Федеральное государственное бюджетное образовательное учреждение высшего образования «Ставропольский государственный медицинский университет» Министерства здравоохранения Российской Федерации
(ФГБОУ ВО СтГМУ Минздрава России)
Кафедра биологии

355000, г. Ставрополь,
ул. Мира, 310
тел. (8652)35-34-42

EXAMINATION QUESTIONS on BIOLOGY for the medical students of the English-speaking Medium

1. The forms of life. Concept of eukaryotes, prokaryotes, viruses.
2. Structural features of a prokaryotic cell.
3. Structural features of the eukaryotic plant cells and eukaryotic animal cells.
4. Structure and functions of the cell surface apparatus.
5. Plasma membrane: chemical composition, structural models of organization, functions.
6. Cytoplasm as inner environment. It's components in eukaryotic cell: cytoskeleton, hyaloplasm, organelles and inclusions.
7. Structure and functions of the endoplasmic reticulum (ER).
8. Structure and functions of ribosomes.
9. Structure and functions of peroxysomes.
10. Structure and functions of lysosomes.
11. Structure and functions of mitochondria. Genetical role of mitochondria.
12. Structural organization and functions of the cell centre.
13. Structural organization and functions of the Golgi apparatus.
14. Specific organelles of plant cell, their structure functions.
15. Plastids. Chloroplast: structure and functions in cell.
16. Structure and functions of an interphase nucleus.
17. Structure and functions of the nuclear envelope.
18. Structure, chemical composition and functions of the nucleolus.
19. Organization of interphase chromatin: euchromatin and heterochromatin. Interrelation between its structure and functional activity. Barr bodies.
20. Structure, chemical composition and functions of the metaphase chromosomes.
21. Types of metaphase chromosomes. Rules of chromosomes.
22. Notion of karyotype. Specificity of human karyotype. Karyogram and ideogram.
23. RNA – nucleic acid, kinds of RNA, molecular structure, localization and role in the cell.
24. DNA – nucleic acid, its molecular structure, localization and role in the cell.
25. DNA replication and its significance.
26. Kinds of cell division. Life cycle of a cell. Cell cycle.
27. Life cycle of a cell and its peculiarities in the different cell populations.

28. Kinds of interphase. Periods of autosynthetical interphase, their characteristics.
29. The characteristics of phases of mitosis and its biological importance.
30. Meiosis: definition, its genetic and biological importance. The characteristics of phases.
31. Gametogenesis: spermatogenesis and oogenesis. The basic differences of spermatogenesis from oogenesis.
32. Amitosis. Kinds of amitosis.
33. Endoreproduction. Concept of endomitosis, its mechanisms and result.
34. Endoreproduction: polytene chromosomes. Importance of polyteny for ontogenesis and experimental genetics.
35. Main concepts of genetics (dominant, recessive, homo- and heterozygous organisms, genotype and phenotype, monohybrid cross and dihybrid cross etc.). To give examples.
36. Hybridologic analysis as base method of a classic genetics.
37. Test cross: definition, essence (have to write examples).
38. Mendel's Laws and their cytological fundamentals.
39. Law of purity of gametes: definition, essence. Cytological fundamentals.
40. Mendelated signs of humans (have to write examples of inheritance of normal and pathological traits as genetical problem).
41. Allelic genes. Interaction of allelic genes: complete dominance, incomplete dominance, codominance, overdominance, allelic exclusion – definition, essence of the gene interaction (have to write example as genetical problem).
42. Inheritance of Rhesus-factor. Rh-conflict during pregnancy between the mother and the fetus.
43. Concept about interaction of non-allelic genes. Position effect: definition, essence of the gene interaction (have to write example as genetical problem).
44. Complementarity: definition, essence of the gene interaction (have to write example as genetical problem).
45. Dominant epistasis: definition, essence of the gene interaction (have to write example as genetical problem).
46. Recessive epistasis: definition, essence of the gene interaction (have to write example of “Bombay phenomenon”).
47. Polymeria: kinds, definition, essence of the gene interaction (have to write example as genetical problem).
48. Linked inheritance. Complete linkage of genes (have to write experiment of Thomas Morgan with drosophila).
49. Linked inheritance. Incomplete linkage of genes: crossing over (have to write experiment of Thomas Morgan with drosophila).
50. Chromosomal theory of Thomas Morgan (the base principles).
51. Chromosomal mechanism of sex determination in populations of animals and human: XX-XO methods, XX- XY methods, ZW- ZZ methods
52. Variability and its kinds. Significance in ontogenesis and evolution.

53. Modificative variability. The normal response of genetically determinated signs. Characteristics of modification.
54. Combinative variability, mechanisms of origin.
55. Mutation variability. A classification of mutations.
56. Gene mutations, mechanisms of origin.
57. Chromosome mutations, classification, mechanisms of origin.
58. Genome mutations, mechanisms of origin, medical significance.
59. Methods of human heredity study: amniocentesis and biochemical methods.
60. Twins method in human heredity study and its importance.
61. Cytogenetic methods in human heredity study.
62. Concept about hereditary illnesses, classification, mechanism of origin.
63. Chromosome diseases associated with autosomes. Classification, mechanisms of origin, phenotypic description, methods of diagnostics.
64. Chromosome diseases associated with sex chromosomes. Classification, mechanisms of origin, phenotypic description, methods of diagnostics.
65. Chromosome diseases caused by chromosomal aberrations. Classification, mechanisms of origin, phenotypic description, methods of diagnostics.
66. Molecular diseases: pathology of structural proteins.
67. Molecular diseases. Pathology of transport proteins: Wilson's disease, hemoglobinopathy (sickle-cell anemia and thalassemia).
68. Molecular diseases. Pathology of fermentative proteins. Tyrosinoses: phenylketonuria, alcaptonuria, albinism.
69. Molecular diseases. Imbalance of carbohydrate exchange: galactosemia, fructosuria.
70. Molecular diseases. Imbalance of lipid and mineral exchange (Tay-Sachs disease and hypophosphatemic rickets).
71. Peculiarities of X- linked inheritance (dominant and recessive). Regularities of inheritance of X-linked signs.
72. Holandric genes. Y-chromosome genes determinated signs.
73. Multiple allelism on example of inheritance of hair colour in rabbits.
74. Genetics of blood groups of ABO system as an example for multiple allelism.
75. The nature of parasitism. Classification of parasites.
76. Classification and description of the type Protozoa.
77. Description of the class Sarcodina. Obligatory and facultative parasites.
78. Entamoeba histolytica: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
79. Description of the class Flagellata. Flagellates as parasites of man.
80. Giardia lamblia (Lamblia intestinalis) : taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.

81. Trichomonas vaginalis: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
82. Leishmanias. Species of leishmanias: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics. Forms of leishmaniasis.
83. Trypanosomes. African and American trypanosomiasis. Species of trypanosomes: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
84. Description of the class Sporozoa. Peculiarities of the morphology of Sporozoa. Sporozoa as parasites of man.
85. Plasmodium vivax: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
86. Toxoplasma gondii: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
87. Balantidium coli: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
88. Notion of helminths: geohelminthes, biohelminthes, contact-transmitted helminthes. Examples.
89. Description and classification of the type Plathelminthes.
90. Description of the class Trematoda. Trematodes as parasites of man.
91. Dicrocoelium lanceatum: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
92. Fasciola hepatica: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
93. Paragonimus ringeri (westermani): taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
94. Opisthorchis felineus: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
95. Taeniarhynchus saginatus: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.

96. Taenia solium: taxonomy, name of the disease and complication, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics. Taeniasis. Cysticercosis.
97. Hymenolepis nana: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
98. Echinococcus granulosus: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics. Peculiarities of larval form (hydatid cyst) development. Geographic distribution and foci of echinococcosis.
99. Alveococcus multilocularis. Peculiarities of larval form (hydatid cyst) development. Geographic distribution and foci of alveococcosis.
100. Diphyllobothrium latum: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
101. Description of the type Nemathelminthes. Nemathelminthes as parasites of man.
102. Ascaris lumbricoides: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage), way and mode of the invasion, diagnostics.
103. Trichocephalus trichiurus: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage), way and mode of the invasion, diagnostics.
104. Trichinella spiralis. Peculiarities of life cycle. Ways of the spread of trichinellosis in synanthropic and natural foci.
105. Enterobius vermicularis: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
106. Ancylostoma duodenale: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
107. Dracunculus medinensis: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
108. Family Filariidae. *Wuchereria bancrofti et brugia malayi*: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.
109. Family Filariidae. *Onchocerca volvulus*: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.

110. Description and classification of the type Arthropoda.
111. Description and classification of Chelicerata, Poisonous Chelicerata.
112. Description and classification of the order Acarina. Acarina as vectors and agents of human diseases.
113. Ixodidae. Significance of Ixodidae as vectors of human infections. *Ixodes ricinus*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance, way of transmition of disease agents.
114. Argasidae. Significance of Argasidae as vectors of human infectious agents. *Ornithodorus papillipes*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance, way of transmition of disease agents.
115. Family Acariformes. Acarus siro: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance.
116. Description and classification of the class Insecta, their ecological and medical importance.
117. Anoplura (Lice). Species of Anoplura. Peculiarities of life cycle. Lice as vectors of human infectious agents. *Genus Pediculus* and *genus Phthirus*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance, way of transmition of disease agents.
118. Aphaniptera (Fleas), peculiarities of life cycle. Fleas as vectors of human infectious agents. *Pulex irritans*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance, way of transmition of disease agents.
119. Description and classification of the order Diptera. Main families, their ecological and medical importance.
120. Family Psychodidae. *Phlebotomus pappatasii*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance, way of transmition of disease agents.
121. Family Culicidae. *Plasmodium vivax*: taxonomy, name of the disease, localization in organism, morphology, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics. Gonotrophic cycle.
122. Family Muscidae (flies). *Musca domestica*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance.
123. Family Muscidae (flies). *Stomoxys calcitrans*: taxonomy, name of the disease, localization in organism, morphology of adult, life cycle of a parasite (pathogenic stage, infective stage and diagnostic stage) , way and mode of the invasion, diagnostics.

124. Family Muscidae (flies). *Glossina palpalis*: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance, way of transmition of disease agents.

125. Wohlfahrtia magnifica: taxonomy, morphology (parts of body, theirs segmentation, mouthparts, sense organs), food of parasite, cycle of development, medical importance.

Зав. каф.биологии,
доцент М.Г.Гевандова