Assessment tools for midterm assessment

Biology
(1-2 terms)

Code, discipline	31.05.01 General Medicine
Qualification	General Medicine
Form of education	Full-time
Designer Department	Morphology and physiology
Graduate Department	Internal Diseases

TYPICAL TASKS FOR THE CONTROL WORK

CONTROL WORK

List of referats – 1st term:

1. Biology is a field of natural science, a complex of scientific disciplines about life in all its manifestations.
2. The history of ideas about the world of life. Scientific basis of biology.
3. Stages of development of biology science. Goals, objectives and methods of biology.
4. Biological sciences.
5. Optical technology. Mechanical, lighting and optical parts of the microscope.
6. Strategy of life. Adaptation, progress, energy and information support.
7. The main provisions of the cell theory.
8. Differences between prokaryotic and eukaryotic types of cell organization.
9. Features of the structure and functions of the structural elements of the eukaryotic cell.
10. Features of the structure, localization and functions of chromatin of interphase chromosomes.
11. DNA, its structure and function.
12. Stages of genetic information flow in the cell.
13. DNA replication.
14. The main regularities of intracellular flows of substances and energy.
1. The surface apparatus of the eukaryotic cell.
2. The structure and function of the cytoplasmic membrane.
3. Active and passive transport of substances through the plasma membrane.
4. Transport of small particles: active and passive.
5. Characteristics of vesicular transport.
6. Receptor function of the membrane.
7. Supramembrane and submembrane complexes.
8. Liposomes, prospects for their use in medicine.
9. Metabolism and energy conversion in the cell.
10. Stages of energy metabolism.
11. Cell pathology.
12. The main ultrastructural changes in cell organelles under the influence of damaging factors.

List of referats – 2nd term:

1. Biogeocenosis is an elementary unit of the biogeocenotic level of life organization. Evolut ion of biogeocenoses.
2. Human habitat.
3. Man as an object of action of environmental factors. Human adaptation to the environment.
4. Anthropogenic ecological systems.
5. The role of anthropogenic factors in the evolution of species and biogeocenoses.
6. Toxicity of animals as an ecologica l phenomenon.
7. Subject and objectives of medical parasitology.
8. The prevalence of parasitism in nature.
9. Classification of parasitism and parasites. The origin of parasitism.
10. Adaptation to a parasitic lifestyle. Main trends.
11. Cycles of development of parasites and the host organism.
12. Relationships in the parasite-host system at the population level.
13. Natural focal diseases.
14. Type Protozoa.
15. Subphylum Sarcodina.
16. Subphylum Mastigophora.
17. Phylum Ciliophora.
18. Phylum Apicomplexa.
19. The type of flatworms Plathelminthes.
20. Class Trematoda.
21. Class Cestoda.
22. The type of roundworms Nemathelminthes.
23. Class Arachnids Arachnoidea.
24. Class Insects Insecta.
25. Modern concepts of the biosphere.
26. The structure and functions of the biosphere.
27. Evolution of the biosphere.
28. Biogenesis and noogenesis.
29. Ways of human influence on nature

TYPICAL TASKS FOR CREDIT (1st term)

The task on the credit contains 3 theoretical questions.

The task for the indicators of the evaluation of the descriptor «Knows»	**Task type**
Formulate detailed answers to the following theoretical questions: 1. Light microscope design: mechanical, lighting and optical parts. 2. Basic properties of biological systems, evolutionarily determined levels of organization of biological systems. 3. The structure of pro- and eukaryotic cells, their basic physical and chemical properties. Life origin hypotheses. 4. Organelles and their role in the cell. 5. Inclusions and their role in the cell. 6. Molecular organization of the biological membrane. 7. Components of the interphase nucleus. Heterochromatin and euchromatin. 8. Mitotic cycle. The biological essence of mitosis, its importance in the life of the organism. Phases of mitosis, their duration and the essence of the processes occurring in them.	**theoretical**
9. Apoptosis. 10. Biological significance and essence of meiosis. 11. Features of the organization of hereditary material in pro- and	

eukaryotes. 12. Molecular organization and function of nucleic acids. 13. Ontogenesis. Periods of ontogenesis. 14. Gametogenesis. Differences between spermatogenesis and ovogenesis. Morphofunctional and genetic characteristics of germ cells. 15. Fertilization, its phases, biological essence. Partenogenesis. Gynogenesis. Androgenesis. 16. Cleavage. The relationship between the type of eggs and the nature of their cleavage. 17. The embryo at the morula stage. The embryo at the blastocyst stage. Blastocyst types. The embryo at the gastrula stage. Types of gastruli. The main methods of gastrulation. 18. Methods for the formation of mesoderm. Derivatives of the three germ layers. Provisional organs, their difference in anamniotes and amniotes. 19. Postembryonic development. Types of postembryonic development. 20. Genetic regulation of the development of the organism. Contact interaction of cells 21. Hereditary and non-hereditary congenital diseases. Phenocopy, genocopy. Developmental defects. Teratogens; their classificatio n, mechanism of action. 22. Critical periods of embryogenesis. 23. Regeneration. Types of regeneration. Physiological regeneratio n. Reparative regeneration, its importance in the life of organisms. 24. Biological evolution. The history of the formation of evolutiona ry ideas. The essence of Charles Darwin's ideas about the mechanis ms of evolution of living nature. 25. Population is an elementary unit of evolution. The main characteristics of the population as an ecological-genetic system: population area, number of individuals and its dynamics, sex and age structure, morphological and ecological unity. 26. Mutational process and its significance in evolution. Populatio n waves. Periodic and aperiodic changes in population size. Genetic - automatic processes (gene drift). The importance of populatio n waves in changing the genotypic structure of populations. Isolation, its forms and significance in evolution. 27. Phylogenesis of the body’s coverings, musculoskeletal systems. 28. Phylogenesis of the digestive system. 29. Phylogenesis of the respiratory system. 30. Phylogenesis of the circulatory system. 31. Phylogenesis of the urinary and reproductive systems. 32. Phylogenesis of the endocrine and nervous systems. 33. Main tendencies of progressive evolution and phylembryo genesis. Ontophylogenetic prerequisites for congenital malformations of organ systems in humans.	

TYPICAL TASKS FOR EXAM (2nd term)

The exam tasks contain 3 theoretical questions.

The task for the indicators of the evaluation of the descriptor «Knows»	**Task type**
Formulate detailed answers to the following theoretical questions: 1. The main characteristics of living matter. Principles of organization of living matter in time and spaces. Levels of organization of the living. 2. The theory of the origin of life. 3. The main stages of the development of life on Earth (chemica l, prebiological, biological, social). 4. Prokaryotes and eukaryotes. Cellular theory, history, significance for biology and medicine. Prokaryotic and eukaryotic cells. 5. The cell is the main form of organization of living matter. The main structural components of a eukaryotic cell. 6. The mitotic cycle of the cell. Characteristics of the periods. Mitosis, its biological significance. 7. The cell as an open system. Organization of the flows of matter, energy and integration of cells of a multicellular organism. Biologica l substances synthesized in the cell and their significance for medicine. 8. Assimilation and dissimilation as the basis for self-renewal of biological systems. Definition, meaning. 9. Reproduction is the main property of the living. Asexual and sexual reproduction. Forms of asexual reproduction. Definition. Essence, biological significance. 10. Sexual reproduction in protozoa. Conjugation and copulation. 11. Sexual reproduction of multicellular organisms. Morphophysical features of germ cells. the process of fertilization, biologica l significance. 12. Spermatogenesis and ovogenesis. Cytological and cytogenetic characteristics. The biological significance of sexual reproduction. 13. Fertilization. Parthenogenesis. Forms and prevalence in nature. Sexual dimorphism. 14. Meiosis. Features of the first and second division of meiosis. Biological significance. 15. Theories of the problem of development. Premorphism and epigenes is. Their criticism. 16. Developmental biology. Life cycles of development as a reflection of their evolution. Ontogenesis and its periodization. Direct and indirect development. 17. General characteristics of embryonic development: prezygotic period, fertilization, fragmentation, gastrulation, histogenesis and organogenesis. The embryonic membranes of the fetus. The relationship between the maternal organism and the fetus. 18. The main stages of embryogenesis. Germ layers and their derivatives the concept of axial organs. 19. Embryonic induction, differentiation and integration in development. Critical periods of embryogenesis. Developmental abnormalities. 20. Periodization of postembryonic development. The period of growth and formation, the influence of external and internal factors. 21. The role of heredity and environment in ontogenesis. Critical periods of development. Teratogenic environmental factors.	**theoretical**
22. Postnatal ontogenesis and its periods. The role of endocrine glands: thyroid. Pituitary gland, sex glands in the regulation of the vital activit	

y of the body in the postnatal period. The interaction of social and biological in the periods of childhood, youth, adult life and old age.old age. 23. Biological and social aspects of aging and death. Genetic, molecula r, cellular systems and mechanisms of aging. The concept of gerontology and geriatrics. 24. Death as the final stage of ontogenesis. Clinical and biological death. Intensive care. 25. Regenerative processes in the body, types of regeneration. 26. Regeneration as a property of the living to self-renewal and self-healing. Physiological regeneration. Its biological significance. 27. Types of reparative regeneration. Methods of its implementation. 28. Auto- , hemo- and heterotransplantation. Ways to overcome tissue incompatibility, artificial organs. 29. Biological rhythms. The medical significance of chronobiology. 30. The concept of creationism and transformism. 31. J.B. Lamarck's evolutionary theory and its assessment. 32. The history of the formation of the evolutionary idea. The essence of the Ch . Darwin's theory of the mechanism of organic evolution. The modern period of synthesis of Darwinism and genetics. 33. The main provisions of the evolutionary theory of Ch. Darwin. 34. The concept of the species. The reality of the species. The structure of the species. Criteria of the species. 35. The population structure of the species. The genetic structure of the population. 36. Ecological characteristics of populations (number, density, age and sex composition). The Hardy-Weinberg rule: content and mathematica l expression. 37. Elementary evolutionary factors. Mutation process, Fluctuations in Populations, isolation, gene drift. The interaction of elementar y evolutionary factors. 38. Natural selection in populations. Its forms and effectiveness. 39. The population structure of mankind. People as an object of action of evolutionary factors. 40. Micro- and macroevolution. Characteristics of the mechanisms and main results. 41. Evolution and ontogenesis. The biogenetic law of Muler-Haeckel. 42. The theory of phylembryogenesis. Cenogenesis. 43. General patterns of phylogeny of vertebrate and human organ systems (basic concepts and methods of evolutionary morphology. Principles of organ transformation). 44. Evolutionary origins of the chordate brain. 45. Evolutionary origins of the respiratory system of chordates. 46. Phylogeny of the circulatory system of the chordates. 47. Phylogeny of the genitourinary system of chordates. 48. Comparative review of the structure of the chordate skeleton. 49. Malformations of human organs and systems. 50. Anthropogenesis. The biological and social essence of man. Patterns of anthropogenesis.	
51. he concept of races and the species unity of man. Modern classificat ion and distribution of human races. 52. Forms of biological connections in nature. Parasitism as a biologica l phenomenon. Examples. 53. Basic concepts of parasitology. The parasite-host system. 54. Pathways of circulation of pathogens in nature. The hosts and	

mechanism of transmission of pathogens. 55. The life cycle of parasites. The alternation of hosts and the phenomenon of changing hosts. Intermediate and defenitive hosts. 56. Ptozoa. Classification. The characteristic features of the organizatio n. Importance for medicine. 57. Sarcodina. The main representatives. Dysentery amoeba. Morphology, developmental cycle, laboratory diagnostics, prevention. 58. Mastigophora. The most important representatives. Importance for medicine. 59. Systematics, morphology and biology of leishmaniasis pathogens. Laboratory diagnostics, prevention. 60. Trypanosomes. Systematics, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 61. Trichomonas. Systematics, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 62. Malarial plasmodium. Systematic position, morphology, development cycle, species differences. The fight against malaria. The tasks of the antimalarial service at the present stage. 63. Toxoplasma. Systematics, morphology, developmental cycle, pathways of infection. Laboratory diagnostics, prevention. 64. Balantidium. Systematics, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 65. The modern system of the organic world. The origin of life, the origin of multicellular organisms. 66. Helminthology. Its meaning. 67. Phylum Platyhelminthes. Class Trematoda and Cestoda. Taxonomy, morphology, main representatives, meaning. 68. Fasciola hepatica. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 69. Opisthorchis felineus. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 70. Dicrocoelium lanceatum. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 71. Paragonimus westermani. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 72. Schistosomes. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 73. Taeniarhynchus saginatus. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 74. Taenia solium. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, preventio n. Cysticercosis. Ways of infection. Prevention.	
75. Hymenolepis nana. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 76. Diphyllobothrium latum. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. 77. Echinococcus and alveococcus. Systematic position, morphology, development cycle, pathways of infection. Laboratory diagnostics, prevention. Differences in larval stages of development. 78. Phylum Nematode. Classification. Features of the organization, the	

most important members. Importance for medicine. 79. Ascaris. Morphology, life cycle, rout of transsmision. Laboratory diagnostics, prevention. 80. Trichuris trichiura. Classification, morphology, life cycle, rout of transsmision. Laboratory diagnostics, prevention. 81. Enterobius vermicularis. Classification, morphology, life cycle, rout of transsmision. Laboratory diagnostics, prevention. Justification of drug-free treatment. 82. Strongyloides stercoralis. Classification, morphology, life cycle, rout of transsmision. Laboratory diagnostics, prevention. 83. Ancylostoma duodenale. Classification, morphology, life cycle, rout of transsmision. Laboratory diagnostics, prevention. 84. Dracunculus medinensis. Classification, morphology, life cycle, rout of transsmision. Laboratory diagnostics, prevention. 85. Direct and indirect methods are used for the laboratory diagnosis of helminthiasis 86. Annelid worms. Taxonomy, morphology, phylogenetic relationships of polychaete worms with arthropods. 87. Arthropods. Systematics, morphology, development. Importance for medicine. 88. Insects. Taxonomy. The characteristic features of the organizatio n. Medical significance. 89. Arachnids. Taxonomy. The characteristic features of the organizatio n. Medical significance. 90. Ticks. Systematics, morphology, development. Medical significance. 91. Flies. Systematics, morphology, epidemiological significance, methods of control. 92. Lice, fleas. Systematics, morphology, epidemiological significance, methods of control. 93. Mosquitoes. Systematics. The main members, features of malarial and non-malarial mosquitoes. Medical significance, methods of control. 94. Chordates. Taxonomy, morphology. Importance for medicine. 95. Fish and amphibians. Taxonomy, morphology, biogenetic and medical significance 96. Reptiles. Taxonomy, morphology. Features of a progressive organization. Medical significance. 97. Mammals. Taxonomy, morphology. Progressive features of the structure. Medical significance. 98. Definition of the science of ecology. Environment as an ecologica l concept, environmental factors. Ecosystem, biogeocenos is, anthropogenesis.	
99. The subject of human ecology. Biological and social aspects of adaptation of the population to living conditions. Levels of human ecological connections: individual, group, global. 100. Human as a creative environmental factor. The main directions and results of anthropogenic changes in the environment. Nature protection and rational use of natural resources. 101. Biological variability of people and biogeographic characteristics of the environment. Ecological differentiation of mankind. The concept of ecological types of people and their formation. 102. Anthropogenic ecosystems as a result of industrializatio n, chemicalization, urbanization, development of transport. 103. Poisonous animals. Classification, primary and secondary toxic. 104. The biosphere as a natural-historical system. Modern concepts of the	

biosphere: biochemical, biogeocenological, thermodynamic, geophysical, cybernetic, socio-ecological. 105. Humanity as an active element of the biosphere. The noosphere is the highest stage of the evolution of the biosphere. Biomedical aspects of the noosphere.	