Questions in Histology and Embryology for Medicine and Dentistry students

Embryology

A.

General embryology

1. Fertilization
2. Maternal endometrial tissues and decidual reaction
3. Formation of the placenta
4. Preembryonic development - Morula
5. Preembryonic Development - Blastocyst
6. Preembryonic Development - Gastrulation
7. Implantation
8. Formation of the three-layered embryo
9. Primary germ layers - Endoderm
10. Primary germ layers - Mesoderm
11. Primary germ layers - Ectoderm
12. Amnion
13. Chorion
14. Allantois
15. Yolk sac
16. Extraembrional haematopoiesis
17. Umbilical cord
18. Developing of epithelial tissues
19. Epithelial linings derived from ectoderm
20. Epithelial linings derived from mesoderm
21. Epithelial linings derived from endoderm
22. Developing of the connective tissues
23. Mesenchymal tissue
24. Developing of the cartilage and bone
25. Embryonal and fetal haematopoiesis
26. Developing of the vascular system
27. Fetal circulation
28. Developing of the smooth muscle tissue
29. Developing of the skeletal muscle tissue
30. Developing of the heart muscle tissue
31. Developing of the neural tissue
32. Formation and differentiation of the neural tube
33. Formation and differentiation of the neural crest
B. Systems-based Embryology for medicine students

1. Folding of the embryonic disc and development of the head
2. Folding of the embryonic disc and development of the primitive gut
3. Pharyngeal (branchial) arches as a part of primitive gut
4. Stomadeum
5. The primitive mouth cavity
6. Development of definitive mouth cavity
7. Development of definitive nasal cavity
8. Development of the lips
9. Development of the tongue
10. Development of teeth
11. Development of upper and lower jaw
12. Development of the primary and secondary palate
13. Abnormalities in the development of the lips
14. Abnormalities in the development of teeth
15. Abnormalities in the development of the palate
16. Development of hypophysis and the pharyngeal hypophysis
17. Development of the thyroid gland
18. Abnormalities in the development of the thyroid gland
19. Branchial or pharyngeal arches
20. Pharyngeal clefts
21. Pharyngeal pouches
22. Mesenchimal component of pharyngeal arches
23. Development of the head bones
24. Vascularisation and inervation of pharyngeal arches
25. The role of neural crest cells in the development of pharyngeal arches
26. Development of palatine tonsil
27. Development of parathyroid gland
28. Development of thymus
29. Development of the external and middle ear
30. Abnormalities in the development of pharyngeal system
31. Development, division and differentiation of the primitive gut
32. Development of the pharynx and oesophagus
33. Abnormalities in the development of the oesophagus
34. Development of the stomach
35. Development of the gut
36. Development of pancreas
37. Development of the liver
38. Abnormalities in the development of the digestive system
39. Development of the pleural, pericardial and peritoneal cavity
40. Development of the lung
41. Abnormalities in the development of the lung
42. Aortic arches
43. Extraembryonal circulation
44. Establishment of intraembryonal circulation
45. Fetal circulation
46. Development of the heart
47. Abnormalities in the development of the heart
48. Circulatory changes at the birth
49. Development of the suprarenal gland
50. Development of the kidneys - pronephros
51. Development of the kidneys - mesonephros
52. Development of the kidneys - metanephros
53. Development of the urinary bladder
54. Development and division of the cloaca
55. Abnormalities of the urinary system
56. Indifferent stage in the development of gonades
57. Development of uterine tube and uterus
58. Ovarian differentiation
59. Abnormalities in the development of female genital system
60. Testicular differentiation
61. Abnormalities in the development of male genital system
62. Development of the neural tube and brain vesicles
63. Development of the spinal ganglia
64. Development of the eye
65. Development of the internal ear
I. Cell and tissues

The cell

1. Cell Membrane
2. Cytoplasm, Membrane bound and nonmembrane bound organells
3. Cytoskeleton
4. Microfilaments
5. Intermediate filaments
6. Microtubules
7. Centrioles and centrosome
8. Microvilli and Stereocilia
9. Kinocilia
10. Intercellular junctions in different kinds of tissues
11. Occluding intercellular junctions
12. Adhering intercellular junctions
13. Communicant intercellular junctions
14. Nucleus - structure, shape, size, distribution, number
15. Ribosomes
16. Mitochondria
17. Golgi apparatus
18. Lysosomes
19. Rough endoplasmic reticulum
20. Smooth endoplasmic reticulum
21. Cell Cycle
22. Cell renewal, Mitosis
23. Maturation and Differentiation of cells
24. Cell death
25. Apoptosis
26. Cytoplasmic Inclusions
27. The shape and size of the cell
The Tissues

1. Definition and types of tissues
2. General characteristics of epithelial tissues
3. Polarization of epithelial cells
4. Apical domain of epithelial cells
5. Lateral domain of epithelial cells, intercellular junctions
6. Basal domain of epithelial cells
7. Nutrition of epithelial tissue, blood vessels
8. Classification of epithelial tissues
9. Embryonal origin of epithelial tissues
10. Simple squamous epithelium
11. Simple cuboidal epithelium
12. Simple columnar epithelium
13. Regeneration of simple epithelium
14. Stratified and pseudostratified epithelia, definition and classification
15. Pseudostratified epithelia, definition, types and localization
16. Stratified epithelia, definition, types and localization
17. Pseudostratified epithelium in the respiratory system
18. Transitional epithelium, morphological characteristics and localization
19. Stratified squamous nonkeratinizing epithelium, morphological characteristics and localization
20. Stratified squamous keratinizing epithelium
21. Stratified columnar epithelium, morphological characteristics and localization
22. Regeneration of pseudostratified epithelia
23. Regeneration of stratified epithelia
24. Glandular epithelia, definition and classification
25. Glandular parenchyma and connective tissue stroma of glands
26. General characteristics of exocrine glands
27. General characteristics of endocrine glands
28. Classification of exocrine glands according to their morphological characteristics, type of secretion and secretory mechanism
29. Neuroepithelia - general characteristics and localization
30. General structure of **connective tissue**
31. Cells, fibers and amorphous intercellular substance in connective tissue
32. Structure, importance and origin of intercellular substance in connective tissues
33. Classification of connective tissues according to the properties of extracellular matrix
34. Collagen and elastic fibres, synthesis, types and distribution
35. Mesenchyme as embryonic connective tissue
36. Mucous connective tissue as embryonic connective tissue
37. Loose connective tissue
38. Fixed cells in connective tissue and their function
39. Wandering cells in loose connective tissue and their function
40. Reticular connective tissue - morphological properties and localisation
41. Elastic tissue - morphological properties and localisation
42. Dense connective tissue - morphological properties and localisation
43. White and brown adipose tissue - morphological properties and localisation
44. General characteristics of cartilage
45. Hyaline cartilage - morphological properties and localisation
46. Elastic cartilage - morphological properties and localisation
47. Fibrocartilage - morphological properties and localisation
48. Perichondrium
49. Growth and repair of cartilage
50. Mucous connective tissue
51. Articular cartilage
52. Synovial membrane of the joint
53. General structure of the bone tissue - mature (lamellar bone) and immature bone
54. Compact and spongy bone
55. Periosteum and endosteum
56. Periosteal ossification
57. Endochondral or indirect ossification
58. Intramembranous or direct ossification
59. Bone marrow
60. Hemopoiesis in adults - red bone marrow
61. Blood - plasma, hematocrit, erythrocytes, leucocytes
62. Blood - erythrocytes
63. Blood - leucocytes - granulocytes
64. Blood - leucocytes - lymphocytes
65. Blood - platelets
66. Hemopoiesis - Erythropoiesis
67. Hemopoiesis - Granulopoiesis
68. Hemopoiesis - Lymphopoiesis
69. Hemopoiesis - Monocyte development
70. Hemopoiesis - Platelets development
71. General characteristics of **muscle tissue**
72. Smooth muscle - morphological properties and distribution
73. Skeletal muscle - morphological properties and distribution
74. Cardiac muscle - morphological properties
75. Cardiac muscle - Purkinje fibres
76. Regeneration of muscle tissue
77. Motor end plate - neuromuscular junction

78. General characteristics of **nerve tissue**
79. The neuron
80. Classification of neurons according to the shape of cell body
81. Classification of neurons according to the length of axons
82. Classification of neurons according to the number of cell processes
83. Supporting cells (neuroglia) of central and peripheral nervous system
84. Myelin sheath of neurons in central and peripheral nervous system
85. Nerve endings
86. Efferent nerve endings - neuromuscular and neuroglandular synapses
87. Afferent nerve endings - free and incapsulated
88. Synapses
89. Regeneration of nervous tissue
ORGANOLOGY

Cardiovascular system
1. Blood capillaries, types and localisation
2. Arterial blood vessels, classification and common characteristics
3. Arterioles
4. Muscular arteries
5. Elastic arteries
6. Veins, classification and common characteristics
7. Venules, postcapillary and of muscle type
8. The heart, endocardium and subendocardium
9. The heart, myocardium and types of myocardiocytes
10. The heart, epicardium
11. Lymphatic vessels

Respiratory system
12. Vestibulum nasi
13. Respiratory region of the nasal cavity
14. Larynx
15. Trues and false vocal folds
16. Epiglottis
17. Bronchial tree
18. Lung lobules
19. Respiratory bronchioles and pulmonary alveoli
20. Pleura

Digestive system
21. The lips
22. Hard and soft palates
23. The cheek
24. Gingiva
25. Teeth, basic morphology
26. Dental pulp
27. Dentin
28. Enamel
29. Cementum
30. Alveola dentis
31. The tongue - corpus linguae
32. The tongue - radix linguae
33. Mechanical and gustatory lingual papillae
34. Small salivary glands
35. Glanduia parotis
36. Glandula sublingualis
37. Glandula submandibularis
38. Oesophagus
39. Cardia
40. Fundic and corpus region
41. Pyloric region
42. Duodenum
43. Jejunum
44. Appendix vermiformis
45. Colon
46. Rectum
47. Anal region
48. Exocrine pancreas
49. Liver
50. Intrahepatic bile ducts
51. Extrahepatic bile ducts
52. Gallbladder
53. Diffuse endocrine system of the gastrointestinal tract
54. Gastro-intestinal lymphoid tissue (GALT)
55. Peritoneum
56. Gastro-entero-pancreartic endocrine system

**Urinary system**

57. Kidneys - general lobular structure, cortex and medulla
58. Nephron
59. Corpusculum renis
60. Juxtaglomerular comlex
61. Collecting ducts, renal calyces, renal pelvis
62. Renal blood supply
63. Endocrine tissue of the kidney
64. Ureter
65. Urinary bladder
66. Urethra

**Endocrine system**

1. Hypothalamo-hypopyseal complex
2. Adenohypophysis
3. Neurohypophysis
4. Eminenia mediana and portal blood system
5. Adenohypopysis and peripheral endocrine system
6. Pineal gland
7. Thyroid gland
8. Parathyroid gland
9. Endocrine pancreas
10. Adrenal glands
11. Diffuse endocrine system
12. Ovarium and testis as endocrine organs
Nervous system

13. Peripheral nerve
14. Spinal and visceral ganglion
15. Spinal cord
16. Cerebellum
17. Cerebrum
18. Leptomeninges
19. Horioideal plexus and haematoliquor barrier
19a. Haematoencephal barrier
20a. Paraganglions

Sensory organs

20. The external ear - auricle
21. The external ear - external acoustic meatus and tympanic membrane
22. The middle ear
23. The internal ear
24. The vestibule contains the utricle and saccule
25. The spiral organ of Corti
26. The olfactory region of the nose
27. The gustoreceptors of the tongue
28. The eye - retina
29. The eye - cornea and the sclera
30. The eye - iris and the ciliary body
31. The eyelid
32. Lacrimal gland

Skin and related appendages

33. The skin - epidermis
34. The skin - dermis and hypodermis
35. The skin - adnexa
36. Hair follicle
37. Nail
38. Breast

Immune system

38. Classification of the organs of the immune system
39. The cells of the immune system
40. Reticuloendothelial system (RES)
41. Lymphoid follicles - blast transformation of lymphocytes
42. Lymph nodes
44. Thymus
45. Spleen lymphocytes
46. Immune system of mucous membranes
Reproductive system

47. Ovaries - follicular maturation
48. Tertiary or De Graafian follicle
49. Corpus luteum
50. Uterine tubes
51. Uterus - menstrual cycle
52. Vagina
53. Testis - spermatogenesis
54. Extratesticular seminiferous efferent ducts
55. Seminal vesicles
56. Prostate