DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY
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Topics for written final exam from subject „Histology and Embryology 2“ for study programme „Dental medicine“, AY 2025/2026

A. DEVELOPMENT AND MICROSCOPIC ANATOMY OF STRUCTURES AND ORGANS IN CRANIOFACIAL REGION (HEAD AND NECK).

1. Branchial (pharyngeal) arches, grooves and their derivates.
2. Pharyngeal pouches and their derivates.
3. Development of the face. Anomalies.
4. Development and microscopic structure of the oral cavity. Anomalies.
5. Development and microscopic structure of the lip, cheek and palate. Clefts.
6. Development and microscopic structure of the tongue. Anomalies.
7. Development, microscopic structure and function of the major and minor salivary glands.
8. Development and microscopic structure of the nasal cavity and paranasal sinuses.
9. Tonsils – microscopic structure and function.
10. Early tooth development – formation of gingival and dental lamina, early developmental stages of decidual and permanent teeth.
11. Development of the root and eruption of the teeth.
12. Amelogenesis. Ameloblasts, their origin, structure and function.
13. Enamel – physical and chemical properties, microscopic structure and function.
14. Dentinogenesis. Origin, structure and function of odontoblasts.
15. Dentin – physical and chemical properties, microscopic structure and function.
16. Predentin, primary, secondary and tertiary dentin – basic characteristics.
17. Cementum – physical and chemical properties, microscopic structure and function.
18. Tooth pulp – development, microscopic structure, function innervation and blood supply.
19. Parodontium (tooth alveolus, periodontium) – microscopic structure, function.
20. Gingiva – microscopic structure, topographic regions and function.
21. Summary of microscopic structure and development of the ear – basic characteristics.
22. Summary of microscopic structure and development of the eye – basic characteristics.
23. Skull – essentials of bones development. Desmocranium, chondrocranium,

viscerocranium. Fontanelles.

24. Temporomandibular joint – development and microscopic structure.
25. Larynx and trachea – development, microscopic structure and function.
26. Pharynx and oesophagus – microscopic structure and function.
27. Thymus – microscopic structure and function.
28. Lymph node – microscopic structure and function.
29. Hypophysis – development, microscopic structure and function.
30. Thyroid gland, parathyroid glands – development, microscopic structure and function.
31. Essentials of development, microscopic structure and function of meninges.
32. Microscopic structure and function of the brain.
33. Microscopic structure and function of the cerebellum.
34. Microscopic structure and function of the spinal cord.
35. Peripheral nerve and nerve ganglia – microscopic structure and function.

B. DEVELOPMENT AND MICROSCOPIC ANATOMY OF STRUCTURES AND ORGANS <u>OUTSIDE</u> THE CRANIOFACIAL REGION.

1. Arteries and veins – types, microscopic structure and differences in their structure.
2. Blood capillaries – types, microscopic structure, location and function.
3. Heart – microscopic structure of the wall and function. Conducting system of the heart.
4. Essentials of the heart development.
5. Skin and skin derivates (skin glands, hair and hair follicle) – microscopic structure and function.
6. Fertilization.
7. Cleavage of the zygote, development and structure of the early and late blastocyst.
8. Implantation. Differentiation of the trophoblast and the embryoblast. Decidual reaction. Decidua.
9. Development of two-layered and three-layered embryonic disc (gastrulation).
10. Development of the human embryo in 3. and 4. week – primitive streak, notochord, primitive cardiovascular system, somites, primitive gut.
11. Development of the neural tube (neurulation). Essentials of central nervous system development (brain, spinal cord). Neural crest and its derivates.
12. Development of the placenta. Microscopic structure and function of fully developed placenta.
13. Derivates of ectoderm, mesoderm and endoderm.