

## **THE EXAM QUESTIONS on the discipline “Biology”**

### **A. Suggested final test questions of the discipline “Biology”**

1. Biology as a science of patterns and mechanisms of functioning and development of organisms.
2. Defining the essence of life. The fundamental properties of living. . Evolutionary-based levels of organization of life.
3. The main stages of development of the cell theory. Cell theory of Schleiden-Schwann, Vi. Modern cell theory.
4. Structure and function of cell membrane organelles.
5. Structure and function of nonmembrane cell organelles.
6. Structural and functional organization of the interphase nucleus.
7. Comparative characteristics of pro- and eukaryotic cells. Distinctive features of the cells of plants and animals.
8. The life cycle of the cell. Characteristics of the interphase.
9. Mitosis: phase and biological significance.
10. Morphofunctional characteristic of the hereditary apparatus of cells.
11. Reproduction - the universal property of living. The evolution of reproduction. Biological aspects of sexual dimorphism.
12. Methods of asexual and sexual reproduction.
13. Cytological and cytogenetic characterization of meiosis.
14. Subject, objectives, methods and stages of development of genetics.
15. The main provisions of the chromosome theory of heredity. Linked inheritance.
16. The gene as a functional unit of heredity. Classification, properties and localizations of gene.
17. Mendel's laws and cytological bases.
18. Sex linkage. Genetics of sex.
19. The regulation of the activity of genes in prokaryotes.
20. Modification variability, its adaptive nature, meaning in ontogeny and evolution. The concept of normal reaction.
21. Mechanisms combinative variability. The value of combinative variability in ensuring the genotypic diversity of people.
22. Mutational variability. Classification of mutations. The concept of genetic mutations. Genetic disease.
23. Chromosomal mutations (aberration). The concept of chromosomal diseases.
24. Genomic mutations. Euploidiya and aneuploidiya.
25. The concept of ontogenesis. Periodization of ontogenesis. The life cycles of organisms as a reflection of their evolution.
26. Cleavage. Types of cleavage. Types blastula.
27. Gastrulation. Methods of gastrulation.
28. Primary and final organogenesis.
29. Embryonic membranes (provisionals organs): structure and physiological significance.
30. Differentiation in development. Stages and differentiation factors.
31. Embryonic induction.
32. The critical periods of development. Teratogenic agents factors.
33. General characteristics and periodization of postnatal ontogenesis of the person.
34. The regeneration of organs and tissues as a process of development. The physiological and reparative regeneration. Methods of reparative regeneration.
35. Pre-Darwinian evolutionary ideas infancy. The evolutionary concept of J.B. Lamark.
36. Darwin's contribution to the development of evolutionary theory. The main provisions of the theory of evolution.
37. The modern synthetic theory of evolution. Population - the unit of evolution.
38. Species - qualitative stage of evolution. Criteria for the species.  
Factors evolution.

39. The main directions of evolution (biological progress and regression). Ways to achieve biological progress (aromorphosis, idioadaptation total degeneration) and its forms.
40. Macro- and microevolution. Characteristic of their results. Speciation and its forms.
41. The position of Homo sapiens in the animal world. The qualitative uniqueness of the person.
42. The ratio biological and social factors in the development of human rights.
43. Race and the unity of the human species.
44. Ecology as a science.
45. Environmental factors. Patterns of action of environmental factors on the body.
46. The concept of ecosystem biogeocoenose, antropobiogeotsenoze.
47. The principles of interaction of the parasite and the host at an individual level. Parasitism as a biological phenomenon. The origin of parasitism.
48. General characteristics of the class Sarcodina. Morphophysiology and the life cycle of dysenteric amoeba. Diagnosis and prevention of amoebiasis.
49. Morphophysiological characteristic of the class Zoomastigophora. The life cycle of pathogens, pathogenesis, diagnosis and prevention of trypanosomiasis.
50. Morphophysiological characteristic of the class Zoomastigophora. The life cycle of pathogens, pathogenesis, diagnosis and prevention of leishmaniasis.
51. Morphophysiological characteristic of the class Zoomastigophora. The life cycle of pathogens, pathogenesis, diagnosis and prevention of trichomoniasis and giardiasis.
52. Class Sporozoa. The life cycle of Plasmodium falciparum. Pathogenesis, diagnosis and prevention of malaria.
53. Morphophysiology, lifecycle and pathogenic effect of the pathogen of toxoplasmosis.
54. General characteristics of the class "Ciliates". The life cycle and pathogenic effect balantidiums. Prevention balantidiaz.
55. Class Flukes. Morphological characteristics and breeding trematodes.
56. Features of biology and pathogenic action of opisthorchosis, fascioliasis and Paragonimiasis.
57. Features of biology and pathogenic action of tropical trematodes.
58. Total morphophysiological characteristic of the class Cestoda.
59. Class Cestoda. The life cycle of pathogens and pathogenic action, diagnosis and prevention and hymenolepiasis dipilobotriosis.
60. Class Cestoda. The life cycle of pathogens and pathogenic action, diagnosis and prevention of echinococcosis and alveococcosis.
61. Class Cestoda. The life cycle of pathogens and pathogenic action, diagnosis and prevention teniasis, cysticercosis and teniarinhosis.
62. Morphophysiological characterization of the class Nematoda.
63. The morphology, development cycle and pathogenic effect ascaris, pinworm, whipworm. Laboratory diagnosis and prevention nematosis.
64. Class Nematoda. The life cycle of pathogens pathogenic action, diagnosis and prevention of hookworm, strongyloidiasis, trichinosis.
65. Class Nematoda. The life cycle of pathogens pathogenic action, diagnosis and prevention of dracunculiasis, onchocerciasis and wuchereriasis.
66. General characteristics of the class Arachnids.
67. Troop mites: morphology, life cycle, medical value.
68. Morphophysiological characteristics and life cycle of the class Insects.
69. Morphology, life cycle and medical importance of insects - ectoparasites (lice, fleas, houses and volfartova flies).
70. Insects - the carriers of infectious and parasitic diseases (gnats, mosquitoes, sandflies, tsetse flies. Midges), morphophysiological characteristics, life cycle and medical importance.

## **B. The microscopic slides**

1. Golgi complex.
2. Mitochondria in the cells of the intestinal roundworm.
3. Inclusion of fat in liver cells amphibian.
4. The inclusions of glycogen.

5. Pigment inclusion in chromatophores tadpole skin.
6. Mitosis in onion of root.
7. Polytene chromosomes.
8. Blastula frog.
9. Frog gastrula.
10. Frog neurula (early).
11. Frog neurula (average).
12. Frog neurula (late).
13. Primary chicken embryo strip.
14. Somites, notochord, neural tube.
15. Trunk and chicken embryo amniotic fold.
16. Lancet fluke.
17. Cat fluke.
18. Lung fluke.
19. Roundworm eggs.
20. Eggs of liver fluke.
21. Eggs of bovine tapeworm.
22. Eggs of broad tapeworm.
23. Eggs of pinworm eggs.
24. Oncosphere.
25. The tick Ixodes.
26. Gamasid mites.
27. Mouthparts of the mosquito.
28. Flea dog.
29. Head louse.
30. Nit.

### **C. The macro specimens**

1. Ascaris (male and female).
2. Wide tapeworm.
3. Liver fluke.
4. Echinococcus.
5. Ascaris (male and female).
6. Wide tapeworm.
7. Liver fluke.
8. Echinococcus.