

## SINOPSIS

### for the cytology, general histology and embryology examination – first year medical students

1. Subject, purpose and history of the cytology
2. Introduction in cytology. Methods of the cell study. Principles of cytological, histological, cytochemistry, immunohistochemistry investigations
3. Methods of the cell study - preparation of permanent histological material
4. Methods of the cell study - microscope and different types of microscopes
5. The cell – chemical composition. Hyaloplasm
6. The cell - external morphology
7. The cell - internal morphology and organization
8. The cell membrane – structure and functions. Glycocalyx (Cell coat)
9. The cell membrane - specialized structures of the cell membrane, intercellular junctions
10. Membranous cell organelles - endoplasmic reticulum
11. Membranous cell organelles - mitochondria
12. Membranous cell organelles - Golgi apparatus. Secretory vesicles, coated vesicles.
13. Membranous cell organelles - lysosomes. Peroxisomes
14. Cell nucleus – structure of interphase nucleus: chromatin, nucleolus, nuclear matrix.
15. Cell nucleus – ultrastructural organization: structure of the nuclear envelope - nuclear pores
16. Cell nucleus – chromosomes, structure and replication of DNA
17. Nonmembranous cell organelles - ribosomes, polyribosomes
18. Nonmembranous cell organelles - microtubules and cytofilaments.
19. Nonmembranous cell organelles - cytocenter
20. Specialized cell organelles. Cell inclusions
21. Cytophysiology – vital and mitotic cycle of the cell. Amitosis, mitosis, meiosis.
22. Cytophysiology – cellular metabolism, transmembrane transport
23. Cytophysiology – cellular signaling, cellular reactivity and motility
24. Cytophysiology – cellular differentiation, growth, aging and death
25. General histology – introduction. Tissues – definition, general features, classification
26. Epithelial tissue – general features, types of epithelial tissue
27. Epithelial tissue - surface epithelium
28. Epithelial tissue - glandular epithelium
29. Connective tissue - general features and classification
30. Connective tissue – connective tissues with non-differentiated intercellular substance
31. Connective tissues - connective tissues with fibrous intercellular substance
32. Connective tissues - connective tissues with dense intercellular substance
33. Blood and lymph – blood and lymph plasma: contents, antibodies
34. Morphology and function of erythrocytes, leucocytes, thrombocytes
35. Erythropoiesis – formation of erythrocytes
36. Leucopoesis – formation of granulocytes and agranulocytes
37. Thrombocytopoesis – formation of thrombocytes
38. Muscle tissue – general features. Types of muscle tissue
39. Muscle tissue – skeletal muscle tissue. Muscle contraction
40. Muscle tissue -. smooth and cardiac muscle tissue
41. Nerve tissue – general features. Neuroganglion cells: external and internal morphology. Neurosecretory cells
42. Nerve fibers and their sheaths. Peripheral nerves

43. Terminal section of nerve cells. Synapses - principle of organization, types
44. Neuroglia - types and features
45. Receptor and effector nerve endings – structure and functions
46. Sex cells – female sex cells
47. Sex cells – male sex cells
48. Subject, tasks and methods of general embryology
49. Spermato- and ovogenesis. Ovulation
50. Fertilization
51. Segmentation, blastogenesis
52. Cyclic changes in uterine mucosa
53. Implantation
54. Formation of germ layers and axial organs
55. Derivatives of germ layers. Disturbances in the development - mutations
56. Formation and development of embryonic envelopes
57. Placentation. Structure of the placenta. Umbilical cord
58. Embryonal blood circulation
59. Teratology - teratogenic factors

### **RECOMMENDED LITERATYRE**

1. Junqueira, K., J. Carneiro and K. O. Kelly. Basic Histology, Appleton and Lange, 1995
2. Larsen, William J. Embryology, Churchill Livingstone Inc. 1993.
3. Sadler, T.W. Langman's Medical Embryology, Baltimore, The Williams & Wilkins Co., 1990.
4. Bloom, William & Don W. Fawcett. A Textbook of Histology, Saunders Comp., Philadelphia, 1996.
5. Gray's Anatomy, Churchill Livingstone
6. Snell, R. Clinical Anatomy .Little, Brown and Co. Boston, 1995.
7. Sadler, T.W. Langman's Medical Embryology, Baltimore, The Williams & Wilkins Co., 1990.