DENTAL MEDICINE

Histology and Embryology – final examination questions

I. Cytology and Tissues

1. **The cell - general structure, its size and shape.**
2. **Cell membrane - ultrastructure and molecular structure, membrane receptors.**
3. **Cytoplasm – structure, hyaloplasm, cytoplasmic inclusions.**
4. **Nucleus - nuclear envelope, chromatin, function of the nucleus.**
5. **Nucleolus - LM and EM structure, function.**
6. **Rough (granular) endoplasmic reticulum – structure and function.**
7. **Smooth endoplasmic reticulum – structure and function.**
8. **Ribosomes – structure and function. Development.**
9. **Mitochondria – types, LM and EM structure, function.**
10. **Lysosomes and peroxisomes – structure and function.**
11. **Golgi complex - structure, function.**
12. **Cytoskeleton - microtubules, microfilaments and intermediate filaments. Centriols.**
13. **Cytoplasmic inclusions – glycogene, lipids, pigments.**
14. **EM structure of cells producing polypeptides, proteins and biogenic amines.**
15. **EM structure of cells producing mucus, steroids, cells transporting ions.**
16. **Covering epithelial tissue, classification, structure and function.**
17. **Specialization of apical and basal surface of epithelial cells.**
18. **Specialization of lateral surface of epithelial cells. Structure of intercellular junctions.**
19. **Basement membrane - ultrastructure and function.**
20. **Glandular epithelial tissue – exocrine glands, types of secretion, structure and function.**

21. Glandular epithelial tissue - endocrine glands, structure and function.

22. Fixed connective tissue cells – types, structure and function.

23. Free connective tissue cells – types, structure and function.

24. Types of fibers in connective tissue.

25. Amorphous ground substance of connective tissue.

26. Types of connective tissue – characteristics and differences.

27. Cartilage - microscopic structure. Perichondrium.

28. Bone tissue - microscopic structure. Periosteum, endosteum.

29. Intramembranous and endochondral ossification.

30. Primary and secondary bone tissue – microscopic structure. Primary and secondary ossification.

31. Epiphyseal (growing) plate – structure and function.

32. Erythrocytes - structure and function.

33. Granulocytes – structure and function. Arneth's classification of neutrophils.

34. Agranulocytes – structure and function.

35. Platelets – structure and function.

36. Erythropoiesis - maturation of erythrocytes.

37. Skeletal muscle tissue - structure in LM and EM.

38. Cardiac muscle tissue - structure in LM and EM.

39. Smooth muscle tissue - structure in LM and EM.

40. Neurons – definition, classification, structure.

41. Nerve fibers – definition, classification, structure.

42. Synapses - structure and function.

43. Efferent nerve endings – myoneural junction, structure in EM. Neurotransmitters.

44. Afferent sensitive nerve endings – structure and function.

45. Neuroglia - types, function and origin.

46. Histologic technic - sampling, fixation, embedding to paraffin and sectioning of tissues.

47. Histologic technic - staining in the light microscopy. Hematoxylin eosin staining.

48. The principle of transmission and scanning electron microscope.

II. Microscopic anatomy

1. **Skin and derivatives - glands and hair. Structure and function.**
2. **Heart – microscopic structure.**
3. **General structure of blood vessels. Elastic and muscular arteries.**
4. **Veins - microscopic structure.**
5. **Blood capillaries - microscopic structure, types and function.**
6. **Lymph nodes- structure and function.**
7. **Thymus - structure and function.**
8. **Tonsills - structure and function. Waldayer´s ring.**
9. **Nasal cavity, larynx and trachea - microscopic structure.**
10. **Lungs – microscopic structure and function.**
11. **Pharynx and oesophagus – microscopic structure.**
12. **Salivary glands – secretory part and duct system. Structure, types and differences.**
13. **Tongue - microscopic structure, glands of the tongue. Function.**
14. **Lip, cheak and palate - microscopic structure.**
15. **Microscopic structure of the tooth.**
16. **Periodontal ligaments – structure and function.**

17. Enamel - physical and chemical properties, microscopic structure.

18. Dentine - physical and chemical properties, microscopic structure.

19. Predentin, primary, secondary and tertiary dentin.

20. Cementum - physical and chemical properties, microscopic structure and function.

21. Tooth pulp – microscopic structure, innervation, blood supply, function.

22. Uterus - microscopic structure.

23. Placenta - structure and function.

24. Hypophysis - structure and function.

25. Thyroid and parathyroid gland - structure and function.

26. Spinal cord - microscopic structure.

27. Brain cortex - microscopic structure.

28. Cerebellum - microscopic structure.

29. Dorsal root ganglia and peripheral nerve – microscopic structure.

30. Meninges - microscopic structure.

31. Fibrous layer of the eye - microscopic structure.

32. Vascular layer of the eye - microscopic structure.

33. Retina - microscopic structure.

34. External and middle ear - microscopic structure.

35. Internal ear - bony and membranous labyrinth, organ of Corti - microscopic structure.

III. Embryology

1. **Developmental processes – proliferation, migration, differentiation, growth, death of cells.**
2. **Fertilization, cleavage of the zygote and development of the blastocyst (1st week of embryonic development).**

3. **Implantation and differentiation of the trophoblast and decidua.**

4. **Formation of two-layered embryonic disc. Development of amnion, yolk sac (umbilical vesicle). Development of extraembryonic mesoderm.**

5. **Development of the intraembryonic mesoderm - gastrulation. Notochord development.**

6. **Differentiation of ectoderm. Development of placodes and their derivatives.**

7. **Development of cytotrophoblast, syncytiotrophoblast and primary mesenchyme.**

8. **Development of extraembryonic structures: fetal membranes - chorion, amnion.**

9. **Development of primitive organs of embryo, embryonic epithelium, embryonic mesoderm.**

10. **Differentiation of intraembryonic mesoderm. Development of somites and their derivatives.**

11. **General structure of branchial apparatus. External branchial grooves, branchial membranes – development and derivatives.**

12. **Branchial arches development and their derivatives.**

13. **Pharyngeal pouches development and their derivatives.**

14. **Development of the skull – chondrocranium, desmocranium, viscerocranium.**

15. **Development of neural tube, histogenesis (neuroblasts, spongioblasts).**

16. **Brain vesicles development and their derivatives.**

17. **Development of the eye.**

18. **Development of the ear.**

19. **Folding of embryonic disc. Development of external form of the embryo.**

20. **Development of the face and neck. Congenital anomalies, clefts.**

21. **Development of nasal cavities.**

22. **Development of oral cavity.**

23. **Development of primary and secondary palate.**

24. Development of salivary glands.

25. Development of the tongue.

26. Early stages of tooth development - enamel organ, dental papilla, dental sac and its derivatives. Primary and secondary dental lamina.

27. Amelogenesis, enamel organ, structure and function of ameloblasts during development.

28. Dentinogenesis, dental papilla, structure and function of odontoblasts during development.

29. Tooth pulp and periodontal ligaments development.

30. Development of the root and eruption of the teeth.

31. Development of foregut.

32. Development of larynx and trachea.

33. Early development of primitive blood circulation and primitive heart.