equalizes pressure changes with external environment
- C. It is covered by pseudo-stratified columnar epithelium
- D. It protects tympanic membrane from excessive pressure
- E. All the answers

376. The medial wall of this cavity has the oval and the round windows. The cavity is covered by simple squamous epithelium. Which cavity is described?

- A. External auditory cavity
- B. Internal labyrinth cavity
- C. All the answers
- D. None of the answers
- E. Tympanic cavity

377. Tympanic cavity is covered with...

- A. Stratified non-keratinized epithelium
- B. Simple cuboidal epithelium
- C. Stratified transitional epithelium
- D. Simple columnar epithelium
- E. Simple squamous epithelium

378. The macula utriculi and macula sacculi penetrate into a gelatinous mass that has calcium carbonate crystals called

- A. Cristae ampullaris
- B. Endolymph
- C. Perilymph
- D. Epilymph
- E. Otolith

379. The liquid that fills space between the bone and the membranous labyrinth is called...

- A. Endolymph
- B. Otolymph
- C. Epilymph
- D. Paralymph
- E. Perilymph

380. The liquid that fills space in the membranous labyrinth is called...

- A. Otolymph
- B. Perilymph
- C. Epilymph
- D. Paralymph
- E. Endolymph

381. Vestibule and 3 semicircular canals belong to:

- A. Membranous labyrinth of inner ear
- B. Tympanic cavity of middle ear
- C. Auditory tube of inner ear
- D. None of the answers
- E. Bone labyrinth of inner ear

382. Which parts of membranous labyrinth are located in vestibule?

- A. Semicircular ducts
- B. Cochlear duct
- C. All the answers
- D. None of the answers
- E. Saccule and utricle

383. Semicircular ducts are filled with...

- A. Otolymph
- B. Perilymph
- C. Epilymph
- D. Paralymph
- E. Endolymph

384. Cochlear duct belongs to:

- A. Bone labyrinth of inner ear
- B. Tympanic cavity of middle ear
- C. Auditory tube of inner ear
- D. None of the answers
- E. Membranous labyrinth of inner ear

385. The space between cochlea and cochlear duct is filled with...

- A. Endolymph
- B. Otolymph
- C. Epilymph

- D. Paralymp
- E. Perilymph

386. Macula of saccule and utricle are made of...

- A. Simple cuboidal epithelium
- B. Simple squamous epithelium
- C. Stratified non-keratinized epithelium
- D. Stratified transitional epithelium
- E. Sensory and supportive cells of specialized epithelium

387. Bone labyrinth of the inner ear consists of...

- A. Sacculi, utricle, 3 semicircular ducts and cochlear canal
- B. Vestibule, 3 semicircular canals and cochlear canal
- C. Vestibule, 3 semicircular canals and cochlear canal
- D. None of the answers is correct
- E. Vestibule, 3 semicircular canals and cochlea

388. Membranous labyrinth of the inner ear consists of...

- A. Vestibule, 3 semicircular canals and cochlea
- B. Vestibule, 3 semicircular canals and cochlear canal
- C. Vestibule, 3 semicircular canals and cochlear canal
- D. None of the answers is correct
- E. Sacculi, utricle, 3 semicircular ducts and cochlear duct

389. On histological section of inner ear there are two types of cells. One of them has bulbous body and is surrounded by multiple dendrites. Another one has columnar shape and smaller amount of surrounding afferent endings. Which cells are described?

- A. Sensory cells
- B. Receptor cells
- C. Hair cells
- D. None of the answers
- E. All the answers

390. The cells that surround sensory cells in macula utriculi and macula sacculi are called...

- A. Receptor cells
- B. Hair cells
- C. Keratinized cells
- D. None of the answers
- E. Supporting cells

391. On histological section of macula utriculi and macula sacculi in inner ear there are two types of cells. One of them has bulbous body and is surrounded by multiple dendrites. Another one has columnar shape and smaller amount of surrounding afferent endings. What are these cells responsible for?

- A. Provide information about angle acceleration
- B. Provide hearing
- C. Provide sense of smell
- D. None of the answers
- E. Provide information about the static position of the head

392. One long cilium and many stereocilia covered with a cupula made of gelatinous substance are typical for apical surface of ...

- A. Supporting cells
- B. Receptor cells of macula utriculi and macula sacculi
- C. Fibroblasts
- D. None of the answers
- E. Receptor cells of semicircular ducts

393. One long cilium and many stereocilia covered with an otolith membrane made of gelatinous substance are typical for apical surface of ...

- A. Supporting cells
- B. Receptor cells of semicircular ducts
- C. Fibroblasts
- D. None of the answers
- E. Receptor cells of macula utriculi and macula sacculi

394. Scala vestibule, scala media and scala tympani are parts of...

- A. Semicircular ducts
- B. Macula utriculi and macula sacculi
- C. Vestibule
- D. None of the answers
- E. Cochlea

395. Scala vestibule and scala tympani are filled with...

- A. Endolymph
- B. Otolymph
- C. Epilymph
- D. Paralymph
- E. Perilymph

396. Scala media is filled with...
- A. Perilymph
 - B. Epilymph
 - C. Paralymph
 - D. Otolymph
 - E. Endolymph
397. Scala vestibule starts with...
- A. Round window
 - B. Square window
 - C. Triangular window
 - D. Transparent window
 - E. Oval window
398. Scala tympani ends with...
- A. Oval window
 - B. Square window
 - C. Triangular window
 - D. Transparent window
 - E. Round window
399. The correct order of structures participating in sound vibrations transmission is...
- A. Round window– scala tympani– helicotrema– scala vestibule – oval window
 - B. Scala vestibule–helicotrema– scala tympani–round window – oval window
 - C. Helicotrema – scala tympani – round window – oval window – scala vestibule
 - D. None of the answers
 - E. Oval window – scala vestibule – helicotrema – scala tympani – round window
400. Spiral organ of Corti is a group of epithelial cells located on...
- A. Vestibular membrane
 - B. Reissner's membrane
 - C. Stria vascularis
 - D. None of the answers is correct
 - E. Basiliar membrane

401. A group of sensory and supporting cells located on basilar membrane in cochlear duct and covered with tectorial membrane make...

- A. Vestibular organ
- B. Otolithic organ
- C. Meibomian organ
- D. Bowman's organ
- E. Organ of Corti

402. Which type of cells DOESN'T belong to organ of Corti?

- A. Pillar cells
- B. Inner phalangeal cells
- C. Outer phalangeal cells
- D. Inner sensory cells
- E. Otolithic cells

403. Which type of cells in organ of Corti is NOT supportive?

- A. Pillar cells
- B. Inner phalangeal cells
- C. Outer phalangeal cells
- D. None of the answers
- E. Inner sensory cells

404. Which cells make tunnel of Corti?

- A. Inner and outer phalangeal cells
- B. Outer phalangeal cells
- C. Inner and outer sensory cells
- D. Inner sensory cells
- E. Pillar cells

405. Stereocilia of sensory cells in organ of Corti is embedded in gelatinous glycoprotein known as...

- A. Otolithic membrane
- B. Cupula
- C. All of the answers
- D. None of the answers
- E. Tectorial membrane

406. Tectorial membrane covers stereocilia of sensory cells in...
- A. Retina
 - B. Semicircular ducts
 - C. Macula utriculi
 - D. Macula sacculi
 - E. Organ of Corti

5.3. Organ of taste

407. Supporting and gustatory cells arranged in groups connected with the surface of the tongue by taste pores are...

- A. Taste nuclei
- B. Taste trabecula
- C. Taste stroma
- D. Taste islands
- E. Taste buds

408. Taste pores consist of:

- A. Pillar and sensory cells
- B. Phalangeal cells and receptor cells
- C. Pillar and phalangeal cells
- D. Inner and outer pillar cells
- E. Supporting and gustatory cells

409. Main function of basal cells in taste bud is...

- A. To connect sensory cells to outer environment
- B. To provide nutrition for sensory cells
- C. To provide sense of taste
- D. To provide sense of smell
- E. To divide and substitute supporting and gustatory cells

410. The cells of the taste bud that have long microvilli extending through the taste pore are...

- A. Supporting cells
- B. Gustatory cells

- C. Receptor cells
 - D. None of the answers
 - E. All the answers
411. Which cell DOESN'T belong to the taste bud?
- A. Supporting cells
 - B. Sensory cells
 - C. Basal cells
 - D. Gustatory cells
 - E. Pillar cells

5.4. Organ of smell

412. Olfactory epithelium is classified as...
- A. Stratified keratinized epithelium
 - B. Stratified non-keratinized epithelium
 - C. Simple squamous epithelium
 - D. Simple cuboidal epithelium
 - E. Pseudostratified columnar epithelium
413. Olfactory epithelium is located in...
- A. Lower part of nasal cavity
 - B. Nasopharynx
 - C. All of the answers
 - D. None of the answers
 - E. Upper part of nasal cavity
414. The cells of olfactory epithelium are small, spherical or cone-shaped, can divide and substitute other cells providing regeneration. Which cells are described?
- A. Olfactory cells
 - B. Fibroblasts
 - C. Pillar cells
 - D. Stellate cells
 - E. Basal cells

415. Olfactory cells are classified as...

- A. Unipolar neurons
- B. Pseudounipolar neurons
- C. Apolar neurons
- D. Multipolar neurons
- E. Bipolar neurons

416. The section of olfactory region of nasal cavity shows bipolar neurons with 6-20 cilia on the apical surface. Which cells are these?

- A. Basal cells
- B. Fibroblasts
- C. Pillar cells
- D. Stellate cells
- E. Olfactory cells

CHAPTER 6

SKIN

417. Skin protects organism from damaging UV influence due to:
- A. Merkel's cells
 - B. None of the answers
 - C. Keratinocytes
 - D. Langerhans' cells
 - E. Melanocytes
418. ALL the structures of skin that participate in thermoregulation are:
- A. Sebaceous glands, epidermis, capillary network
 - B. Sebaceous and sweat glands, adipose tissue of hypoderm
 - C. Adipose tissue of hypoderm, Merkel's cells, hair
 - D. Dense connective tissue of derma, sebaceous and sweat glands
 - E. Sweat glands, adipose tissue of hypoderm, capillary network
419. Excretory function of skin is provided by:
- A. Epidermis
 - B. Langerhans' cells
 - C. Merkel's cells
 - D. Adipose tissue
 - E. Sweat glands
420. Steroid hormones of human organism can be stored in skin.
Which structure is responsible for that?
- A. Epidermis
 - B. Papillary layer of dermis
 - C. Reticular layer of dermis
 - D. Basal lamina
 - E. Adipose tissue of hypodermis
421. Non-specific immunity is provided by skin due to:
- A. Loose connective tissue of dermis
 - B. Dense connective tissue of dermis
 - C. Adipose cells of hypodermis
 - D. None of the answers
 - E. Stratified keratinized epithelium of epidermis

422. Receptor function of skin is provided by:
- A. Keratinocytes
 - B. Langerhans' cells
 - C. Melanocytes
 - D. None of the answers
 - E. Merkel's cells
423. Antigen-dependent differentiation of lymphocytes in skin is provided by:
- A. Keratinocytes
 - B. Merkel's cells
 - C. Melanocytes
 - D. All of the answers
 - E. Langerhans' cells
424. Dactylography is based on research of structures made by:
- A. Epidermis and reticular layer of derma
 - B. Papillary layer of derma and reticular layers of derma
 - C. Reticular layer of derma and hypodermis
 - D. Epidermis and reticular layer of derma
 - E. Epidermis and papillary layer of derma
425. The most dense and mechanically solid part of skin used in production of leather goods is:
- A. Epidermis
 - B. Papillary layer of derma
 - C. Hypodermis
 - D. Basal lamina
 - E. Reticular layer of derma
426. The synthesis of vitamin D happens in skin because:
- A. This process is dependent on influence of temperature of the environment
 - B. This process is connected with supply of Oxygen from surrounding air
 - C. All of the answers
 - D. None of the answers
 - E. This process requires ultraviolet

427. The correct location of layers in skin from the bottom to the top is:
- A. Epidermis – hypodermis – reticular layer of derma – papillary layer of derma
 - B. Papillary layer of derma – hypodermis – reticular layer of derma – epidermis
 - C. Reticular layer of derma – papillary layer of derma – hypodermis – epidermis
 - D. Epidermis – papillary layer of derma – reticular layer of derma – hypodermis
 - E. Hypodermis –reticular layer of derma – papillary layer of derma – epidermis
428. The correct location of layers in skin from the top to the bottom is:
- A. Hypodermis – reticular layer of derma – papillary layer of derma – epidermis
 - B. Epidermis – hypodermis – reticular layer of derma – papillary layer of derma
 - C. Papillary layer of derma – hypodermis – reticular layer of derma – epidermis
 - D. Reticular layer of derma – papillary layer of derma – hypodermis – epidermis
 - E. Epidermis – papillary layer of derma – reticular layer of derma – hypodermis
429. Epidermis is made of:
- A. Stratified cuboidal keratinized epithelium
 - B. Simple squamous keratinized epithelium
 - C. Stratified transitional keratinized epithelium
 - D. Stratified squamous non-keratinized epithelium
 - E. Stratified squamous keratinized epithelium
430. Papillary layer of derma is made of:
- A. Dense regular connective tissue
 - B. Dense irregular connective tissue
 - C. Adipose tissue
 - D. Stratified squamous keratinized epithelium
 - E. Loose connective tissue

431. Reticular layer of derma is made of:
- A. Loose connective tissue
 - B. Dense regular connective tissue
 - C. Adipose tissue
 - D. Stratified squamous keratinized epithelium
 - E. Dense irregular connective tissue
432. Hypodermis is made of:
- A. Loose connective tissue
 - B. Dense regular connective tissue
 - C. Dense irregular connective tissue
 - D. Stratified squamous keratinized epithelium
 - E. Adipose tissue
433. What is CORRECT about epidermis?
- A. It is made of stratified squamous keratinized epithelium
 - B. It is the outer layer of skin
 - C. It is made of 5 layers of cells
 - D. None of the answers
 - E. All the answers
434. What is NOT CORRECT about epidermis?
- A. It is made of stratified squamous non-keratinized epithelium
 - B. It is the thickest layer of skin
 - C. It is made of 3 layers of cells
 - D. None of the answers
 - E. All the answers
435. What is CORRECT about hypoderm?
- A. It is made of adipose tissue
 - B. It can store steroid hormones and vitamin D
 - C. It is the most inner part of skin
 - D. None of the answers
 - E. All the answers
436. What is CORRECT about hypoderm?
- A. It is made of specialized connective tissue
 - B. It can store hormones and vitamins
 - C. It provides movability of skin from below-located tissues
 - D. None of the answers
 - E. All the answers

437. The patient has white spots without pigment in skin. Which cells are absent?

- A. Keratinocytes
- B. Langerhans' cells
- C. Merkel's cells
- D. None of the answers
- E. Melanocytes

438. The most abundant type of cells in dermis is:

- A. Langerhans' cells
- B. Merkel's cells
- C. Melanocytes
- D. Adipose cells
- E. Keratinocytes

439. What is CORRECT about Langerhans' cells?

- A. They are responsible for immunity
- B. They originate from monocytes
- C. They are macrophages
- D. None of the answers
- E. All the answers

440. What is NOT CORRECT about Langerhans' cells?

- A. They originate from monocytes
- B. They are macrophages
- C. All the answers
- D. None of the answers
- E. They are responsible for skin sensitivity

441. What is NOT CORRECT about melanocytes?

- A. They have multiple processes with pigment granules
- B. They can share mature melanin granules with Keratinocytes
- C. All the answers
- D. None of the answers
- E. They provide regeneration of other cells in stratum basale

442. The correct change of keratin structures from stratum granulosum to stratum corneum is:
- A. Tonofibrils – kerato-hyalin granules – eleidin – scleroprotein – tonofilaments
 - B. Kerato-hyalin granules – eleidin – scleroprotein – tonofilaments – tonofibrils
 - C. Eleidin – scleroprotein – tonofilaments – tonofibrils – kerato-hyalin granules
 - D. None of the answers
 - E. Tonofilaments – tonofibrils – kerato-hyalin granules – eleidin – scleroprotein
443. Protein, binding keratin tonofibers into keratin tonofibrils, is:
- A. Eleidin
 - B. Bindin
 - C. Desmin
 - D. Tonofibrillin
 - E. Filaggrin
444. Eleidin is typical for:
- A. Stratum basale
 - B. Stratum spinosum
 - C. Stratum granulosum
 - D. Stratum corneum
 - E. Stratum lucidum
445. Regeneration of epidermis is provided by:
- A. Stratum spinosum
 - B. Stratum granulosum
 - C. Stratum lucidum
 - D. Stratum corneum
 - E. Stratum basale
446. The layer that thin skin lacks is:
- A. Stratum basale
 - B. Stratum spinosum
 - C. Stratum granulosum
 - D. Stratum corneum
 - E. Stratum lucidum

447. Hemidesmosomes are cell junctions most typical for:
- A. Stratum spinosum
 - B. Stratum granulosum
 - C. Stratum lucidum
 - D. Stratum corneum
 - E. Stratum basale
448. Stratum spinosum has its name due to:
- A. Location of the cells
 - B. Form of keratin stored in cells
 - C. All the answers
 - D. None of the answers
 - E. Form of the cells
449. Stratum granulosum has its name due to:
- A. Form of the cells
 - B. Location of the cells
 - C. All the answers
 - D. None of the answers
 - E. Form of keratin stored in cells
450. Young cells with big nuclei and high mitotic activity are present in:
- A. Stratum spinosum
 - B. Stratum granulosum
 - C. Stratum lucidum
 - D. Stratum corneum
 - E. Stratum basale
451. Nutrition and oxygen supply of epidermis is provided by:
- A. Capillaries of papillary layer of hypodermis
 - B. Diffusion through all the layers of stratified epithelium
 - C. Diffusion from papilla to upper layers of epidermis
 - D. None of the answers
 - E. All of the answers
452. The difference of thick skin from thin skin is:
- A. Lack of hair follicles
 - B. Thickness of stratum corneum
 - C. Presence of stratum lucidum

- D. None of the answers
- E. All the answers

453. What is TRUE about Malpighian layer?

- A. It includes stratum basale and inner part of stratum spinosum
- B. It is the only layer in epidermis where mitosis occurs
- C. It provides regeneration of upper layers of epidermis
- D. None of the answers
- E. All the answers

454. The layer of skin extremely rich in capillaries that provides nutrition for epidermis is:

- A. Epidermis
- B. Reticular layer of dermis
- C. Basal lamina
- D. Adipose tissue of hypodermis
- E. Papillary layer of dermis

455. On histological section there is a layer of skin consisting of connective tissue rich in capillaries that makes protrusions into epidermis is:

- A. Epidermis
- B. Reticular layer of dermis
- C. Basal lamina
- D. Adipose tissue of hypodermis
- E. Papillary layer of dermis

456. The layer of skin that contains many arteriovenous anastomoses for thermoregulation is:

- A. Epidermis
- B. Papillary layer of dermis
- C. Basal lamina
- D. Adipose tissue of hypodermis
- E. Reticular layer of dermis

457. Meissner's corpuscles are found in histological section of skin. Which layer is under study?

- A. Epidermis
- B. Reticular layer of dermis

- C. Basal lamina
 - D. Adipose tissue of hypodermis
 - E. Papillary layer of dermis
458. What is CORRECT about papillary layer of derma?
- A. It is made of loose connective tissue
 - B. It provides blood supply for epidermis
 - C. It participates in formation of fingerprints
 - D. None of the answers
 - E. All of the answers
459. What is NOT CORRECT about papillary layer of derma?
- A. It provides blood supply for epidermis
 - B. It participates in formation of fingerprints
 - C. All of the answers
 - D. None of the answers
 - E. It is made of dense irregular connective tissue
460. What is CORRECT about reticular layer of derma?
- A. It is made of dense regular connective tissue
 - B. It provides blood supply for epidermis
 - C. It participates in formation of fingerprints
 - D. All of the answers
 - E. It is made of dense irregular connective tissue
461. What is NOT CORRECT about reticular layer of derma?
- A. It is made of dense irregular connective tissue
 - B. It provides mechanical solidity of skin
 - C. All of the answers
 - D. None of the answers
 - E. It has no blood vessels
462. Secretory portions of sweat glands are located in:
- A. Epidermis
 - B. Upper part of papillary layer of derma
 - C. Lower part of papillary layer of derma
 - D. Upper part of reticular layer of derma
 - E. Lower part of reticular layer of derma

463. Secretory portions of sebaceous glands are located in:

- A. Epidermis
- B. Hypoderma
- C. All of the answers
- D. None of the answers
- E. Derma

464. What is CORRECT about sebaceous glands?

- A. They are exocrine glands
- B. They have holocrine secretion
- C. They can open on the surface of skin
- D. They can open in hair follicles
- E. All of the answers

465. Cross-section of skin gland stained with hemotoxylin shows acinar secretory portion with multiple pale-stained cells with foamy cytoplasm and pycnotic nuclei. Which gland is this?

- A. Sweat gland
- B. Mammary gland
- C. Merkel's gland
- D. None of the answers
- E. Sebaceous gland

466. Simple non-branched tubular glands with slightly coiled ducts are:

- A. Sebaceous gland
- B. Mammary gland
- C. Merkel's gland
- D. None of the answers
- E. Sweat gland

467. Glands participating in thermoregulation are:

- A. Sebaceous gland
- B. Mammary gland
- C. Merkel's gland
- D. None of the answers
- E. Sweat gland

468. Glands participating in salt-water homeostasis are:
- A. Sebaceous gland
 - B. Mammary gland
 - C. Merkel's gland
 - D. None of the answers
 - E. Sweat gland
469. Which structure DOESN'T belong to hair bulb?
- A. Dermal papilla
 - B. Internal root sheath
 - C. External root sheath
 - D. All of the answers
 - E. Sebaceous glands
470. Dermal papillae are made of:
- A. Stratified keratinized epithelium
 - B. Dense connective tissue
 - C. Adipose cells of hypodermis
 - D. None of the answers
 - E. Loose connective tissue
471. Layers of internal root sheath include:
- A. Glassy membrane, Huxley's layer and Henle's layer
 - B. Connective tissue sheath, glassy membrane and Henle's layer
 - C. Cuticle, glassy membrane and Huxley's layer
 - D. None of the answers
 - E. Cuticle, Huxley's layer and Henle's layer
472. Which structure DOESN'T belong to the hair?
- A. Medulla
 - B. Cortex
 - C. Cuticle of hair
 - D. All of these structures belong to the hair
 - E. Glassy membrane
473. The most outer sheath of the hair is made of:
- A. Basal lamina of epidermis
 - B. Dense irregular connective tissue
 - C. Stratum granulosum of epidermis
 - D. Glassy membrane
 - E. Loose connective tissue

474. The thickened basal lamina of epidermis surrounding the hair follicle is:

- A. Huxley's layer
- B. Henle's layer
- C. Connective tissue sheath
- D. Cuticle of hair
- E. Glassy membrane

475. Local thickening of stratum corneum underlying the free (distal) part of the nail is:

- A. Lunula
- B. Eponychium
- C. Root
- D. Cuticle
- E. Hyponychium

476. The part of nail hidden under nerve groove is:

- A. Nail body
- B. Nail plate
- C. Lunula
- D. Hyponychium
- E. Nail root

CHAPTER 7

DIGESTIVE SYSTEM

7.1. General characteristic of tubular organ

477. The cross-section of the organ shows a layer made of stratified non-keratinized squamous epithelium located on Basal lamina. This layer is a part of...

- A. Submucosa
- B. Muscularis externa
- C. Serosa
- D. Adventitia
- E. Mucosa

478. The outer layer of tubular organ made of loose connective tissue covered with mesothelium that provides isolation from surrounding organs is...

- A. Adventitia
- B. Mucosa
- C. Submucosa
- D. Muscularis externa
- E. Serosa

479. The outer layer of tubular organ made of loose connective tissue that provides attachment to surrounding organs is...

- A. Mucosa
- B. Submucosa
- C. Muscularis externa
- D. Serosa
- E. Adventitia

480. The location of smooth muscles along most part of digestive tract is...

- A. Longitudinal inside and circular outside
- B. Only circular
- C. Only longitudinal

- D. None of the answers
 - E. Circular inside and longitudinal outside
481. What is NOT CORRECT about lamina propria?
- A. It is made of loose connective tissue
 - B. It provides nutrition for epithelium above
 - C. It is located below epithelium
 - D. All the answers
 - E. It is located below muscularis mucosae
482. What is CORRECT about lamina propria?
- A. It is made of loose connective tissue
 - B. It provides nutrition for epithelium above
 - C. It is located below epithelium
 - D. None of the answers
 - E. All the answers
483. What is NOT CORRECT about submucosa?
- A. It contains compound tubule-alveolar glands
 - B. It contains blood vessels
 - C. It is located between layers of smooth muscles
 - D. It underlies mucosa
 - E. It faces the lumen of digestive tract
484. What is CORRECT about submucosa?
- A. It contains compound tubule-alveolar glands
 - B. It contains blood vessels
 - C. It is located between layers of smooth muscles
 - D. It underlies mucosa
 - E. All the answers
485. The thin layer of a tubular organ made of loose connective tissue that makes the relief of tunica mucosa is...
- A. Muscularis mucosa
 - B. Muscularis externa
 - C. Muscularis media
 - D. None of the answers
 - E. Lamina propria

486. A layer of a tubular organ made of smooth muscles located circularly and longitudinally that provides peristaltic movements is...

- A. Lamina propria
- B. Muscularis mucosa
- C. Muscularis media
- D. None of the answers
- E. Muscularis externa

487. The protrusions of lamina propria into epithelium of digestive tube that increase the surface of absorbtion are:

- A. Microvilli
- B. Crypts
- C. Sphincters
- D. Cilia
- E. Villi

488. Epithelium growing down into lamina propria making tubular ducts is...

- A. Villi
- B. Microvilli
- C. Sphincters
- D. Cilia
- E. Crypts

489. The main function of stratified squamous epithelium in upper parts of digestive tract is...

- A. Absorption of nutrients
- B. Exchange of substances between blood and lumen
- C. All the answers
- D. None of the answers
- E. Protection from mechanical and thermal influence

490. The main function of simple columnar epithelium in the middle part of digestive tract is...

- A. Secretion of substances
- B. Absorption of nutrients
- C. Barrier
- D. None of the answers
- E. All the answers

491. Which statement about epithelial lining of mucosa is NOT correct?

- A. It faces the lumen of digestive tract
- B. It has protective function in upper parts of digestive tract
- C. It may contain secretory cells
- D. All the answers are correct
- E. It contains blood vessels

492. Cross-section of a tubular organ shows multiple compound tubule-alveolar glands. Which layer of the tubular organ is under study?

- A. Lamina propria
- B. Muscularis externa
- C. Serosa
- D. Adventitia
- E. Submucosa

493. Cross-section of a tubular organ shows lymphocytes associated in groups. Which layer of the tubular organ is under study?

- A. Submucosa
- B. Muscularis externa
- C. Serosa
- D. Adventitia
- E. Lamina propria

494. Which statement is NOT TRUE about mesothelium?

- A. It is simple squamous epithelium
- B. It is part of serous layer
- C. It covers loose connective tissue
- D. It provides isolation from surrounding organs
- E. It is part of adventitial layer

495. Which statement is TRUE about mesothelium?

- A. It is simple squamous epithelium
- B. It is part of serous layer
- C. It covers loose connective tissue
- D. It provides isolation from surrounding organs
- E. All the answers

496. What is NOT CORRECT about tissues of digestive tract?

- A. Epithelium covers serous membrane
- B. Loose connective tissue is present in lamina propria and adventitia

- C. Epithelium makes the most inner layer of digestive tract
 - D. All the answers are correct
 - E. Muscles are absent in classical mucosa
497. Choose which layer of a tubular organ contains Messner's plexus.
- A. Lamina propria
 - B. Muscularis externa
 - C. Serosa
 - D. Adventitia
 - E. Submucosa
498. Which layer of a tubular organ doesn't contain any blood vessels and gets all nutrition from underlying structures?
- A. Lamina propria
 - B. Submucosa
 - C. Muscularis externa
 - D. Serosa
 - E. Epithelium of mucosa
499. The layers of a tubular organ that are made of loose connective tissue are...
- A. Muscularis externa and serosa
 - B. Lamina propria and epithelium
 - C. Mesothelium and serosa
 - D. None of the answers
 - E. Lamina propria and adventitia
500. Sphincters of digestive tract are made of:
- A. Longitudinal layer of Muscularis externa
 - B. Longitudinal layer of Muscularis mucosa
 - C. Circular layer of Muscularis mucosa
 - D. None of the answers
 - E. Circular layer of muscularis externa
501. Which sentence describes epithelial tissue of a tubular organ correctly?
- A. Stratified epithelium is a part of serous layer
 - B. Epithelium has blood vessels in it
 - C. Epithelial tissue can locate next to smooth muscles
 - D. Epithelial tissue can make papilla
 - E. None of the answers

7.2. Tooth

502. Regeneration of dentin is provided by:
- A. Ameloblasts whose bodies are located in pulp
 - B. Odontoblasts whose bodies are located in dentin channels
 - C. Ameloblasts whose processes are located in dentin channels
 - D. Odontoblasts whose bodies are located on the border between dentin and enamel
 - E. Odontoblasts whose bodies are located in pulp
503. The part of tooth surrounded by cementum is...
- A. Enamel of root
 - B. Dentin of crown
 - C. Periodont
 - D. Pulp of root
 - E. Dentin of root
504. Regeneration of enamel in adults is provided by:
- A. Odontoblasts
 - B. Enameloblasts
 - C. Fibroblasts of pulp
 - D. All the answers are correct
 - E. None of the answers
505. The cross-section of the tooth shows dentin surrounded by cementum. Which part is that?
- A. Crown
 - B. Neck
 - C. Enamel
 - D. None of the answers
 - E. Root
506. Which part of the tooth contains bodies of odontoblasts?
- A. Inner zone of pulp
 - B. Dentinal tubules
 - C. Lacuna between enamel and dentin
 - D. Cementum
 - E. Outer zone of pulp

507. Which part of the tooth contains processes of odontoblasts?
- A. Inner zone of pulp
 - B. Outer zone of pulp
 - C. Lacuna between enamel and dentin
 - D. Cementum
 - E. Dentinal tubules
508. Which tissue in tooth resembles the bone tissue?
- A. Enamel
 - B. Dentin
 - C. Periodont
 - D. Pulp
 - E. Cementum
509. Which parts of the tooth are made of loose and dense connective tissue respectively?
- A. Enamel and dentin
 - B. Dentin and pulp
 - C. Periodont and dentin
 - D. Dentin and enamel
 - E. Pulp and periodont
510. Which part of the tooth is made of epithelial tissue?
- A. Pulp
 - B. Enamel
 - C. Dentin
 - D. Periodont
 - E. None of the answers
511. Sharpey's fibers and stria of Retzius are typical for _____ and _____ respectively:
- A. Dentin and enamel
 - B. Pulp and dentin
 - C. Cementum and dentin
 - D. Cementum and pulp
 - E. Cementum and enamel
512. Stria of Retzius are formed due to...
- A. Formation of channels in dentin for processes of odontoblasts
 - B. Different chemical composition of dentin

- C. Different refraction of light by enamel prisms
- D. Different location of odontoblasts processes
- E. Different chemical composition of enamel

513. The correct order of tooth development stages:

- A. Cup stage-Bud stage-Bell stage
- B. Bell stage-Bud stage-Cup stage
- C. Bud stage-Bell stage-Cup stage
- D. None of the orders is correct
- E. Bud stage-Cup stage-Bell stage

514. What is the correct location of layers in the "Bell" stage of odontogenesis from the top of future tooth to dental papilla?

- A. Ameloblasts-enamel-odontoblasts-dentin
- B. Dentin-odontoblasts-ameloblasts-enamel
- C. Enamel-ameloblasts-odontoblasts-dentin
- D. Odontoblasts- dentin- enamel-ameloblasts
- E. Ameloblasts-enamel-dentin-odontoblasts

515. The layer surrounding dental papilla on "Bell stage" of odontogenesis is...

- A. Ameloblasts
- B. Dentin
- C. Enamel
- D. Spongy bone
- E. Odontoblasts

516. The most outer layer of an enamel organ at "Bell stage" is...

- A. Odontoblasts
- B. Dentin
- C. Enamel
- D. Spongy bone
- E. Ameloblasts

517. Ameloblasts of enamel organ are located:

- A. Around dental papilla
- B. Between enamel and dentin
- C. Right above dentin
- D. Right under dentin
- E. Right above enamel

7.3. Oral cavity

518. Which structure can NOT be found in cutaneous part of lip?

- A. Hair follicles
- B. Epidermis
- C. Sebaceous glands
- D. Papillary layer of derma
- E. Salivary glands

519. The cross-section of the lip demonstrates thin slightly keratinized epithelium and underlying high papilla made of loose connective tissue containing many capillaries. Which part of the lip is under study?

- A. Skin
- B. Cutaneous
- C. Mucous
- D. Internal
- E. Vermilion zone

520. Salivary glands are typical for _____ part of the lip.

- A. Skin
- B. Cutaneous
- C. Vermilion zone
- D. Transitional
- E. Mucous

521. Mucosa of the tongue is represented by:

- A. Stratified parakeratinized epithelium, lamina propria and muscularis mucosae
- B. Simple cuboidal epithelium and lamina propria
- C. Stratified parakeratinized epithelium, lamina propria and submucosa
- D. Stratified parakeratinized epithelium and muscularis mucosae
- E. Stratified parakeratinized epithelium and lamina propria

522. Mushroom-shaped projections of lamina propria into overlying epithelium containing taste buds are...

- A. Filiform papillae
- B. Circumvallate papillae

- C. Lenticulate papillae
- D. Foliate papillae
- E. Fungiform papillae

523. Pointy projections of lamina propria into overlying epithelium often covered by stratified squamous keratinized epithelium are...

- A. Fungiform papillae
- B. Circumvallate papillae
- C. Lenticulate papillae
- D. Foliate papillae
- E. Filiform papillae

524. Papillae of human tongue are made of...

- A. Stratified non-keratinized or keratinized epithelium, lamina propria and muscularis mucosae
- B. Simple cuboidal epithelium and lamina propria
- C. Stratified non-keratinized or keratinized epithelium, lamina propria and submucosa
- D. Stratified non-keratinized or keratinized epithelium and muscularis mucosae
- E. Stratified non-keratinized or keratinized epithelium and lamina propria

525. Serous glands of von Ebner that produce watery secretion to wash all the food and cellular debris out of the furrow surrounding these papillae are typical for:

- A. Filiform papillae
- B. Fungiform papillae
- C. Lenticulate papillae
- D. Foliate papillae
- E. Circumvallate papillae

526. What is NOT correct about mucosa of oral cavity?

- A. It can be covered by stratified nonkeratinized, or parakeratinized, or keratinized epithelium
- B. It includes lamina propria
- C. Lamina propria is made of loose connective tissue
- D. Everything is correct
- E. It includes muscularis mucosae

527. What is CORRECT about mucosa of oral cavity?
- A. It can be covered by simple squamous nonkeratinized, or parakeratinized, or keratinized epithelium
 - B. It includes muscularis mucosae
 - C. It includes serous layer
 - D. Everything is not correct
 - E. It includes lamina propria

7.4. Esophagus

528. Which type of epithelium lines esophagus?
- A. Simple squamous epithelium
 - B. Keratinized stratified epithelium
 - C. Para-keratinized stratified epithelium
 - D. Simple columnar epithelium
 - E. Non-keratinized stratified epithelium
529. Which type of gland can be found in esophagus?
- A. Esophageal cardiac glands
 - B. Esophageal glands proper
 - C. Mucous glands
 - D. Submucosal glands
 - E. All of them
530. Where are esophageal cardiac glands located?
- A. Epithelium
 - B. Muscularis mucosa
 - C. Submucosa
 - D. Adventitia
 - E. Lamina propria
531. Where are esophageal proper glands located?
- A. Epithelium
 - B. Lamina propria
 - C. Muscularis mucosa
 - D. Adventitia
 - E. Submucosa

532. Which type of gland CAN NOT be found in esophagus?
- A. Esophageal cardiac glands
 - B. Esophageal glands proper
 - C. Mucous glands
 - D. Submucosal glands
 - E. Branched tubular glands
533. Which type of secret do esophageal glands produce?
- A. Sebum
 - B. Vax
 - C. Saliva
 - D. Intrinsic factor
 - E. Mucous
534. What is NOT true about muscularis mucosa of esophagus?
- A. It is thicker than other parts of gastrointestinal tract
 - B. It is composed of smooth muscle cells
 - C. It is part of mucosa
 - D. It is single layer of longitudinally running smooth muscle fibres
 - E. It is inner circular and outer longitudinal layer of smooth muscle fibers
535. What is true about muscularis mucosa of esophagus?
- A. It is made up of skeletal muscle
 - B. It is part of muscularis externa
 - C. It is inner circular and outer longitudinal layer of smooth muscle fibers
 - D. It is oblique layer of smooth muscle fibers
 - E. It is single layer of longitudinally running smooth muscle fibres
536. Which layer is most external layer of esophagus?
- A. Epithelium
 - B. Lamina propria
 - C. Muscularis mucosa
 - D. Submucosa
 - E. Adventitia
537. Which type of tissue is adventitia of esophagus made of?
- A. Dense irregular connective tissue
 - B. Dense regular connective tissue

- C. Cardiac muscle tissue
- D. Reticular connective tissue
- E. Loose connective tissue

538. What is true about muscularis externa of esophagus?

- A. It can be made up of skeletal muscle
- B. It can be composed of smooth muscle cells
- C. It includes inner circular layer of muscle fibers
- D. It includes outer longitudinal layer of muscle fibers
- E. All of them

539. Which type of muscle tissue can muscularis externa of esophagus be made of?

- A. Only Skeletal muscle
- B. Only Smooth muscle
- C. Skeletal and Cardiac muscle
- D. Smooth and Cardiac muscle
- E. Skeletal and Smooth muscle

7.5. Stomach

540. Which type of epithelium lines stomach?

- A. Simple squamous epithelium
- B. Keratinized stratified epithelium
- C. Para-keratinized stratified epithelium
- D. Non-keratinized stratified epithelium
- E. Simple columnar epithelium

541. What is the function of lining epithelium of stomach?

- A. Mucous secretion
- B. Prevention of destruction of tissue from acid content of the gastric juice
- C. Formation of thick, viscous, gel-like coat that adheres to the epithelial surface
- D. Protects against abrasion from rougher components of the chyme
- E. All of them

542. What is the name of longitudinal gastric folds?
- A. Gastric pit
 - B. Villi
 - C. Crypts
 - D. Plicae
 - E. Rugae
543. Which structure does mucosal surface of stomach form?
- A. Microvilli
 - B. Villi
 - C. Crypts
 - D. Cilia
 - E. Gastric pit
544. Which is anatomical region (part) of stomach?
- A. Cardia
 - B. Fundus
 - C. Body
 - D. Pylorus
 - E. All of them
545. Which is NOT region of stomach?
- A. Cardia
 - B. Fundus
 - C. Body
 - D. Pylorus
 - E. Ventricle
546. Which answer offers all correct histological regions (parts) of stomach?
- A. Cardia, Body, Pylorus, Ventricle
 - B. Cardia, Ventricle, Atrium
 - C. Cardia, Body, Pylorus, Antrum
 - D. Cardia, Body, Fundus, Antrum, Pylorus
 - E. Cardia, Fundus and Body, Pylorus
547. What is the site of location of cardiac glands of stomach?
- A. Submucosa of cardiac region of stomach
 - B. Submucosa of fundus

- C. Lamina propria of fundus
 - D. Submucosa of pylorus
 - E. Lamina propria of cardiac region of stomach
548. Which type of gland does fundus of stomach contain?
- A. Simple acinar
 - B. Compound acinar
 - C. Simple tubuloacinar
 - D. Compound tubuloacinar
 - E. Simple branched tubular gland
549. What is the site of location of gastric glands of stomach?
- A. Submucosa of cardiac region of stomach
 - B. Submucosa of fundus region of stomach
 - C. Adventitia
 - D. Submucosa of pylorus
 - E. Lamina propria of fundus region of stomach
550. Which type of cells of gastric (fundic) gland of stomach is acidophilic?
- A. Mucous neck cells
 - B. Chief cells
 - C. Enteroendocrine cells
 - D. All of them
 - E. Parietal cells
551. Which type of secret product do parietal cells produce?
- A. Mucous and HCl
 - B. Gastrin
 - C. Serotonin
 - D. Pepsinogen and HCl
 - E. Intrinsic factor and HCl
552. Which type of secret product do enteroendocrine cells produce?
- A. Histamine
 - B. Gastrin
 - C. Serotonin
 - D. None of them
 - E. All of them

553. Which type of secret product do chief cells produce?
- A. Mucous and HCl
 - B. Gastrin
 - C. Serotonin
 - D. Intrinsic factor and HCl
 - E. Pepsinogen
554. Which type of secret product do mucous neck cells produce?
- A. Insoluble mucous
 - B. Cloudy mucous
 - C. Serotonin
 - D. Pepsinogen
 - E. Soluble mucous
555. Which type of cells of gastric (fundic) gland of stomach is basophilic?
- A. Mucous neck cells
 - B. Parietal cells
 - C. Enteroendocrine cells
 - D. All of them
 - E. Chief cells
556. Which type of organelles is most numeral and high developed in parietal cells?
- A. Rough endoplasmic reticulum
 - B. Smooth endoplasmic reticulum
 - C. Lysosomes
 - D. Golgi apparatus
 - E. Mitochondria
557. Which type of organelles is most numeral and high developed in chief cells?
- A. Mitochondria
 - B. Rough endoplasmic reticulum
 - C. Golgi apparatus
 - D. Secretory vesicles
 - E. All of them
558. Which structure provides eosinophilia of parietal cells?
- A. Rough endoplasmic reticulum
 - B. Smooth endoplasmic reticulum

- C. Lysosomes
- D. Tubulovesicular system
- E. Mitochondria

559. Where is the site of location of stem cell that provide regeneration of surface mucous cells of stomach?

- A. Gastric pit
- B. Isthmus
- C. Bases
- D. All of them
- E. Neck

560. What is the site of location of pyloric glands of stomach?

- A. Submucosa of cardiac region of stomach
- B. Lamina propria of cardiac region of stomach
- C. Submucosa of fundus
- D. Lamina propria of fundus
- E. Submucosa of pylorus

561. Which layer is most external layer of stomach?

- A. Lamina propria
- B. Muscularis mucosa
- C. Submucosa
- D. Adventitia
- E. Serosa

562. Which is NOT layer of muscularis externa of stomach?

- A. Oblique
- B. Circular
- C. Longitudinal
- D. None of them
- E. Perpendicular

563. Which type of glands of stomach contains small amount of Parietal cells?

- A. Gastric gland and Pyloric gland
- B. Gastric gland
- C. Fundic gland and Pyloric gland
- D. Fundic gland
- E. Cardiac gland and Pyloric gland

7.6. Small intestine

564. Which structure does mucosa of small intestine form?

- A. Microvilli, gastric pit and crypts
- B. Only Crypts
- C. Gastric pit and microvilli
- D. Cilia, villi and plica
- E. Villi, plicae and crypts

565. In the histological section of tissue numeral villi and crypts are observed. Which part of gastrointestinal tube is it?

- A. Stomach
- B. Large intestine
- C. Esophagus
- D. Anal canal
- E. Small intestine

566. In the histological section of tissue numeral plicae are observed. Which part of gastrointestinal tube is it?

- A. Stomach
- B. Large intestine
- C. Esophagus
- D. Oral cavity
- E. Small intestine

567. Which type of epithelium lines small intestine?

- A. Simple squamous epithelium
- B. Keratinized stratified epithelium
- C. Para-keratinized stratified epithelium
- D. Non-keratinized stratified epithelium
- E. Simple columnar epithelium

568. Which type of cells of gastrointestinal tract contain brush body?

- A. Goblet cells
- B. Enteroendocrine cells
- C. Paneth cells
- D. Regenerative stem cells
- E. Enterocytes

569. What is the structure of brush body?
- A. Cilia
 - B. Flagellum
 - C. Plicae
 - D. Villi
 - E. Microvilli
570. Which types of cells cover villi in small intestine?
- A. Enterocytes, goblet cells, enteroendocrine cells, paneth cells, regenerative stem cells, microfold cells
 - B. Only enterocytes
 - C. Parietal cells, mucous neck cells, chief cells
 - D. Paneth cells, regenerative stem cells, microfold cells
 - E. Enterocytes, goblet cells, enteroendocrine cells
571. Which type of cells lines crypts in small intestine?
- A. Enterocytes, goblet cells, enteroendocrine cells
 - B. Parietal cells, mucous neck cells, chief cells
 - C. Mucous secreting sheath
 - D. Goblet cells only
 - E. Enterocytes, goblet cells, enteroendocrine cells, paneth cells, regenerative stem cells, microfold cells
572. What is the function of Paneth cells in intestine?
- A. Absorption of nutrients
 - B. Antibody secretion
 - C. Antigen-transporting cells
 - D. Cholecystokinin secretion
 - E. Innate immunity
573. What is the function of microfold M-cells in intestine?
- A. Absorption of nutrients
 - B. Innate immunity
 - C. Antibody secretion
 - D. Cholecystokinin secretion
 - E. Antigen-transporting cells

574. What is the correct site of location of Brunner gland?
- A. Jejunum
 - B. Ileum
 - C. Large intestine
 - D. Esophagus
 - E. Duodenum
575. What is the correct site of location of Peyer's patches?
- A. Duodenum
 - B. Jejunum
 - C. Large intestine
 - D. Esophagus
 - E. Ileum
576. What is the correct site of location of Peyer's patches of ileum?
- A. Epithelium
 - B. Submucosa
 - C. Adventitia
 - D. Muscularis mucosa
 - E. Lamina propria
577. Which type of tissue is Peyer's patches?
- A. Lining epithelium
 - B. Glandular epithelium
 - C. Submucosa
 - D. Smooth muscle cells
 - E. Lymphatic nodules
578. Which type of product do Brunner glands secrete?
- A. Gastrin
 - B. Serotonin
 - C. Pepsinogen
 - D. Intrinsic factor
 - E. Mucous and zymogen
579. What is the site of location of Brunner glands in duodenum?
- A. Epithelium
 - B. Lamina propria
 - C. Adventitia
 - D. Muscularis mucosa
 - E. Submucosa

580. Which layer is most external layer of stomach?
- A. Lamina propria
 - B. Muscularis mucosa
 - C. Submucosa
 - D. Adventitia
 - E. Serosa

7.7. Large intestine

581. Which structure does mucosal surface of large intestine (except anal canal) form?
- A. Microvilli
 - B. Villi
 - C. Gastric pit
 - D. Cilia
 - E. Crypts
582. Which type of epithelium lines large intestine (except anal canal)?
- A. Simple squamous epithelium
 - B. Keratinized stratified epithelium
 - C. Para-keratinized stratified epithelium
 - D. Non-keratinized stratified epithelium
 - E. Simple columnar epithelium
583. Which type of epithelium lines anal canal?
- A. Stratified cuboidal or columnar epithelium
 - B. Stratified squamous keratinized epithelium
 - C. Stratified squamous non-keratinized epithelium
 - D. None of them
 - E. All of them
584. Which type of epithelium does NOT line anal canal?
- A. Stratified cuboidal or columnar epithelium
 - B. Keratinized stratified epithelium
 - C. Non-keratinized stratified epithelium
 - D. None of them
 - E. Simple squamous epithelium

7.8. Salivary glands

585. What is the correct order of ducts in salivary glands from the smallest to the largest?

- A. Striated – excretory – intercalated
- B. Excretory – intercalated – striated
- C. Intercalated – excretory – striated
- D. Excretory – striated– intercalated
- E. Intercalated – striated – excretory

586. Striated ducts have their name due to:

- A. Presence of striated muscles
- B. Location of rough endoplasmic reticulum
- C. The form of the lumen
- D. Wavy form of the ducts
- E. Basal location of mitochondria

587. Which epithelium lines intercalated ducts of large salivary glands?

- A. Simple squamous
- B. Stratified cuboidal
- C. Stratified columnar
- D. Pseudostratified
- E. Simple cuboidal

588. Which epithelium lines striated ducts of large salivary glands?

- A. Simple cuboidal
- B. Simple squamous
- C. Stratified columnar
- D. Pseudostratified
- E. Simple columnar

589. Which epithelium lines excretory ducts of large salivary glands?

- A. Simple cuboidal or columnar
- B. Simple squamous or cuboidal
- C. Stratified squamous or cuboidal
- D. Pseudostratified
- E. Stratified cuboidal or columnar

590. Cross-section of a salivary gland shows duct lined with simple columnar epithelium with many mitochondria located in basal membrane invaginations. Which duct is that?

- A. Columnar
- B. Intercalated
- C. Excretory
- D. Cuboidal
- E. Striated

591. Cross-section of a salivary gland shows duct lined with simple cuboidal epithelium that starts right from acini. Which duct is that?

- A. Striated
- B. Columnar
- C. Excretory
- D. Cuboidal
- E. Intercalated

592. Cross-section of a salivary gland shows duct lined with stratified cuboidal or columnar epithelium that branches in several smaller ducts. Which duct is under study?

- A. Striated
- B. Columnar
- C. Intercalated
- D. Cuboidal
- E. Excretory

593. Which statement about large salivary glands is NOT correct?

- A. All of them contain serous cells
- B. All of them have excretory ducts
- C. All of them are surrounded by capsule
- D. All of them have trabecula
- E. All of them contain mucous cells

594. The study of histological slide of submandibular gland has shown a group of serous cells around mucous cells. What is the name of this structure?

- A. Islands
- B. Trabecula
- C. Hexagons
- D. Lunula
- E. Demilunes

595. Histological specimen shows cells that have flat nuclei and processes that surround acini of salivary glands. The cells are able to contract. Which cells are described?

- A. Serous
- B. Mucous
- C. Striated
- D. Intercalated
- E. Myoepithelial

596. Histological specimen shows cells with rounded nuclei, accumulation of rough ER in the basal third, and an apex filled with protein-rich secretory granules. Which cells are described?

- A. Myoepithelial
- B. Mucous
- C. Striated
- D. Intercalated
- E. Serous

597. Histological specimen shows cells that have flattened nuclei with condensed chromatin located near the bases of the cells and white foamy cytoplasm. Which cells are described?

- A. Myoepithelial
- B. Serous
- C. Striated
- D. Intercalated
- E. Mucous

598. Electron microscopy shows a cell with basally located flattened nucleus and cytoplasm filled with large light granules similar to those of goblet cells. Which cell is studied?

- A. Myoepithelial
- B. Serous
- C. Striated
- D. Intercalated
- E. Mucous

599. Ability to contract for movement of saliva in large salivary gland is typical for:

- A. Striated ducts
- B. Serous cells

- C. Mucous cells
- D. Intercalated ducts
- E. Myoepithelial cells

600. Cross-section of a salivary gland shows many poorly-stained mucous filled cells and a very low percent of serous cells. Which gland is that?

- A. Submandibular
- B. Parotid
- C. Pancreatic
- D. None of the answers
- E. Sublingual

601. Cross-section of a salivary gland shows groups of poorly-stained mucous filled cells surrounded by demilunes of serous cells. Which gland is that?

- A. Sublingual
- B. Parotid
- C. Pancreatic
- D. None of the answers
- E. Submandibular

602. Cross-section of a salivary gland shows acini of well-stained protein-producing cells with well-developed rER and no mucous cells at all. Which gland is that?

- A. Sublingual
- B. Submandibular
- C. Pancreatic
- D. None of the answers
- E. Parotid

603. Large salivary gland produces only serous secret. Which gland is that?

- A. Sublingual
- B. Submandibular
- C. Pancreatic
- D. None of the answers
- E. Parotid

604. Which of large salivary glands have mixed secretion?
- A. Submandibular and parotid
 - B. Sublingual and parotid
 - C. Only submandibular gland
 - D. Only parotid gland
 - E. Submandibular and sublingual

7.9. Pancreas

605. Histological specimen of pancreas has been investigated. In which structure are secretory cells of exocrine part of pancreas organized?

- A. Islets
- B. Plate
- C. Cord
- D. Line
- E. Acinus

606. Histological specimen of pancreas has been investigated. Which structure is NOT part of pancreas?

- A. Acinus
- B. Lobes
- C. Intercalated duct
- D. Intralobular duct
- E. Striated duct

607. Which type of product is secreted by exocrine part of pancreas?

- A. Mucous
- B. Mucous and Serous
- C. Saliva
- D. Acid
- E. Serous

608. In histological specimen of pancreas there are cells organized in acini, they have basophilic basal part and acidophilic apical part with numeral granule. What is the name of granule of pancreatic acinar cells?

- A. Mucous
- B. Mucous and Serous
- C. Pepsinogen
- D. Cholecystokinin
- E. Zymogen

609. The assessment of histological specimen of pancreas has shown an intercalated duct. Which type of epithelium lines this duct of pancreas?

- A. Simple squamous
- B. Simple columnar
- C. Stratified cuboidal
- D. Stratified columnar
- E. Simple cuboidal

610. The assessment of histological specimen of pancreas has shown an intralobular duct. Which type of epithelium lines this duct of pancreas?

- A. Simple squamous
- B. Simple columnar
- C. Stratified cuboidal
- D. Stratified columnar
- E. Simple cuboidal

611. Histological specimen of pancreas shows interlobular duct. Which type of epithelium lines this duct of pancreas?

- A. Simple squamous
- B. Simple cuboidal
- C. Stratified cuboidal
- D. Stratified columnar
- E. Simple columnar

612. What is the function of pancreatic acinar cells?

- A. Synthesize mucous
- B. Synthesize bicarbonate-rich fluid
- C. Synthesize hydrochloric acid
- D. Synthesize pepsinogen
- E. Synthesize zymogenes

613. Which type of enzymes is NOT synthesized by pancreatic acinar cells?

- A. Trypsinogen
- B. Lipases
- C. Ribonuclease
- D. Amylase
- E. Pepsinogen

614. Which type of enzymes are NOT synthesized by pancreatic acinar cells?

- A. Trypsinogen
- B. Lipases
- C. Ribonuclease
- D. Alpha-amylase
- E. All of them

615. What is the function of pancreatic centroacinar cells?

- A. Synthesize a mucous
- B. Synthesize a hydrochloric acid
- C. Synthesize a pepsinogen
- D. Synthesize a zymogenes
- E. Synthesize a bicarbonate-rich fluid

616. From which type of cells begins duct of pancreas?

- A. Acinar
- B. Zymogen
- C. Goblet cells
- D. Enterocytes
- E. Centroacinar

617. Histological specimen of pancreas has been investigated. Which type of cells surrounds acini of pancreas?

- A. Acinar
- B. Centroacinar
- C. Goblet cells
- D. Enterocytes
- E. Fibroblasts

618. Histological specimen of pancreas has been investigated. In which structures are secretory cells of endocrine part of pancreas organized?

- A. Acinus
- B. Plate
- C. Cord
- D. Tube
- E. Islets

619. What is the name of islets of endocrine part of pancreas?

- A. Enteroendocrine
- B. Kupffer's
- C. Purkinje
- D. Ito
- E. Langerhans

620. Which type of cells is a part of endocrine pancreas (islets of Langerhans)?

- A. Alpha cells
- B. Beta cells
- C. Delta cells
- D. F cells (PP-cells)
- E. All of them

621. Which type of cells produces glucagon?

- A. Beta cells
- B. Delta cells
- C. F cells (PP-cells)
- D. G cells
- E. Alpha cells

622. Which type of cells produces insulin?

- A. Alpha cells
- B. Delta cells
- C. F cells (PP-cells)
- D. G cells
- E. Beta cells

623. Which type of cells produces somatostatin?

- A. Alpha cells
- B. Beta cells
- C. F cells (PP-cells)
- D. G cells
- E. Delta cells

624. Which type of cells produces vasoactive intestinal polypeptide (VIP)?

- A. Alpha cells
- B. Beta cells
- C. F cells (PP-cells)
- D. G cells
- E. Delta cells

7.10. Liver

625. Which of the following is NOT a liver cell?

- A. Kupffer cell
- B. Endothelial cell
- C. Hepatocyte
- D. Ito cell
- E. Histiocyte

626. Which cell is a hepatic macrophage?

- A. Histiocyte
- B. Endothelial cell
- C. Hepatocyte
- D. Ito cell
- E. Kupffer cell

627. Hepatic plates are made by _____.
- A. Kupffer cell
 - B. Histiocyte
 - C. Endothelial cell
 - D. Ito cell (the hepatic stellate cell)
 - E. Hepatocyte
628. A liver is covered by _____.
- A. Kupffer's capsule
 - B. Ito's capsule
 - C. Disse's capsule
 - D. LCT capsule
 - E. Glisson's capsule
629. Mesenchymal origin cells that are the primary storage site for hepatic vitamin A.
- A. Kupffer cell
 - B. Histiocyte
 - C. Endothelial cell
 - D. Hepatocyte
 - E. Ito cell (the hepatic stellate cell)
630. A perisinusoidal space of the liver is called _____.
- A. Space of Ito
 - B. Portal triad
 - C. Haptic artery
 - D. Haptic cord
 - E. Space of Disse
631. A space between the basal surfaces of hepatocytes and the basal surfaces of endothelial cells and Kupffer cells is called _____.
- A. Space of Ito
 - B. Space of Kupffer
 - C. Endothelial space
 - D. Basal space
 - E. Space of Disse

632. What is the space between the liver sinusoids and the hepatocytes called?

- A. Space of Mall
- B. Endothelial space
- C. Lacuna
- D. Howship's lacuna
- E. Space of Disse

633. What structure is in the middle of the hepatic lobule?

- A. Hepatic artery
- B. Portal triad
- C. Portal vein
- D. Sinusoids
- E. Central vein

634. Which structures are NOT part of the portal triad?

- A. Portal vein
- B. Hepatic artery
- C. Bile duct
- D. Portal vein and hepatic artery
- E. Central vein

635. Which of the following is NOT a function of the liver?

- A. Metabolism of bilirubin
- B. Metabolism of lipid
- C. Metabolism of carbohydrates
- D. Storage of iron
- E. Storage of calcium

636. Which of the following is NOT a function of the liver?

- A. Metabolism of lipid soluble drugs
- B. Detoxification
- C. Filtration of blood
- D. Storage of blood
- E. Albumin production
- F. Cholecystokinin production

637. What is the functional unit of the liver?
- A. Portal triad
 - B. Central vein
 - C. Hepatocyte
 - D. Sinusoids
 - E. Lobule
638. What are the three structural descriptions (structural units) of the liver?
- A. Portal triad, central vein and hepatocyte
 - B. Portal lobule, central vein and hepatocyte
 - C. Classical lobule, central vein and hepatic acinus
 - D. Portal triad, portal lobule and hepatic acinus
 - E. Classical lobule, portal lobule and hepatic acinus
639. Which structure made the angle of the classic liver lobule?
- A. Kupffer cell
 - B. Central vein
 - C. Sinusoids
 - D. Portal lobule
 - E. Portal triad
640. Which structure made the angle of the portal liver lobule?
- A. Kupffer cell
 - B. Portal triad
 - C. Sinusoids
 - D. Classic lobule
 - E. Central vein
641. Which of the following statements about zones of the liver acinus is CORRECT:
- A. Zone 1 is closest to the central vein
 - B. Zone 2 is the first to undergo necrosis if circulation is impaired
 - C. Zone 3 is closest to branches of the hepatic artery
 - D. Zone 2 is the last to receive any toxins that may be in the blood
 - E. Zone 1 is the first to receive nutrients delivered by the portal vein

642. Which of the following statements about blood flow in a liver is CORRECT:

- A. Blood enters via branches of the portal vein and hepatic artery than through the hepatic sinusoids flows towards the central vein
- B. Central veins join together to form the sublobular vein
- C. Sublobular veins join in collecting vein then in the hepatic vein, which carries blood to the vena cava
- D. None of the answers
- E. All of the answers

643. Which of the following statements about bile flow in a liver is CORRECT:

- A. Bile is produced by hepatocytes and travels through small intercellular canals to enter the bile duct
- B. Bile canaliculi are a small enlargement in the extracellular space between two adjacent hepatocytes
- C. Bile ducts converge and leave the liver via larger hepatic ducts
- D. None of the answers
- E. All of the answers

644. Which of the following statements about gallbladder is CORRECT:

- A. The gallbladder is a simple muscular sac.
- B. In the gallbladder a bile is stored and concentrated.
- C. The inner surface of the gallbladder is lined by a simple columnar epithelium.
- D. None of the answers
- E. All of the answers

645. Which of the following statements about gallbladder is NOT CORRECT:

- A. The gallbladder is a simple muscular sac
- B. In the gallbladder a bile is stored and concentrated
- C. The inner surface of the gallbladder is lined by a simple columnar epithelium
- D. The bile from gallbladder is released into the small intestine
- E. The gallbladder is a parenchymal organ

646. The wall of a gallbladder does not have _____.
- A. A mucosa
 - B. A muscularis
 - C. An adventia
 - D. A serosa
 - E. A submucosa
647. The wall of a gallbladder does not have _____.
- A. A columnar epithelium
 - B. A lamina propria
 - C. An adventitia
 - D. A mucularis
 - E. A muscularis mucosae
648. The wall of a gallbladder does not have _____.
- A. A columnar epithelium
 - B. A lamina propria
 - C. An adventitia
 - D. A mucularis
 - E. A submucosa
649. A gallbladder is attached to a _____.
- A. Lower surface of the stomach
 - B. Pancreas
 - C. All colon
 - D. Small intestine
 - E. Visceral layer of the liver
650. A gallbladder does not have a _____.
- A. Corpus
 - B. Neck
 - C. Body
 - D. Fundus
 - E. Pylorus
651. The bile from gallbladder is released into the _____.
- A. Stomach
 - B. Jejunum

- C. Ileum
- D. Cecum
- E. Duodenum

652. The gallbladder is stimulated to contract and expel the bile by the _ .

- A. Glucagon
- B. Secretin
- C. Vasoactive intestine polypeptide (vip)
- D. Insulin
- E. Cholecystoskinin

653. The muscularis of a gallbladder DOES NOT contain:

- A. Bundles of smooth muscle cells
- B. Collagen fiber
- C. Elastic fiber
- D. Collagen and elastic fibers
- E. Bundles of striated muscle cells

CHAPTER 8

RESPIRATORY SYSTEM

654. Which parts are included in respiratory system?
- A. Excretory portion
 - B. Conduction portion
 - C. Respiratory portion
 - D. Only A and C
 - E. Only B and C
655. Conducting portion of respiratory system consists of:
- A. Nasal cavity
 - B. Larynx
 - C. Trachea
 - D. Bronchi
 - E. All of them
656. Conducting portion of respiratory system does NOT include:
- A. Nasal cavity
 - B. Larynx
 - C. Trachea
 - D. Bronchi
 - E. Alveoli
657. Respiratory portion of respiratory system consist of:
- A. Respiratory bronchioles
 - B. Alveolar duct
 - C. Alveoli
 - D. Alveolar sac
 - E. All of them
658. Respiratory portion of respiratory system does NOT include:
- A. Respiratory bronchioles
 - B. Alveolar duct
 - C. Alveoli
 - D. Alveolar sac
 - E. Terminal bronchioles

659. Which type of bronchi forms respiratory portion of respiratory system?

- A. Primary bronchus
- B. Terminal bronchioles
- C. Tertiary (segmental) bronchus
- D. Secondary (lobal) bronchus
- E. Respiratory bronchioles

660. Which type of bronchi forms conducting portion of respiratory system?

- A. Primary bronchus
- B. Terminal bronchioles
- C. Tertiary (segmental) bronchus
- D. Secondary (lobal) bronchus
- E. All of them

661. Which regions are included in nasal cavity?

- A. Vestibule
- B. Respiratory region
- C. Olfactory region
- D. All of them
- E. Only B and C

662. Which part is NOT a region of nasal cavity?

- A. Vestibule
- B. Respiratory region
- C. Olfactory region
- D. Nasopharynx
- E. All of them are parts of nasal cavity

663. Which type of epithelium lines nostrils?

- A. Stratified non-keratinized squamous epithelium
- B. Stratified columnar epithelium
- C. Stratified cuboidal epithelium
- D. Simple squamous epithelium
- E. Stratified keratinized squamous epithelium

664. Which type of glands is located in dermis of nostril skin?
- A. Sweat glands
 - B. Bowman's glands
 - C. Ceruminous glands
 - D. Seromucous gland
 - E. Sebaceous glands
665. Which type of epithelium lines respiratory region of nasal cavity?
- A. Stratified non-keratinized squamous epithelium
 - B. Stratified keratinized squamous epithelium
 - C. Stratified ciliated cuboidal epithelium
 - D. Simple squamous epithelium
 - E. Pseudostratified ciliated columnar epithelium
666. Which type of glands is located in lamina propria of respiratory portion of nasal cavity?
- A. Sweat glands
 - B. Sebaceous glands
 - C. Bowman's serous secreting glands
 - D. Ceruminous glands
 - E. Seromucous gland
667. Which type of epithelium lines olfactory region of nasal cavity?
- A. Stratified non-keratinized squamous epithelium
 - B. Stratified keratinized squamous epithelium
 - C. Pseudostratified ciliated columnar epithelium
 - D. Stratified ciliated cuboidal epithelium
 - E. Olfactory epithelium
668. Which type of glands is located in lamina propria of olfactory region of nasal cavity?
- A. Sweat glands
 - B. Sebaceous glands
 - C. Ceruminous glands
 - D. Seromucous gland
 - E. Bowman's serous secreting glands

669. Which type of pigment provides yellow-brown coloration of olfactory region of nasal cavity?

- A. Melanin
- B. Carotene
- C. Hemoglobin
- D. Pheomelanin
- E. Lipofuscin

670. Which type of cells contains lipofuscin that provides yellow-brown coloration of olfactory region of nasal cavity?

- A. Serous secreting cells of olfactory gland
- B. Bowman's gland
- C. Supporting cells
- D. Bipolar neurons
- E. Only A, B, C

671. Which type of neurons can be found in olfactory region of nasal cavity?

- A. Unipolar
- B. Pseudounipolar
- C. Multipolar
- D. Apolar
- E. Bipolar

672. Which type of cells does epithelium of conducting portion of respiratory system contain?

- A. Ciliated columnar cells
- B. Goblet cells
- C. Brush cells
- D. Basal cells
- E. All of them

673. Which type of cells of conducting portion of respiratory system is endocrine cells of the diffuse neuroendocrine system (DNES)?

- A. Ciliated columnar cells
- B. Goblet cells
- C. Brush cells
- D. Basal cells
- E. Small granular cells (Kulchitsky cells)

674. What type of specialized surface apparatus is typical for epithelium cells of conducting portion of respiratory system?

- A. Flagellum
- B. Cilia
- C. Microvilli
- D. Fillopodia
- E. Only B and C

675. What is the function of Brush cells of epithelium of respiratory portion of nasal cavity?

- A. Specific smell sensation
- B. Mucus secretion
- C. Serous secretion
- D. Clean of air
- E. General sensation

676. Which type of epithelial cells in respiratory portion of nasal cavity is associated with nerve fibers?

- A. Ciliated columnar cells
- B. Goblet cells
- C. Basal cells
- D. Small granular cells (Kulchitsky cells)
- E. Brush cells

677. What is the function of Basal cells of epithelium of respiratory portion of nasal cavity?

- A. Specific smell sensation
- B. General sensation
- C. Mucus secretion
- D. Serous secretion
- E. Regeneration of epithelial cells

678. What type of specialized surface apparatus belongs to Brush cells of epithelium of respiratory portion of nasal cavity?

- A. Flagellum
- B. Cilia
- C. Fillopodia
- D. Lamellipodia
- E. Microvilli

679. Which type of epithelial cells of respiratory portion of nasal cavity is attached to the basement membrane?
- A. Ciliated columnar cells
 - B. Goblet cells
 - C. Brush cells
 - D. Basal cells
 - E. All of them
680. Which type of epithelium lines paranasal sinuses?
- A. Stratified non-keratinized squamous epithelium
 - B. Stratified keratinized squamous epithelium
 - C. Stratified ciliated cuboidal epithelium
 - D. Simple squamous epithelium
 - E. Pseudostratified ciliated columnar epithelium
681. Which type of epithelium lines nasopharynx?
- A. Stratified non-keratinized squamous epithelium
 - B. Stratified keratinized squamous epithelium
 - C. Stratified ciliated cuboidal epithelium
 - D. Simple squamous epithelium
 - E. Pseudostratified ciliated columnar epithelium
682. Which type of epithelium lines Oropharynx?
- A. Stratified keratinized squamous epithelium
 - B. Pseudostratified ciliated columnar epithelium
 - C. Stratified ciliated cuboidal epithelium
 - D. Simple squamous epithelium
 - E. Stratified non-keratinized squamous epithelium
683. Which type of epithelium lines Superior vestibular folds?
- A. Stratified keratinized squamous epithelium
 - B. Stratified non-keratinized squamous epithelium
 - C. Stratified ciliated cuboidal epithelium
 - D. Simple squamous epithelium
 - E. Pseudostratified ciliated columnar epithelium
684. Which type of epithelium lines Inferior vocal folds?
- A. Stratified keratinized squamous epithelium
 - B. Pseudostratified ciliated columnar epithelium

- C. Stratified ciliated cuboidal epithelium
- D. Simple squamous epithelium
- E. Stratified non-keratinized squamous epithelium

685. Primary ciliary dyskinesia has been revealed in patient with chronic inflammatory processes in respiratory system. Which type of alteration will be associated with this pathology?

- A. Immotile microvilli
- B. Immotile lamellipodia
- C. Immotile filopodia
- D. Immotile pseudopodia
- E. None of them

686. A rare genetic defect of motor protein dynein has been revealed in patient, who came to the hospital. Which type of disorder is associated with this pathology?

- A. Arthritis
- B. Cystitis
- C. Meningitis
- D. Colitis
- E. Sinusitis

687. Patient has frequently repeated acute respiratory disorders. Which type of alteration of mucosa of conducting portion of respiratory system is associated with this condition?

- A. Pneumonia
- B. Pancreatitis
- C. Meningitis
- D. Colitis
- E. Squamous metaplasia

688. Patient has chronic respiratory disorders. Which type of epithelium replaces pseudostratified ciliated columnar epithelium lining conduction portion of respiratory system?

- A. Stratified keratinized squamous epithelium
- B. Simple columnar epithelium
- C. Stratified ciliated cuboidal epithelium
- D. Simple squamous epithelium
- E. Stratified non-keratinized squamous epithelium

689. Patient has lost smell sensation. Which type of disorder is associated with this condition?

- A. Pneumonia
- B. Bronchitis
- C. Meningitis
- D. Laryngitis
- E. Anosmia

690. Patient has hoarse voice. Which type of disorders is associated with this condition?

- A. Pneumonia
- B. Bronchitis
- C. Meningitis
- D. Anosmia
- E. Laryngitis

691. Patient has hoarse voice. Which part of respiratory portion has been inflamed?

- A. Lung
- B. Tertiary (segmental) bronchioles
- C. Respiratory bronchioles
- D. Trachea
- E. Larynx

692. What is the site of location of lymphatic nodules that provide immune defense in larynx?

- A. Epithelium
- B. Vocal ligament
- C. Vocal muscle
- D. Mucus gland
- E. Lamina propria

693. Which type of cartilage is epiglottis made of?

- A. Hyaline
- B. Fibrocartilage
- C. Articular cartilage
- D. All of them
- E. Elastic

694. Which type(s) of cartilage can be distinguished in larynx?
- A. Hyaline
 - B. Elastic
 - C. Fibrocartilage
 - D. Only A and B
 - E. Only A and C
695. Which type of cartilage can be distinguished in trachea?
- A. Elastic
 - B. Fibrocartilage
 - C. Articular cartilage
 - D. All of them
 - E. Hyaline
696. Which type of muscle is located in primary bronchus?
- A. Skeletal
 - B. Cardiac
 - C. Striated
 - D. None of them
 - E. Smooth
697. Smooth muscle fibers in primary bronchi are located between...
- A. Epithelium and lamina propria
 - B. Submucosa and cartilage
 - C. Cartilage and adventitia
 - D. Epithelium and cartilage
 - E. Lamina propria and submucosa
698. Wall of extrapulmonary primary bronchi contains the following layers:
- A. Mucosa
 - B. Submucosa
 - C. Cartilage
 - D. Adventitia
 - E. All of them
699. Which layer is NOT contained in the wall of bronchioles?
- A. Mucosa
 - B. Submucosa

- C. Adventitia
- D. None of them
- E. Cartilage

700. Which type of epithelium lines large bronchioles?

- A. Stratified keratinized squamous epithelium
- B. Stratified non-keratinized squamous epithelium
- C. Pseudostratified ciliated columnar epithelium
- D. Simple cuboidal ciliated epithelium
- E. Simple columnar ciliated epithelium

701. Which type of epithelium lines small (terminal) bronchioles?

- A. Stratified keratinized squamous epithelium
- B. Stratified non-keratinized squamous epithelium
- C. Pseudostratified ciliated columnar epithelium
- D. Simple columnar ciliated epithelium
- E. Simple cuboidal ciliated epithelium

702. How does lining epithelium change from large primary bronchi to small respiratory bronchioles?

- A. Stratified keratinized squamous epithelium – Stratified non-keratinized squamous epithelium – Simple squamous epithelium
- B. Simple columnar ciliated epithelium – Simple cuboidal ciliated epithelium – Simple squamous epithelium
- C. Pseudostratified ciliated columnar epithelium – Simple squamous epithelium
- D. Stratified keratinized squamous epithelium – Simple squamous epithelium
- E. Pseudostratified ciliated columnar epithelium – Simple columnar ciliated epithelium – Simple cuboidal ciliated epithelium

703. Site of location of Clara cells is...

- A. Primary bronchus
- B. Tertiary (segmental) bronchus
- C. Secondary (lobal) bronchus
- D. Alveoli
- E. Terminal bronchioles

704. Which type of cells does wall of conducting portion of large bronchioles contain?

- A. Ciliated columnar cells
- B. Goblet cells
- C. Smooth muscle cells
- D. Chondroblasts and chondrocytes
- E. All of them

705. Which type of cells is NOT contained in the wall of conducting portion of terminal bronchioles?

- A. Ciliated columnar cells
- B. Goblet cells
- C. Serous and mucus glandular cells
- D. Chondroblasts and chondrocytes
- E. All of them

706. Which type of cells is NOT contained in the wall of conducting portion of primary bronchi but appears in bronchioles?

- A. Ciliated columnar epithelium
- B. Goblet cells
- C. Brush cells
- D. Enteroendocrine cells
- E. Clara cells

707. What is the function of Clara cells in mucosal epithelium of bronchioles?

- A. Mucus production
- B. General sensation
- C. Secretion of pulmonary surfactant
- D. Secretion of serotonin
- E. Secretion of surface-active agent

708. The wall of alveolar ducts consists of:

- A. Circular and longitudinal layers of smooth muscle cells
- B. Layer of cartilage
- C. Pseudostratified ciliated columnar epithelium of mucosa
- D. Submucosa
- E. Linearly arranged alveoli and single smooth muscle cells

709. Which type of cells is alveolar septa made of?
- A. Pneumocytes of type I
 - B. Pneumocytes of type II
 - C. Macrophages
 - D. Fibroblasts
 - E. All of them
710. Which type of cells does NOT belong to alveolus?
- A. Pneumocytes of type I
 - B. Pneumocytes of type II
 - C. Macrophages
 - D. Fibroblasts
 - E. Clara cells
711. What is the function of Pneumocytes of type II of alveolus?
- A. Mucus production
 - B. Gas exchange
 - C. General sensation
 - D. Secretion of serotonin
 - E. Secretion of pulmonary surfactant
712. What is the function of Pneumocytes of type I of alveolus?
- A. Mucus production
 - B. General sensation
 - C. Secretion of pulmonary surfactant
 - D. Secretion of serotonin
 - E. Gas exchange
713. What is the function of Dust cells of alveolus?
- A. Mucus production
 - B. Gas exchange
 - C. Secretion of pulmonary surfactant
 - D. Secretion of serotonin
 - E. Immune defense
714. Membrane-coated granules with lamellar structure can be distinguished in electronogram of lung. Which type of cells contains these granules?
- A. Pneumocytes of type I
 - B. Macrophages

- C. Fibroblasts
- D. Clara cells
- E. Pneumocytes of type II

715. Membrane-coated granules with lamellar structure can be distinguished in electronogram of lung. Which type of product is contained in these granules?

- A. Mucus
- B. Zymogen
- C. Serotonin
- D. Bombesin
- E. Phospholipids

716. Blood gas barrier in lung consists of:

- A. Type I alveolar cells (pneumocytes of type I)
- B. Surfactant
- C. Basal lamina of type I alveolar cells (pneumocytes of type I) and endothelial cells
- D. Endothelial cells
- E. All of them

717. Which type of cells does NOT participate in blood gas barrier in lung?

- A. Type I alveolar cells (pneumocytes of type I)
- B. Surfactant
- C. Basal lamina of type I alveolar cells (pneumocytes of type I) and endothelial cells
- D. Endothelial cells
- E. Clara cells

CHAPTER 9

URINARY SYSTEM

718. Which statement about blood supply of kidney is NOT correct?

Renal artery carries oxygenated blood

- A. Renal artery carries blood with wastes
- B. Renal vein carries deoxygenated blood
- C. All the statements are correct
- D. Renal vein carries blood with wastes

719. Which structure cannot be found in kidney?

- A. Capsule
- B. Interstitium
- C. Cortex
- D. Medulla
- E. Trabecula

720. Structures made of medulla going into cortex are:

- A. Medullar cords
- B. Renal columns
- C. Cortical rays
- D. Cortical cords
- E. Medullar rays

721. Structures made of cortex going into medulla are called:

- A. Medullar column
- B. Medullar rays
- C. Cortical rays
- D. Cortical cords
- E. Renal column

722. One renal column in kidney is located:

- A. Between two lobules
- B. Between cortex and medulla
- C. Between two nephrons
- D. Between capsule and cortex
- E. Between two lobes

723. The capsule of kidney DOESN'T contain:

- A. Fibroblasts
- B. Collagen fibers
- C. Myofibroblasts
- D. Doesn't contain any of the mentioned options
- E. Interstitium

724. A group of nephrons drained by one collecting duct is called:

- A. Renal lobe
- B. Renal medulla
- C. Renal cortex
- D. Renal acinus
- E. Renal lobule

725. The histological cross-section demonstrates a part of renal medulla of triangular shape limited by renal cords on both sides and ending in renal papilla. Which structure is under study?

- A. Renal lobe
- B. Renal medulla
- C. Renal cortex
- D. Renal acinus
- E. Renal lobule

726. Glomerulus surrounded by Bowman's capsule is called:

- A. Renal column
- B. Loop of Henle
- C. Renal unit
- D. Nephron
- E. Renal corpuscle

727. A cross-section of kidney demonstrated a bunch of capillaries surrounded by double-layered capsule made of podocytes and simple squamous epithelium. Which structure is under study?

- A. Renal column
- B. Loop of Henle
- C. Renal unit
- D. Nephron
- E. Renal corpuscle

728. The tubule going out of Bowman's capsule is...
- A. Distal convoluted
 - B. Distal straight
 - C. Proximal straight
 - D. Descending limb
 - E. Proximal convoluted
729. The loop of Henle is located between:
- A. Proximal and distal convoluted tubules
 - B. Proximal convoluted and distal straight tubules
 - C. Proximal straight and distal convoluted tubules
 - D. None of the answers
 - E. Proximal and distal straight tubules
730. Cortex of renal parenchyma DOES NOT include:
- A. Proximal convoluted tubule
 - B. Distal convoluted tubule
 - C. Bowman's capsule
 - D. Renal corpuscle
 - E. Collecting duct
731. Medulla of renal parenchyma includes:
- A. Proximal convoluted tubule
 - B. Distal convoluted tubule
 - C. Bowman's capsule
 - D. Renal corpuscle
 - E. Collecting duct
732. What is NOT CORRECT about loop of Henle?
- A. It helps with reabsorption
 - B. It is made of descending and ascending limbs
 - C. It can be located in cortex or go down to medulla
 - D. It is surrounded by network of peritubular capillaries
 - E. It consists of proximal and distal convoluted tubules

733. What is the correct order of structures in nephron? Mind the following: proximal convoluted tubule – 1, distal convoluted tubule – 2, proximal straight tubule – 3, distal straight tubule – 4, Bowman's capsule – 5, Loop of Henle – 6.

- A. 1-2-3-4-5-6
- B. 5-1-3-6-2-4
- C. 5-1-6-3-2-4
- D. 5-2-4-6-1-3
- E. 5-1-3-6-4-2

734. The vessels located between renal lobes are called:

- A. Intralobular arteries and veins
- B. Interlobular arteries and veins
- C. Intralobar arteries and veins
- D. Arcuate arteries and veins
- E. Interlobar arteries and veins

735. Blood vessels branching into interlobular arteries are called:

- A. Interlobar
- B. Segmental
- C. Intralobar
- D. Angular
- E. Arcuate

736. Which statement about afferent arterioles in kidney is NOT correct?

- A. They are broader than efferent
- B. Smooth muscles of their wall can be modified in hormone – producing structures
- C. They carry blood with wastes
- D. They branch from interlobular arteries
- E. They are narrower than efferent

737. Which statement about efferent arterioles is correct?

- A. They go into Bowman's capsule
- B. They are broader than afferent
- C. They carry blood with wastes
- D. They branch from interlobular arteries
- E. They are narrower than afferent

738. Which vascular network in the kidney provides reabsorption?
- A. Arcuate
 - B. Interlobular
 - C. Glomerular
 - D. Interlobar
 - E. Peritubular
739. Arcuate arterioles are located between:
- A. Interlobular and Interlobar
 - B. Afferent and efferent
 - C. Efferent and afferent
 - D. Segmental and Interlobar
 - E. Interlobar and interlobular
740. Which statement is NOT correct about peritubular capillary network?
- A. It provides reabsorption
 - B. It provides nutrition
 - C. It provides oxygen supply
 - D. It provides removing of carbon dioxide
 - E. It provides filtration
741. Vascular structures responsible for filtration and reabsorption are _____ and _____ respectively:
- A. Arcuate arteries and veins
 - B. Glomerulus and afferent arteriole
 - C. Peritubular network and efferent arteriole
 - D. Afferent and efferent arteriole
 - E. Glomerulus and peritubular network
742. Which substances can be found in primary urine formed after filtration?
- A. Water
 - B. Hormones
 - C. Vitamins
 - D. Urea
 - E. All of them

743. Which substance is not reabsorbed?
- A. Water
 - B. All of them
 - C. Hormones
 - D. Vitamins
 - E. Urea
744. Which structure NEVER participates in reabsorption?
- A. Proximal convoluted tubule
 - B. Distal convoluted tubule
 - C. Collecting duct
 - D. Loop of Henle
 - E. Glomerulus
745. What is the result of reabsorption?
- A. Formation of primary urine
 - B. Secretion of urea
 - C. Returning of urea to blood
 - D. None of the answers
 - E. Formation of secondary urine
746. Which substances are normally not filtered?
- A. Red blood cells
 - B. Large proteins
 - C. Leucocytes
 - D. Platelets
 - E. All of them
747. Which part of nephron is responsible for secretion?
- A. Proximal convoluted tubule
 - B. Distal convoluted tubule
 - C. Glomerulus
 - D. Loop of Henle
 - E. Collecting duct
748. What is the purpose of reabsorption?
- A. Return water to blood
 - B. Return glucose to blood

- C. Return vitamins to blood
- D. Decrease the volume of excreted liquid
- E. All the answers

749. Which part of nephron is responsible for both secretion and reabsorption?

- A. Renal corpuscle
- B. Proximal convoluted tubule
- C. Proximal straight tubule
- D. Ascending limb
- E. Collecting duct

750. Which answer includes structures that participate in filtration barrier?

- A. Fenestrated capillaries and parietal layer of Bowman's capsule
- B. Sinusoid capillaries, podocytes
- C. Fenestrated capillaries, simple squamous epithelium
- D. Sinusoid capillaries, simple squamous epithelium
- E. Fenestrated capillaries, podocytes

751. Parietal layer of Bowman's capsule is made of:

- A. Simple cuboidal epithelium
- B. Podocytes
- C. Transitional epithelium
- D. Pseudostratified epithelium
- E. Simple squamous epithelium

752. Visceral layer of Bowman's capsule is made of:

- A. Simple cuboidal epithelium
- B. Simple squamous epithelium
- C. Transitional epithelium
- D. Pseudostratified epithelium
- E. Podocytes

753. The main reason of reabsorption is high pressure in glomerulus. Why does it increase?

- A. Afferent arteriole is narrower than efferent
- B. Capillaries have thick muscular layer that contracts to increase the pressure

- C. Podocytes surround capillaries and press them
 - D. All answers are correct
 - E. Afferent arteriole is broader than efferent
754. Which statement about filtration slits is not correct?
- A. They are formed between processes of podocytes
 - B. They are covered by slit diaphragms
 - C. They participate in filtration barrier
 - D. They are located in Bowman's capsule
 - E. They provide pressure for filtration
755. Which of these structures do not participate in filtration barrier?
- A. Podocytes
 - B. Basal lamina
 - C. Slit diaphragms
 - D. Endothelium
 - E. All of them participate
756. The structure that DOESN'T participate in filtration is:
- A. Bowman's capsule
 - B. Glomerulus
 - C. Renal corpuscle
 - D. Podocytes
 - E. Loop of Henle
757. Which capillaries make glomerulus?
- A. Sinusoidal
 - B. Somatic
 - C. Continuous
 - D. Discontinuous
 - E. Fenestrated
758. The cells of proximal convoluted tubule have well-developed brush border of microvilli on their apical surface. What is their function?
- A. Movement of fluid in the tubule
 - B. General sensitivity
 - C. Phagocytosis of foreign particles
 - D. None of the answers
 - E. Increase the surface of reabsorption

759. The cells of convoluted tubules have basal striation. What is it caused by?

- A. Rough endoplasmic reticulum
- B. Golgi body
- C. Contraction of smooth muscles below
- D. None of the answers
- E. Mitochondria

760. What is the main difference between epithelium of proximal and distal convoluted tubules?

- A. Presence of mitochondria
- B. Location of nucleus
- C. None of the answers
- D. All of the answers
- E. Presence of brush border

761. What is similar for epithelium of proximal and distal convoluted tubules?

- A. Brush border
- B. Large amount of microvilli
- C. All the answers
- D. None of the answers
- E. Location of mitochondria

762. Where are most of organic substances reabsorbed?

- A. Distal convoluted tubule
- B. Loop of Henle
- C. Collecting duct
- D. Distal straight tubule
- E. Proximal convoluted tubule

763. Where is Cl^- reabsorbed?

- A. Distal convoluted tubule
- B. Proximal convoluted tubule
- C. Collecting duct
- D. Distal straight tubule
- E. Loop of Henle

764. Where are Na^+ and Ca^{++} reabsorbed?

- A. Proximal convoluted tubule
- B. Loop of Henle
- C. Collecting duct
- D. Distal straight tubule
- E. Distal convoluted tubule

765. The cross-section of renal cortex shows tubule lined by cuboidal epithelium with well-developed brush border of microvilli and mitochondria in membrane invaginations in basal part of the cells. Which tubule is in the field of microscope?

- A. Distal convoluted tubule
- B. Loop of Henle
- C. Collecting duct
- D. Distal straight tubule
- E. Proximal convoluted tubule

766. The cross-section of renal cortex shows a tubule lined by low cuboidal epithelium with rare microvilli and mitochondria in membrane invaginations in basal part of the cells. Which tubule is in the field of microscope?

- A. Proximal convoluted tubule
- B. Loop of Henle
- C. Collecting duct
- D. Distal straight tubule
- E. Distal convoluted tubule

767. What is the correct order of excretory passages in urinary system from the smallest to the largest in diameter?

- A. Major calyx – Minor calyx – Renal pelvis – Ureter – Urinary bladder
- B. Renal pelvis – Minor calyx – Major calyx – Ureter – Urinary bladder
- C. Ureter – Urinary bladder – Minor calyx – Major calyx – Renal pelvis

- D. Urinary bladder – Minor calyx – Major calyx – Renal pelvis – Ureter
 - E. Minor calyx – Major calyx – Renal pelvis – Ureter – Urinary bladder
768. How much urine is normally secreted out of organism per day?
- A. 5 liters
 - B. 0.5 liters
 - C. 150 liters
 - D. 0.5 ml
 - E. 1.5 liters
769. In which part of nephron does secretion start:
- A. Distal convoluted tubule
 - B. Proximal convoluted tubule
 - C. Loop of Henle
 - D. Distal straight tubule
 - E. Collecting duct
770. What is secreted out of organism?
- A. Urea
 - B. Water
 - C. H⁺
 - D. Drugs
 - E. All of that
771. What is not reabsorbed in the kidney?
- A. Water
 - B. Salts
 - C. Albumins
 - D. Glucose
 - E. Urea
772. Which types of cells can be found in collecting ducts?
- A. Brush-border cells
 - B. Goblet cells
 - C. Striated cells
 - D. Transitional cells
 - E. Intercalated cells

773. Collecting ducts take urine from nephrons and join together to form...

- A. Major calyx
- B. Renal pelvis
- C. Ureter
- D. Urinary bladder
- E. Minor calyx

774. Renal pelvis is the result of several _____ joining together.

- A. Collecting ducts
- B. Minor calyces
- C. Distal tubules
- D. Loops of Henle
- E. Major calyces

775. The cross-section of renal cortex shows the wall of afferent arteriole located near glomerulus of renal corpuscle. Smooth muscles in the wall were modified for production of hormones. Which structure is under study?

- A. Macula densa
- B. Intraglomerular mesangial cells
- C. Extraglomerular mesangial cells
- D. None of the answers
- E. Juxtaglomerular granule cells

776. The cross-section of renal cortex shows the wall of distal convoluted tubule near Bowman's capsule. The epithelium of the wall is columnar, modified for producing hormones. Which structure is under study?

- A. Extraglomerular mesangial cells
- B. Juxtaglomerular granule cells
- C. Intraglomerular mesangial cells
- D. None of the answers
- E. Macula densa

777. The cross-section of renal cortex shows renal corpuscles with mesangial cells that are located out of Bowman's capsule. What is their function?

- A. They participate in filtration barrier
- B. They participate in reabsorption
- C. They regulate the blood supply of glomerulus
- D. All of the answers
- E. They produce hormones

778. Which statement about endocrine function of kidney is NOT correct?

- A. It regulates RBCs production in red bone marrow
- B. It can influence blood pressure
- C. It produces renin
- D. It releases hormones in blood
- E. It produces angiotensinogen

779. Which of these structures in kidney DOESN'T participate in its endocrine function?

- A. Smooth muscles of afferent arteriole
- B. Extraglomerular mesangial cells
- C. Macula densa
- D. Epithelium of distal convoluted tubule
- E. All of them participate

780. What is macula densa made of?

- A. Intraglomerular mesangial cells
- B. Endothelium of afferent arteriole
- C. Smooth muscles of afferent arteriole
- D. Extraglomerular mesangial cells
- E. Epithelium of distal convoluted tubule

781. Juxtaglomerular cells are modification of:

- A. Extraglomerular mesangial cells
- B. Macula densa
- C. Epithelium of distal convoluted tubule
- D. Epithelium of proximal convoluted tubule
- E. Smooth muscles of afferent arteriole

782. Which statement about renal endocrine structures is correct?
- A. Macula densa is made of smooth muscles of afferent arteriole
 - B. Juxtaglomerular cells are modified epithelial cells of proximal convoluted tubule
 - C. Juxtaglomerular cells are modified epithelial cells of distal convoluted tubule
 - D. Everything is wrong
 - E. Macula densa is a modified epithelium of distal convoluted tubule
783. Which structure is absent in ureter?
- A. Tunica mucosa
 - B. Tunica media
 - C. Tunica muscularis
 - D. Tunica externa
 - E. Tunica intima
784. Which epithelium lines the wall of ureter?
- A. Simple cuboidal
 - B. Simple columnar
 - C. Pseudostratified ciliated
 - D. Stratified non-keratinized
 - E. Transitional
785. Which layer is located below epithelium of ureter?
- A. Submucosa
 - B. Muscularis mucosa
 - C. Muscularis externa
 - D. Serosa
 - E. Lamina propria
786. Which tissue is lamina propria made of?
- A. Dense irregular connective tissue
 - B. Dense regular connective tissue
 - C. Reticular tissue
 - D. Adipose tissue
 - E. Loose connective tissue

787. What is the specific characteristic of transitional epithelium?
- A. It can reabsorb substances
 - B. It can contract
 - C. It can produce hormones
 - D. None of the answers
 - E. It is stretchable
788. What is NOT correct about histological structure of ureter?
- A. It is lined by transitional epithelium
 - B. It includes lamina propria
 - C. Muscularis externa is made of smooth muscles
 - D. All the statements are true
 - E. Muscularis externa makes a sphincter on the border with urinary bladder
789. What is CORRECT about histological structure of ureter?
- A. Its wall is lined with pseudostratified columnar epithelium
 - B. It doesn't have lamina propria
 - C. Muscularis externa is made of smooth muscles in upper part and skeletal muscles in lower part
 - D. Muscularis externa makes a sphincter on the border with urinary bladder
 - E. Everything is incorrect
790. What is NOT correct about ureter?
- A. It starts with renal pelvis
 - B. It opens in urinary bladder
 - C. It provides secretion
 - D. It enters the kidney in hilum
 - E. It starts with major calyx
791. Which epithelium lines the wall of urinary bladder?
- A. Simple cuboidal
 - B. Simple columnar
 - C. Pseudostratified ciliated
 - D. Stratified non-keratinized
 - E. Transitional

792. Which statement about muscularis externa of urinary bladder is NOT correct?

- A. It is made of smooth muscles
- B. It makes sphincter on the exit of urethra
- C. It is located below tunica externa
- D. Everything is correct
- E. It makes sphincters on the entrance of ureters

793. What is NOT correct about urinary bladder?

- A. Two ureters enter it
- B. It has a sphincter
- C. It collects secondary urine
- D. Everything is correct
- E. One uterus goes out of it

794. The cross-section of urinary bladder shows epithelium located in several layers, not all the cells are in contact with basement membrane. Which type of epithelium is that?

- A. Stratified non-keratinized
- B. Stratified keratinized
- C. Pseudostratified columnar
- D. Simple columnar
- E. Transitional

795. Which statement about histological structure of urinary bladder is TRUE?

- A. It is lined with pseudostratified columnar epithelium
- B. Muscularis externa forms sphincters on the entrance of ureters
- C. Muscularis externa doesn't form any sphincters
- D. All the statements are false
- E. The outer layer is represented by serosa and adventitia

796. What is the CORRECT characteristic of tissues that make layers of urinary bladder?

- A. Adventitia is made of loose connective tissue and mesothelium
- B. Mucosa contains transitional epithelium, dense irregular connective tissue and smooth muscles

- C. Mucosa contains pseudostratified columnar epithelium, loose connective tissue and smooth muscles
- D. Muscularis externa is made of combined smooth and skeletal muscles
- E. Mucosa contains transitional epithelium, loose connective tissue and smooth muscles

797. In which state of urinary bladder will transitional epithelium have more layers?

- A. When it is full
- B. A) and C)
- C. When it is stretched
- D. A) and B)
- E. When it is empty

798. In which state of urinary bladder will transitional epithelium have fewer layers?

- A. When it is empty
- B. When it is stretched
- C. A and B
- D. B and A
- E. When it is full

CHAPTER 10

MALE REPRODUCTIVE SYSTEM

799. Which organ in of male reproductive system provides the major part of spermatogenesis?

- A. Prostate
- B. Epididimis
- C. Penis
- D. Bulbous glands
- E. Testis

800. In which part of male reproductive system do spermatogonia become spermatids?

- A. Epididimis
- B. Prostate
- C. Penis
- D. Bulbous glands
- E. Testis

801. Which answer contains ALL glands of male reproductive system?

- A. Scrotum, seminal vesicles, bulbouretral glands
- B. Seminal vesicles, testes, prostate, efferent ductules
- C. Testes, prostate, seminal vesicles, penis
- D. Scrotum, testes, prostate
- E. Prostate, bulbouretral glands, seminal vesicles, testes

802. Why are testes located in scrotum?

- A. For better protection
- B. To increase the temperature
- C. For better blood supply
- D. None of the answers
- E. To decrease the temperature

803. What is the exocrine function of male reproductive system?
- A. Produce androgens
 - B. Produce testosterone
 - C. All of the answers
 - D. None of the answers
 - E. Produce sperm
804. What is the endocrine function of male reproductive system?
- A. Produce androgens
 - B. Provide development of secondary male characteristics
 - C. Produce testosterone
 - D. None of the above
 - E. All of the above
805. Which organ in male reproductive system requires lower temperature for normal functioning?
- A. Excretory ducts
 - B. Penis
 - C. Prostate
 - D. Seminal vesicles
 - E. Testes
806. Which statement correctly describes the condition when testes stay located inside of the organism?
- A. It is called cryptorchidism
 - B. It leads to disorders of spermatogenesis
 - C. It leads to abnormal temperature of testes
 - D. None of the answers
 - E. All the answers
807. Which statement about testes is NOT correct?
- A. It provides spermatogenesis
 - B. It has endocrine functions
 - C. It's a parenchymal organ
 - D. It has lobules
 - E. It has lobes

808. Which compound DOESN'T belong to stroma of testes?
- A. Tunica albuginea
 - B. Capsule
 - C. Trabecula
 - D. Interstitium
 - E. Everything belongs
809. Which compound DOESN'T belong to parenchyma of testes?
- A. Seminiferous tubules
 - B. Convulated tubules
 - C. Sertoli cells
 - D. Everything belongs
 - E. Tunica albuginea
810. Which statement about testes structure is TRUE?
- A. Trabeculas go from capsule and divide it into 4-5 lobes
 - B. Each lobule contains around 250 convoluted tubules
 - C. Septa divide testis into 1-4 lobules
 - D. There is no interstitium in testes
 - E. Each lobule contains 1-4 convoluted tubules
811. Which cells are NOT located in interstitium of testes?
- A. Leydig cells
 - B. Fibroblasts
 - C. All of them are typical for interstitium
 - D. None of them is typical for interstitium
 - E. Sertoli cells
812. Which cells of seminiferous tubules provide nutrition of developing spermatocytes?
- A. Leydig cells
 - B. Kupfer cells
 - C. Fibroblasts
 - D. All of them
 - E. Sertoli cells
813. Which function is NOT provided by Sertoli cells?
- A. Protection of sperm cells from immune system
 - B. Nutrition of spermatogenic cells

- C. Phagocytosis of residual cytoplasm of spermatids
- D. Participation in blood-testicular barrier
- E. Production of androgen

814. Which function is provided by Leydig cells?

- A. Protection of germ cells from immune system
- B. Nutrition of spermatogenic cells
- C. Phagocytosis of residual cytoplasm of spermatids
- D. Participation in blood-testicular barrier
- E. Production of androgen

815. Which cells can be found between basal membrane and tight junctions of Sertoli cells?

- A. Spermatids
- B. Primary spermatocytes
- C. Secondary spermatocytes
- D. Spermatozoa
- E. Spermatogonia

816. Which cells are isolated from interstitium by tight junctions of Sertoli cells?

- A. Spermatids
- B. Primary spermatocytes
- C. Secondary spermatocytes
- D. Spermatozoa
- E. All of them

817. Which cells can be found in seminiferous tubules?

- A. Spermatogonia
- B. Spermatids
- C. Sertoli cells
- D. Primary spermatocytes
- E. All of them

818. Which cells can NOT be found in seminiferous tubules?

- A. Sertoli cells
- B. Spermatids
- C. Spermatogonia
- D. Spermatozoa
- E. Leydig cells

819. Which cells of seminiferous tubules are located on basal lamina?

- A. Leydig cells
- B. Spermatids
- C. Primary spermatocytes
- D. Spermatozoa
- E. Sertoli cells

820. Which structure DOESNT participate in blood-testicular barrier?

- A. Endothelium
- B. Basal lamina of capillaries
- C. Basal lamina of seminiferous tubules
- D. Tight junctions of Sertoli cells
- E. All of them participate

821. Which cells in testis can make tight junctions?

- A. Fibroblasts of interstitium
- B. Endotheliocytes of capillaries
- C. Leydig cells
- D. Spermatogenic cells
- E. Sertoli cells

822. What is the connection of spermatogenic cells?

- A. Simplast
- B. Tight
- C. Desmosomes
- D. They are not connected
- E. Cytoplasmic bridges

823. The cross-section of the testes shows cells with many processes that are attached to basal lamina and form tight junctions between each other. Which cells are described?

- A. Leydig
- B. Myoid
- C. Fibroblasts
- D. Spermatogonia
- E. Sertoli

824. Electron microscopy of testes shows cells of interstitium with well-developed smooth endoplasmic reticulum and Golgi body. Which cells are under study?

- A. Sertoli
- B. Myoid
- C. Fibroblasts
- D. Spermatogonia
- E. Leydig

825. The cross-section of testes shows flattened contractile cells that surround seminiferous tubules and are located close to their basal lamina. Which cells are under study?

- A. Sertoli
- B. Leydig
- C. Fibroblasts
- D. Spermatogonia
- E. Myoid

826. Where are androgens of Leydig cells directed?

- A. To blood capillaries
- B. To seminiferous tubules
- C. Around the organism
- D. None of the answers
- E. All of answers

827. Which cells divide with mitosis to produce the population of spermatogenic cells?

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatids
- D. Spermatozoa
- E. Spermatogonia

828. Which cells have the most peripheral location in seminiferous tubules?

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatids
- D. Spermatozoa
- E. Spermatogonia

829. Which cells don't need to be protected from immune system and isolated from blood by blood-testicular barrier?

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatids
- D. Spermatozoa
- E. Spermatogonia

830. Which cells of spermatogenesis result from first meiotic division?

- A. Primary spermatocytes
- B. Spermatogonia
- C. Spermatids
- D. Spermatozoa
- E. Secondary spermatocytes

831. Which cells of spermatogenesis result from second meiotic division?

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatogonia
- D. Spermatozoa
- E. Spermatids

832. The cross-section of testes showed many residual bodies near the lumen of seminiferous tubules. What is the origin of these residual bodies?

- A. They mostly consist of dead spermatids and spermatozooids
- B. They are secreted by Sertoli cells
- C. They are secreted by Leydig cells
- D. None of the answers
- E. They are made of cytoplasm released from maturing spermatids

833. The cross-section of seminiferous tubules in testes shows round peripherally-located cells with big dark nucleus and small amount of cytoplasm. Which cells are these?

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatids
- D. Spermatozoa
- E. Spermatogonia

834. Which cells have the most central location in seminiferous tubules of testes?

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatogonia
- D. Spermatids
- E. Spermatozoa

835. Electron microscopy of spermatozoa shows a modified Golgi body located in front of the nucleus in the form of flattened cistern. Which structure is under study?

- A. Flagella
- B. Axoneme
- C. Lysosome
- D. Nucleolus
- E. Acrosome

836. Which spermatogenic cells don't divide?

- A. Spermatogonia
- B. Primary spermatocytes
- C. Secondary spermatocytes
- D. All of them divide
- E. Spermatids

837. Electron microscopic study shows a cell with very small amount of cytoplasm, Golgi body is located right in front of the nucleus. Which cell is that?

- A. Spermatogonia
- B. Primary spermatocyte
- C. Secondary spermatocyte
- D. None of the answers
- E. Spermatid

838. Stem cells of spermatogenesis are...

- A. Primary spermatocytes
- B. Secondary spermatocytes
- C. Spermatids
- D. Spermatozoa
- E. Spermatogonia

839. What is the correct order of cells of spermatogenesis?
- A. Spermatid – primary spermatocyte – secondary spermatocyte – spermatogonia
 - B. Spermatogonia – spermatid – primary spermatocyte – secondary spermatocyte
 - C. Primary spermatocyte – secondary spermatocyte – spermatogonia – spermatid
 - D. None of the answers is correct
 - E. Spermatogonia – primary spermatocyte – secondary spermatocyte – spermatid
840. What is the correct order of phases of spermatogenesis?
- A. Spermatocyte phase – Spermatid phase – Spermatogonial phase
 - B. Spermatid phase – Spermatocyte phase – Spermatogonial phase
 - C. Spermatid phase – Spermatogonial phase – Spermatocyte phase
 - D. None of the orders is correct
 - E. Spermatogonial phase – Spermatocyte phase – Spermatid phase
841. Which cells produce androgens?
- A. Sertoli cells
 - B. Spermatogonia
 - C. All of them
 - D. None of them
 - E. Interstitial cells
842. Which gland regulates the endocrine function of Leydig cells?
- A. Pineal gland
 - B. Thyroid gland
 - C. Neuro-Hypophysis
 - D. Thymus
 - E. Adeno-Hypophysis
843. Which hormones regulate activity of Leydig cells?
- A. Somatotropin
 - B. Androgens
 - C. Testosterone
 - D. None of them
 - E. Luteinizing and follicle-stimulating

844. Which hormone is produced by interstitial cells?

- A. Luteinizing hormone
- B. Follicle-stimulating hormone
- C. Aldosterone
- D. None of the answers
- E. Testosterone

845. What is the influence of testosterone that goes to seminiferous tubules?

- A. It regulates secondary male characteristics
- B. It regulates division of Leydig cells
- C. It regulates primary male characteristics
- D. None of the answers
- E. It regulates spermatogenesis

846. What is the influence of testosterone that goes to the capillaries surrounding Leydig cells?

- A. It regulates spermatogenesis
- B. It regulates division of Sertoli cells
- C. It regulates primary male characteristics
- D. None of the answers
- E. It regulates secondary male characteristics

847. Electron microscopy shows a cell of interstitium that has a well-developed smooth endoplasmic reticulum. What is the main function of that cell?

- A. Exocrine
- B. Production of protein hormones
- C. Phagocytosis
- D. Contraction
- E. Production of steroid hormones

848. Which duct DOESN'T belong to extratesticular ducts?

- A. Ductus Epididimidis
- B. Urethra
- C. Ductus deferens
- D. Ductus Ejaculatorius
- E. Straight tubules

849. Which duct belongs to intratesticular ducts?

- A. Ductus Epididimis
- B. Urethra
- C. Ductus deferens
- D. Ductus Ejaculatorius
- E. Straight tubules

850. A genital excretory duct shows scalloped appearance in section. Which duct is under study?

- A. Ductus Epididimis
- B. Urethra
- C. Ductus deferens
- D. Ductus Ejaculatorius
- E. Efferent ductules

851. Which genital duct is covered with simple cuboidal epithelium?

- A. Ductus Epididimis
- B. Convoluted tubules
- C. Ductus deferens
- D. Ductus Ejaculatorius
- E. Straight tubules

852. The cross-section of genital duct shows lumen, pseudostratified columnar epithelium and lack of muscles in the wall as it is surrounded by prostate. Which duct is studied?

- A. Ductus Epididimis
- B. Convoluted tubules
- C. Straight tubules
- D. Ductus deferens
- E. Ductus Ejaculatorius

853. The cross-section of genital duct shows a tubular organ lined with cuboidal and ciliated columnar cells, basal lamina and muscular coat of smooth muscles. Which duct is studied?

- A. Ductus Epididimis
- B. Straight tubules
- C. Ductus deferens
- D. Ductus Ejaculatorius
- E. Ductuli efferentes

854. The cross-section of excretory duct shows tubular organ with three layers: mucosa of pseudostratified columnar epithelium and lamina propria, very thick tunica muscularis of 3 layers and tunica adventitia. Which tubular organ is that?

- A. Ductus Epididimidis
- B. Ductuli efferentes
- C. Straight tubules
- D. Ductus Ejaculatorius
- E. Ductus deferens

855. What is NOT correct about the structure of the wall of ductus deferens?

- A. Tunica muscularis is the thickest layer
- B. Tunica muscularis is made of three layers of smooth muscles
- C. The outer layer is serosa
- D. Everything is correct
- E. Smooth muscles of tunica muscularis form inner circular layer

856. The cross-section of a male reproductive system organ shows a huge amount of smooth muscles in stroma and three types of glands located all around the organ. Which gland is being studied?

- A. Seminal vesicles
- B. Bulbourethral glands
- C. Testes
- D. None of the answers
- E. Prostate

857. Presence of corpus amyloaceum on histological slide is a characteristic of:

- A. Seminal vesicles
- B. Bulbourethral glands
- C. Testes
- D. None of the answers
- E. Prostate

858. Which glands of prostate have the closest location to the lumen?

- A. Submucosal
- B. Main
- C. Muscular
- D. Adventitial
- E. Mucosal

859. Which glands of prostate are compound tubulo-alveolar and have the most peripheral location?

- A. Submucosal
- B. Mucosal
- C. Muscular
- D. Adventitial
- E. Main

860. What is the correct location of glands in prostate from central that surround lumen to the most peripheral ones?

- A. Mucous – main – submucous
- B. Main – submucous – mucous
- C. Main – mucous – submucous
- D. None of the answers is correct
- E. Mucous – submucous – main

861. What is the correct location of glands in prostate from the most peripheral to the central ones?

- A. Mucous – main – submucous
- B. Mucous – submucous – main
- C. Main – mucous – submucous
- D. None of the answers is correct
- E. Main – submucous – mucous

862. Which structure surrounds prostate?

- A. Adventitia
- B. Serosa
- C. Externa
- D. None of the answers
- E. Capsule

863. The cross-section of prostate shows compound tubulo-alveolar glands, their ducts and secretory portions make the major part of the organ. Which glands are these?

- A. Mucosal
- B. Submucosal
- C. Endocrine
- D. Additional
- E. Main

864. Which glands produce fluid rich in fructose for the sperm?
- A. Prostate
 - B. Bulbourethral glands
 - C. Testes
 - D. None of the answers
 - E. Seminal vesicles
865. Which gland secretes acid phosphatase and citric acid?
- A. Seminal vesicles
 - B. Bulbourethral glands
 - C. Testes
 - D. None of the answers
 - E. Prostate
866. Which glands secrete preseminal fluid?
- A. Seminal vesicles
 - B. Prostate
 - C. Testes
 - D. None of the answers
 - E. Bulbourethral glands
867. Which glands are located in peripheral zone of prostate?
- A. Mucosal
 - B. Submucosal
 - C. Supportive
 - D. Additional
 - E. Main
868. Which glands are located in central zone of prostate?
- A. Mucosal
 - B. Supportive
 - C. Main
 - D. Additional
 - E. Submucosal
869. Which glands are located in transitional zone of prostate?
- A. Submucosal
 - B. Supportive
 - C. Main
 - D. Additional
 - E. Mucosal

CHAPTER 11

FEMALE REPRODUCTIVE SYSTEM

870. Which organ is NOT exactly a part of the female reproductive system?

- A. Ovaries
- B. Oviducts
- C. Uterus
- D. Vagina
- E. Mammary Gland

871. From which system do Mammary Glands derive?

- A. Respiratory system
- B. Female reproductive system
- C. Male reproductive system
- D. Endocrine system
- E. Integumentary system

872. Which organs belong to the female reproductive system?

- A. Ovaries
- B. Oviducts
- C. Uterus
- D. Vagina
- E. All of the answers are part of female reproductive system

873. Female patient was hospitalized in surgery department and the ovary was extirpated. Histological specimens were prepared for examination. Which type of epithelium covers the ovary?

- A. Simple squamous epithelium
- B. Simple columnar epithelium
- C. Stratified squamous epithelium
- D. Stratified cuboidal epithelium
- E. Simple cuboidal epithelium

874. Female patient was hospitalized in surgery department and the ovary was extirpated. Histological specimens were prepared for examination. Which part of the ovary can be distinguished using small magnification of microscope?

- A. Tunica albuginea
- B. Cortex
- C. Medulla
- D. Surface simple cuboidal epithelium
- E. All of them are present in ovum

875. A layer of dense irregular connective tissue that underlies germinal epithelium is well distinguished in histological specimens of the ovum. Which structure of ovum does this layer form?

- A. Follicles
- B. Cortex
- C. Medulla
- D. Surface simple cuboidal epithelium
- E. Tunica albuginea

876. In histological specimens one can see core of ovum (medium part) – lighter area that contains blood vessels is medulla. Which type of tissue is medulla composed of?

- A. Dense irregular connective tissue
- B. Dense regular connective tissue
- C. Adipose tissue
- D. Reticular connective tissue
- E. Loose connective tissue

877. In histological specimens of ovum darker cortex contains structures that are specific for this area. There is one oocyte surrounded with supporting stromal cells. What is the name of these structures?

- A. Tunica albuginea
- B. Medulla
- C. Surface simple cuboidal epithelium
- D. Fundus
- E. Follicles

878. Which part of ovary contains ONLY stroma?

- A. Follicles
- B. Cortex
- C. Cortex and medulla
- D. Oocytes
- E. Medulla

879. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What are specific morphological features of primordial follicles?

- A. They contain centrally located oocyte surrounded by one layer of cuboidal follicular cells
- B. They contain centrally located oocyte surrounded by several layers of cuboidal follicular (granulosa) cells
- C. They contain oocyte surrounded by several layers of cuboidal follicular (granulosa) cells and fluid-filled cavity (antrum)
- D. They contain huge antrum (fluid-filled cavity) and oocyte surrounded by cumulus oophorus and corona radiata
- E. They contain centrally located oocyte surrounded by one layer of flat follicular cells

880. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What are specific morphological features of primary unilaminar follicles?

- A. They contain centrally located oocyte surrounded by one layer of flat follicular cells
- B. They contain centrally located oocyte surrounded by several layers of cuboidal follicular (granulosa) cells
- C. They contain oocyte surrounded by several layers of cuboidal follicular (granulosa) cells and fluid-filled cavity (antrum)
- D. They contain huge antrum (fluid-filled cavity) and oocyte surrounded by cumulus oophorus and corona radiata
- E. They contain centrally located oocyte surrounded by one layer of cuboidal follicular cells

881. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What are specific morphological features of secondary follicles?

- A. They contain centrally located oocyte surrounded by one layer of flat follicular cells
- B. They contain centrally located oocyte surrounded by one layer of cuboidal follicular cells
- C. They contain centrally located oocyte surrounded by several layers of cuboidal follicular (granulosa) cells
- D. They contain huge antrum (fluid-filled cavity) and oocyte surrounded by cumulus oophorus and corona radiata
- E. They contain oocyte surrounded by several layers of cuboidal follicular (granulosa) cells and fluid-filled cavity (antrum)

882. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What are specific morphological features of mature tertiary follicles?

- A. They contain centrally located oocyte surrounded by one layer of flat follicular cells
- B. They contain centrally located oocyte surrounded by one layer of cuboidal follicular cells
- C. They contain centrally located oocyte surrounded by several layers of cuboidal follicular (granulosa) cells
- D. They contain oocyte surrounded by several layers of cuboidal follicular (granulosa) cells and fluid-filled cavity (antrum)
- E. They contain huge antrum (fluid-filled cavity) and oocyte surrounded by cumulus oophorus and corona radiata

883. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What are specific morphological features of multilaminar primary follicles?

- A. They contain centrally located oocyte surrounded by one layer of flat follicular cells
- B. They contain centrally located oocyte surrounded by one layer of cuboidal follicular cells
- C. They contain oocyte surrounded by several layers of cuboidal follicular (granulosa) cells and fluid-filled cavity (antrum)

- D. They contain huge antrum (fluid-filled cavity) and oocyte surrounded by cumulus oophorus and corona radiata
- E. They contain centrally located oocyte surrounded by several layers of cuboidal follicular (granulosa) cells

884. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What is the medium size of the oocyte in the primordial follicles?

- A. 1 μm
- B. 10 μm
- C. 150 μm
- D. 1000 μm
- E. 25 μm

885. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What is the medium size of the oocyte in the tertiary follicles?

- A. 1 μm
- B. 10 μm
- C. 25 μm
- D. 1000 μm
- E. 150 μm

886. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. At what stage of a cell cycle is the oocyte of the primordial follicle stopped?

- A. Pre-synthetic (G1)
- B. Synthetic (S)
- C. Pre-mitotic (G2)
- D. Metaphase of second meiotic division
- E. Prophase of first meiotic division

887. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. At which stage of a cell cycle is the oocyte of the mature tertiary follicles stopped?

- A. Pre-synthetic (G1)
- B. Synthetic (S)
- C. Pre-mitotic (G2)

- D. Prophase of first meiotic division
- E. Metaphase of second meiotic division

888. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. In what type of follicles does zona pellucida appear?

- A. Primordial
- B. Multilaminar Primary
- C. Secondary
- D. Tertiary
- E. Unilaminar Primary

889. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What type of cells produces zona pellucida?

- A. Granulosa cells
- B. Follicular cells
- C. Theca interna cells
- D. Theca externa cells
- E. Oocytes

890. In histological specimen of ovaries the follicles on different stages of differentiation can be distinguished. What is the function of zona pellucida?

- A. Provides isolation of oocyte
- B. Provides nutrition of oocyte
- C. Provides differentiation of oocyte
- D. Provides interaction between oocyte and theca interna cells
- E. Provides species specific recognition and binding between sperm cell and oocyte

891. Which structure is the part of the growing follicle of the ovary?

- A. Oocyte and Zona pellucida
- B. Follicle cells (granulosa cells)
- C. Basement membrane of the follicle cells
- D. Theca interna and Theca externa
- E. All of them are the part of the growing follicle

892. What structure is NOT a part of the primordial follicle of the ovary?

- A. Oocyte
- B. Follicle cells
- C. Basement membrane of the follicle cells
- D. All of them are the part of the primordial follicle
- E. Zona pellucida

893. At what stage of follicular development do Theca interna and Theca externa form?

- A. Primordial follicle
- B. Mature tertiary (Graafian) follicle
- C. Atretic follicle
- D. Corpus luteum
- E. Growing follicle

894. What is the function of the Theca interna of the growing follicle?

- A. Production of oogonia
- B. Production of zona pellucida
- C. Production of basement membrane
- D. Production of follicle stimulating hormone (FSH)
- E. Production of androstenedione (precursor of estradiol)

895. What is the name of the remnant of follicle after ovulation?

- A. Primordial follicle
- B. Primary follicle
- C. Secondary
- D. Tertiary (Graafian)
- E. Corpus hemorrhagicum

896. What is the function of Corpus Luteum in the cortex of the ovary?

- A. Provides restoration of number of primary follicles
- B. Provides nutrition of oocytes
- C. Provides species specific recognition and binding between sperm cell and oocyte
- D. Provides synthesis of testosterone
- E. Provides synthesis of androgens and their derivatives (progesterone, estrogen)

897. What is the Corpus Albicans?

- A. Primordial follicle
- B. Primary follicle
- C. Secondary follicle
- D. Tertiary (Graafian) follicle
- E. White scar after degeneration of Corpus Luteum

898. Which type of organ is oviduct?

- A. Endocrine gland
- B. Muscular sack
- C. Parenchimal organ
- D. Immune organ
- E. Muscular tube

899. What part (segment) does NOT belong to the oviduct (uterine tube)?

- A. Intramural part
- B. Isthmus
- C. Ampulla
- D. Infundibulum
- E. Fundus

900. What layers is present in the wall of Oviduct (uterine tube)?

- A. Mucosa
- B. Muscularis
- C. Serosa
- D. None of the answers
- E. All of them are the layers of the oviduct

901. What layer is absent in the wall of oviduct (uterine tube)?

- A. Mucosa
- B. Muscularis
- C. Serosa
- D. All of them are the layers of the oviduct
- E. Submucosa

902. What type of epithelium lines the oviduct (uterine tube)?

- A. Simple squamous epithelium
- B. Simple cuboidal epithelium

- C. Stratified squamous epithelium
- D. Pseudostratified ciliated epithelium
- E. Simple ciliated columnar epithelium

903. What type of epithelial cells lines lumen of oviduct (uterine tube)?

- A. B Ciliated columnar epithelial cells
- B. Non-ciliated secretory epithelial cells (Peg cells)
- C. Squamous cells
- D. A and C
- E. A and

904. What muscle layer can be found in the oviduct (uterine tube) muscularis?

- A. Inner circular
- B. Inner longitudinal
- C. Outer longitudinal
- D. A and B Only
- E. A and C Only

905. What tissue participates in formation of mucosa fold in the oviduct (uterine tube)?

- A. Epithelium
- B. Lamina propria
- C. Muscularis
- D. A and C Only
- E. A and B Only

906. What part (segment) does NOT belong to uterus?

- A. Cervix
- B. Body
- C. Fundus
- D. B and C Only
- E. Infundibulum

907. Which layers compose the wall of body and fundus of uterus?

- A. Endometrium
- B. Myometrium
- C. Serosa

- D. Adventitia
- E. All of them are the layers of the uterus

908. What layers do NOT belong to the wall of body and fundus of uterus?

- A. Endometrium
- B. Myometrium
- C. Serosa
- D. Adventitia
- E. Submucosa

909. What muscle layer composes uterine myometrium?

- A. Inner circular
- B. Inner longitudinal
- C. Outer longitudinal
- D. Middle circular
- E. B, C and D Only

910. What muscle layer does NOT compose the myometrium of uterus?

- A. Inner longitudinal
- B. Outer longitudinal
- C. Middle circular
- D. B and C Only
- E. Inner circular

911. What layer can be found in uterine endometrium?

- A. Functional layer
- B. Basal layer
- C. Lamina propria
- D. Mucosa
- E. All of them are the layers of uterine endometrium

912. Which layer of uterine endometrium is sloughed off (released) during menstruation?

- A. Basal layer of endometrium
- B. Lamina propria
- C. Mucosa
- D. Submucosa
- E. Functional layer of endometrium

913. Which layer of uterine endometrium is retained after menstruation?

- A. Functional layer of endometrium
- B. Lamina propria
- C. Mucosa
- D. Submucosa
- E. Basal layer of endometrium

914. What type of glands is located in uterine endometrium?

- A. Compound tubular glands
- B. Simple alveolar glands
- C. Compound alveolar glands
- D. Tubulo-alveolar glands
- E. Simple tubular glands

915. What type of arteries supplies basal layer of uterine endometrium?

- A. Arcuate
- B. Helical arteries
- C. Peritubular
- D. Afferent
- E. Straight arteries

916. What type of arteries supplies functional layer of uterine endometrium?

- A. Arcuate
- B. Straight arteries
- C. Peritubular
- D. Afferent
- E. Helical arteries

917. From what artery do the arteries of functional layer of uterine endometrium originate?

- A. Afferent
- B. Straight arteries
- C. Helical arteries
- D. Peritubular
- E. Arcuate

918. From what artery do the arteries of basal layer of uteral endometrium originate?

- A. Afferent
- B. Straight arteries
- C. Helical arteries
- D. Peritubular
- E. Arcuate

919. What changes does estrogen induce in uteral endometrium?

- A. Proliferation of cells of glands of basal layer
- B. Growing of tubular glands
- C. Proliferation of cells of lamina propria
- D. Growing of coiled arteries
- E. All of them

920. What changes does progesterone induce in uteral endometrium?

- A. Proliferation of cells of glands
- B. Coiling and branching of tubular gland
- C. Proliferation of cells of lamina propria
- D. Complete development of coiled arteries
- E. All of them

921. Which type of organ is mammary gland?

- A. Endocrine gland
- B. Muscular tube
- C. Muscular sack
- D. Immune organ
- E. Parenchimal organ

922. What type of glands composes mammary gland?

- A. Compound tubular gland
- B. Simple tubular gland
- C. Simple alveolar gland
- D. Compound alveolar gland
- E. Compound tubulo-acinar gland

923. What type of secretion characterizes mammary glandular cells?

- A. Apocrine
- B. Merocrine
- C. Holocrine
- D. A and C only
- E. A and B only

924. What type of product is secreted from mammary glandular cells by apocrine mechanism?

- A. Proteins
- B. Water
- C. Glucose
- D. Immunoglobulins
- E. Lipids

925. What type of product is secreted from mammary acinar cells by merocrine mechanism?

- A. Lipids
- B. Water
- C. Glucose
- D. Immunoglobulins
- E. Proteins

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