МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ДВНЗ «Ужгородський національний університет»
Приймальна комісія

ЗАТВЕРДЖУЮ

Голова приймальної комісії
ДВНЗ «УжНУ»,

_____ проф. Олександр РОГАЧ

_____ 2026 р.

ПРОГРАМА

вступного іспиту для іноземців
з **біології**
для вступників на навчання
для здобуття освітнього ступеня “бакалавр” (“магістр”)
(на основі повної загальної середньої освіти, НРК5)

РОЗРОБЛЕНО

Предметною екзаменаційною комісією

з Біології

Голова комісії: _____Владислав МІРУТЕНКО

Ужгород – 2026

PROGRAM ON BIOLOGY FOR FOREIGN ENTRANTS

Explanatory note

The entrance exam on biology is an integral part of the entrance exam for foreigners. The exam takes the form of testing. The exam can be conducted in face-to-face and remote formats. Participants have 60 minutes to complete the work.

The entrance examinations program is structured by the levels of life organization and consists from the "Introduction" and "Molecular level of life organization", "Cellular level of life organization", "Non-cellular forms of life", "Organic level of life organization", "Supraorganismal levels of life organization" and "Historical evolution of the organic world" sections, which are subdivided by themes. The requirements for participants' knowledge and practical skills on biology of external independent evaluation are determined for each theme.

The entrance examinations program is aimed for evaluation of students' level of knowledge and skills on school subject "Biology", on the basis of which the entrant can:

- characterize the basic biological concepts, patterns, laws and theories, biological phenomena and processes:
- operate the concepts, explaining the processes and phenomena of wildlife if required, and confirming with examples from human life and activities, health care, achievements of biological science;
- compare the processes of life at different levels of life organization (molecular, cellular, organism, population, ecosystem, biosphere) and identify the relationships between them;
- establish causal, functional, structural relationships and patterns in wildlife and classify objects;
- reveal the sequels of bad habits for the body;
- apply knowledge on biology for analysis of situations that arise in different spheres of life;
- carry out the calculations using the mathematical apparatus;
- apply acquired knowledge in the analysis of biological information presented in various forms (graphical, tabular, textual);
- support the conclusions.

Introduction

General properties of life. Levels of life organization: molecular, cellular, organism, tissue, population, ecosystem, biosphere.

Life at the molecular level

Chemical composition of cells. Classification of chemical compounds by their content in organisms. Sequels of insufficient or excessive introduction of chemical elements (I, F, Fe, Ca, K) into human body and management of their insufficiency. Endemic diseases.

Inorganic compounds in organisms. Functions of water, salts and other inorganic compounds in the organism.

Organic compounds in organisms. Composition, properties, and functions of organic compounds. Notion of biopolymers and their monomers.

Carbohydrates: features of the structure, basic properties and functions in living organisms.

Lipids: Features of the structure, basic properties and functions in living organisms.

Proteins: Amino acids, peptides and polypeptides. Their features of structure. Levels of

proteins structural organization. Properties of the proteins. Functions of proteins in living organisms.

Nucleic acids: Nucleotides. Structure, properties and functions of DNA. Rule of base pairing. Structure of the RNA. Types of RNA and their functions. Notion of the gene.

ATP, notion of the macroergic bond.

Cellular level of life organization

Cell organisation. Modern cell theory. Structure of living cell: Membranes, their structure, properties and basic functions. Plasma membrane. Transport of substances across the membranes. Supra-membrane complexes (cell wall, glycocalyx). Sub-membrane complexes (microfibers, microtubules, pellicle). Cytoskeleton and its functions.

Cytoplasm and its components.

Organelles. Single-membranous organelles: endoplasmic reticulum, Golgi apparatus, lysosomes, vacuoles. Double-membranous organelles: mitochondria, plastids and their types (details of their structure and functions). Mutual conversion of plastids. Autonomy of mitochondria and chloroplasts in a cell. Other organelles: ribosomes, polyribosomes, centrosomes and locomotion organelles. Cytoplasmic inclusions.

Cell nucleus: structure and functions. Chromosomes: features of structure and their chemical composition. Homologous chromosomes. Autosomes and sex chromosomes (heterochromosomes). Human karyotype. Chromosome set of the nucleus (haploid, diploid, polyploid).

Eukaryotic and prokaryotic cells.

Cell division. Cell cycle. Interphase. Mitosis. Stages of mitosis.

Meiosis. Stages of meiosis. Conjugation of homologous chromosomes. Crossing over.

Metabolism and energy transformation. Metabolism. Constructive (assimilation, anabolism) and energy (dissimilation, catabolism) metabolism. Energy sources for organisms. Autotrophs (photosynthetic and chemosynthetic organisms) and heterotrophs.

Stages of energy transformation in the body: preparatory, anoxic (oxygenless) and aerobic (oxygen). Aerobic respiration. Fermentation.

Protein synthesis and its stages. Genetic code and its properties. Codon, anticodon, start codon, stop codons. Transcription. Structural and regulatory genes. Exons, introns. Splicing. Reactions of template synthesis (DNA replication, transcription, translation).

Photosynthesis. The main reactions of the light and dark phases of photosynthesis. Significance of photosynthesis.

Non-cellular forms of life

Viruses, prions, and viroids. Viruses, their chemical composition, structure and reproduction. The mechanism of viral entry into the organism and host's cells. Viral effect on the host organism. Prophylaxis of human viral diseases. Role of viruses in ecosystems and human life.

Prions. Viroids.

Organism level of organization in the living world

Bacteria. General characteristics of prokaryotes (bacteria, cyanobacteria). Features of the structure and life processes of prokaryotes (nutrition, respiration, reproduction, spore formation, encystation, conjugation). Interactions of prokaryotes with other organisms (mutualism, commensalism, parasitism). Diversity and role of bacteria in ecosystems and human life. Pathogenic bacteria and bacterial diseases.

Plants. General characteristics of the Kingdom Plantae. Classification of plants. The structure of a plant organism. Features of the organization of unicellular and multicellular plants. Lower and higher plants. Plant tissues: formative (meristem), dermal (epidermis, periderm

(cortex)), main (parenchyma — storage, airborne, assimilative), mechanical (collenchyma, sclerenchyma), conductive (xylem, phloem), their structure and functions. Vascular bundles.

Vegetative organs of plants. Root and its functions. Types of roots. The root system and its types. Root zones and their functions. The root structure in cross section. Modification of the root (tuberous, fasciculated, pneumatophores, prop, climbing, epiphytic, sucking), their biological significance. The concept of dive.

Shoot and its functions. The shoot structure. Branching of the shoots: its significance and types (dichotomous, monopodial, sympodial). Modifications of the shoots: underground and sub-aerial: elongation and shortening. Stem and its functions. Inner structure of wooden stem.

Leaf, its structure and functions. Modification of the leaf. Defoliation.

Generative organs of angiosperms (flower, seed, fruit). Flower is an organ of plant reproduction. The flower structure and functions. Flower formula. Inflorescences, their biological significance. Types of inflorescences (raceme, spadix, capitulum, composite, corymb, umbels, spike, compound spike, panicle, compound corymb, compound umbels.

Seed and fruit: structure and function. Seed and fruit formation. Types of fruits (legume, drupe, capsule, silique, silicle, achene, grain, berry, pome, nut, follicle). Collective fruits, their biological significance. Period of rest and conditions of seed germination. Distribution of fruits.

Processes of life, reproduction and development of plants. Nutrition of plants (mineral nutrition, air supply—photosynthesis). Respiration of plants. Transpiration. Transport of substances. Ascending and descending currents of substances in plants.

Forms of reproduction in plants: sexual and asexual. Spores.

Fertilization. Pollination and its modes.

Growth and development of plants. The concept of the life cycle of higher plants (alternation of generations, sporophyte, gametophyte). Irritability and plant movements. Regulation of vital processes in angiosperms. Adaptation of plants to living conditions.

Plant diversity. Green algae: unicellular (Chlorella, Chlamydomonas) and multicellular (Spirogyra, Ulva, Ulothrix).

Brown algae (Laminaria, Fucus).

Red algae (Phyllophora, Porphyra, Corallina).

Diatoms (Navicula, Pinnularia).

Bryophytes (hairy-cup moss, liverworth, peat moss).

Lycopodiophytes (club-moss, fir moss, stag's horn moss). Equisetophytes (common horsetail, sylvan horsetail).

Pteridophytes (male fern, ostrich fern, watermoss).

Gymnospermes (ginkgo, european yew, thuja, pine, spruce, larch, juniper, cedar, welwitschia, cycas).

Angiospermes. Classes: Monocotyledons and Dicotyledons, and their Families.

General characteristics and features of distribution of different plant taxons.

Fungi and Lichens. General characteristics of the Kingdom Fungi. Fungi structure and processes of life (nutrition, reproduction). Variety of fungi: mushrooms (slippery jack, **brown cap** boletus, cep, agaric honey, champignon, *oyster, fly-agaric* mushroom, **death cup**), molds (Mucor, Penicillium, Aspergillum), yeasts, parasitic fungi (leaf smut, rust, powdery mildew and sponk). Role of fungi in ecosystem and human life.

Lichens as symbiotic organisms. The structure and features of the life of lichens. Variety of lichens (script lichen, shield lichen, orange lichen, old man's beard, **reindeer moss**, Iceland moss). Shape of lichen thallus (crustose, foliose, fruticose). Features and role of lichens in ecosystems and human life.

Kingdom Protista. Unicellular animals. General characteristics. Features of the structure and processes of life (nutrition, respiration, excretion, osmoregulation, motion, irritability, reproduction, encystation). Freshwater organisms (amoebas, euglena, paramecia) and marine organisms (foraminiferans, radiolarians), their role in ecosystem and human life. The role of marine unicellular species in the formation of sedimentary rocks and as "index fossils". The role

of unicellular animals in soil formation. Symbiotic unicellular animals: mutualists, commensals, parasites. Diseases of humans and domestic animals caused by parasitic unicellular animals. Role of unicellular animals in ecosystem and human life.

Kingdom Animalia: general characteristics, principles of classification.

Animal tissues. The general structure of the animal organism: symmetry of the body (bilateral, radial), body cover, locomotor apparatus (external skeleton, internal skeleton, hydrostatic skeleton), body cavity (primary, secondary, mixed), organs, organ systems and their functions. Irritability, motion, nutrition, respiration, excretion, transport of substances, reproduction, animal growth). Types of animal development: direct and indirect (with complete and incomplete transformation). Regulation of functions in multicellular animals. Features of animal behavior. The notion of reflex and instinctive behavior.

Multicellular animals: general characteristics, their distinguishing features from unicellular animals.

Phylum Sponges. General characteristics: features, structure and processes of life. Cell differentiation, type of organization. Biodiversity (freshwater sponge, Venus' Flower Basket, bath sponge). Their role in ecosystem and human life.

Phylum Cnidarians. General characteristics: features, structure and processes of life. Hydra. Biodiversity of cnidarians (jellyfish and polyps). Role of cnidarians in ecosystem and human life. Coral polyps and the formation of coral reefs.

Phylum Flatworms. General characteristics. Biodiversity of flatworms: classes Turbellaria (planarian), flukes (liver fluke and cat fluke), tapeworms (beef and pork tapeworms, dog tapeworm, broad fish tapeworm); features of distribution, structure and processes of life, life cycles. Adaptation of flat worms to parasitism. The harm they cause on the host's body.

Phylum Roundworms (Nematoda). General characteristics. Biodiversity of roundworms and their habitats. Free-living roundworms, their role in the processes of soil formation. Round worms as parasites of plants (root-knot nematode, stem nematode, wheat nematode, sugar beet nematode), animals and humans (maw worm, pinworm, trichina worm), diseases caused by them. Harmful effect of helminths on the organism of the host. Prevention of diseases caused by helminths.

Phylum Ringed worms, or annelids: general characteristics. Biodiversity of ringed worms, their habitats. Bristle worms, or polychaetes (clam worm, sandworm). Oligochaetes (earthworm, sludge worm): structure, life cycles. Role of the earthworms in the processes of soil formation. Leeches (medical leech). Role of ringed worms in ecosystems and human life. Conservation of annelids.

Phylum Mollusks. General characteristics, biodiversity, habitat and way of life. Gastropods (pond snail, Roman snail), Bivalves (swan mussel, oysters, freshwater pearl mussel), Cephalopods (squids, cuttlefishes, octopuses). Characteristics of structure, life processes and distribution. Role of mollusks in ecosystem and human life. Conservation of mollusks.

Phylum Arthropods. General characteristics. Biodiversity of arthropods, their habitats and way of life.

Class Crustaceans. General characteristics, features of external and internal structure, processes of life, their habitat. Biodiversity of crustaceans (river crayfish, crab, shrimp, wet, daphnia, shit, cyclops, branchiura). Their role in nature and human life. Crustacean conservation.

Class Arachnoidea. General characteristics, external and internal structure of body, metabolic processes, habitat. Biodiversity of Arachnoidea (Order Araneae (spiders), Order Acari (ticks and mites)). Their role in nature and human life.

Class Insecta. General characteristics, habitats. External and internal structure of body, metabolic processes. Types of mouth parts. Functions of the body fat. Adaptation to flight. Insects behavior. Types of development. Pupa stage and its biological significance. Biodiversity of insects. The order of insects with incomplete metamorphosis (Order *Orthoptera*, Order Anaplura (lice)) and complete metamorphosis (Coleoptera or Beetles, Lepidoptera, or Butterflies, Hymenoptera, Diptera, Siphonaptera or Fleas). Characteristics of orders, typical

representatives, role in nature and human life. Domestic insects. Using of insects in the biological pest control methods. Insect conservation.

Phylum Chordata. General characteristics, habitats. Biodiversity of chordates.

Subphylum Acrania. General characteristics. Class Cephalochordata. External and internal structure of body, metabolic processes of lanceolate.

Subphylum Chordata. General characteristics. Class Chondrichthyes. The structure and metabolic processes. Biodiversity of cartilaginous fishes (sharks and rays). Role in nature and human life.

Class Osteichthyes (Bony fish) External and internal structure of body, metabolic processes. Fish behavior. Spawning, caring for the offspring. Biodiversity of bony fish (Order Acipenseriformes, Order Clupeiformes,order Salmoniformes, order Perciformes, order Cypriniformes. Superorder

Crossopterygii and Dipnoi. Their characteristics and typical representatives. Role in nature and human life. Fishing. Rational use of fish resources. Fish farming. Fish conservation.

Class Amphibia. General characteristics. How structure of the body and metabolic processes depends on terrestrial life. Biodiversity of Amphibians (order Salientia (frogs, toads), Order Caudata (salamanders, newts), order Gymnophiona (caecilians). Features of the organization, representatives. Role in nature and human life. Amphibians conservation.

Class Reptilia. External and internal structure of body, metabolic processes. Seasonal phenomena in the life of reptiles. Adaptations of reptilian to terrestrial life. Biodiversity of reptilian: lizards, turtles, crocodiles. Features of the organization, representatives. Role in nature and human life. Reptilian conservation.

Class Birds (Aves). External and internal structure of body, metabolic processes. Birds are warm-blooded (endothermic) animals. Flight feather. Seasonal phenomena in bird's life. Migratory, nomadic, sedentary type of birds. Migration of birds and methods of their research. Reproduction and development of birds: marriage behavior, arrangement of nests. The structure of the bird's egg and its incubation. Brood and breeding birds. Semi-precocial or semi-altricial chicks. Biodiversity of birds: ostriches, kiwis, cassowaries, penguins, order Piciformes (the woodpeckers), order Galliformes (the turkey, grouse, chicken), order Anseriformes (the ducks, geese, swans), order Falconiformes (the falcons and caracaras), order Strigiformes (the owls), order Gruiformes (crested crane, rails), order Ciconiiformes (storks), order Passeriformes (Palestine sunbird, blue jay, house sparrow, great tit, hooded crow, southern masked weaver). Features of the organization, representatives. Role of birds in nature and human life. Aviculture. Birds conservation.

Class Mammals. General characteristics. Habitat. External and internal structure of body, metabolic processes. Features of breeding and development of mammals. Mammalian behavior. Seasonal phenomena in the life of mammals. Mammalian biodiversity. Oviparous animals. Infraclass Marsupialia. Placentalia: the order Insectivora, order Chiroptera, order Rodentia, order Carnivora, order Artiodactyla, order Equiformes, order Primates. Features of the organization, representatives. Role of birds in nature and human life. Mammalian conservation.

Lifestyle, external and internal structure of body. Distribution in the nature of the representatives, their biodiversity. Role of mammals in nature and human life.

The Human. Human taxonomic position within the living world.

Human tissue types (epithelial, muscular, nervous, tissues of internal environment: connective, blood, skeletal) their structure and functions. Functional system of organs.

Human skeletal and locomotive system. Bone and cartilage tissues. Chemical composition, structure, growth and bone joints. Human skeleton structure.

Muscle tissue. Structure and function of skeletal muscles. Major groups of muscles. Mechanism of muscle contraction. Work, tone, strength and muscle fatigue. Physical inactivity.

Internal environment of human body. Homeostasis. Blood composition and functions. Structure and composition of RBCs, leukocytes and platelets. Blood groups. Blood transfusion. Blood coagulation. Immunity, types of immunity. Phagocytosis Immune system. Allergic

reactions of the organism. Haematopoiesis and anaemia.

Functions and structure of the circulatory and lymphatic systems. Systemic and pulmonary circulations. The structure of the heart. Characteristics of the heart muscle. Heart automatism. Heart cycle. The work of the heart and its regulation. Heart rate, systolic and cardiac output.

Blood vessels, their structure and functions. Blood circulation. Blood flow in vessels. Vascular tone. Blood pressure.

Lymph and its composition. Lymphatic system, its structure and functions.

External and cellular respiration. Functions and structure of the respiratory organs. Gas exchange in lungs and tissues. Respiratory movements and their regulation. Voice.

Feeding and digestion. Structure and functions of the digestive system. Digestive glands. Digestion in the oral cavity, stomach, intestines. Teeth. Parenteral digestion. Absorption. Regulation of digestion. Energy needs of the organism. Standards and hygiene of nutrition. Vitamins, their properties. Avitaminosis, hypo- and hyper-vitaminosis.

Excretory system (urinary tract, respiratory, digestive, and skin).

Functions and structure of the kidneys. The structure of the nephron. Formation and excretion of urine.

Structure and functions of the skin. Thermoregulation. Tempering.

Endocrine system. Hormones Functions of endocrine and mixed glands. Effects of endocrine glands dysfunction. Humoral regulation.

Nervous system: central and peripheral. Structure and functions of the spinal cord and brain. Regulation of motor activity. Vegetative nervous system (sympathetic and para-sympathetic). The influence of the vegetative nervous system on the activity and functions of the organism. Nervous regulation. Reflex. Reflex arc.

Sensory systems, their significance. Functions and structure of sensor systems. General properties of touch systems. The organs of the senses. Receptors. Structure and functions of the organs of vision, hearing and balance. Perception of objects, light, color, sound and balance of the body. Hygiene of hearing and vision.

Human higher nervous activity. Instincts. Unconditioned and conditioned reflexes. Formation of conditioned reflexes. Temporary nerve bond. Brain reflex inhibition. Dynamic stereotype. Physiological basis of speech. First and second signal systems. Thinking and consciousness. Feeling, perception, attention, memory and its types, emotions. Personality. Types of temperament. Disposition. Giftedness, ability. Sleep and its importance.

Influence of alcohol, drugs, toxins and tobacco smoke on the human body.

Reproduction. Modes of reproduction: asexual and sexual. Types of asexual reproduction of single-cell (division, schizogony, budding, sporogenesis) and multi-cellular organisms (vegetative reproduction, sporogenesis).

Polyembryonia. Parthenogenesis. Conjugation. Copulation. The process of germ cells formation (gametogenesis).

Fertilization and its forms. Gonochoric and hermaphroditic organisms.

Individual development. Ontogenesis. Human development. Periods of human development.

Embryonic period of development, its stages in animals. Stem cells. Post-embryonic period of development, its types and stages in animals and humans. Pubescence.

Features of post-embyonic development in plants.

Growth, its types and regulation. Regeneration. Life cycle. Simple and complex life cycles. The alternation of different generations in the life cycle.

Heredity and variation. Methods of genetic researches. Genetics key terms: gene, genotype, phenotype. allele, locus, dominant and recessive traits, homozygotes, heterozygotes, genotype, phenotype, gene pool, heredity, variability, pure line.

Laws of inheritance. Mendelian laws of inheritance and their statistical features. Gene interaction.

Chromosome theory of inheritance. Genetics of sex. Cytoplasmic inheritance.

Modification (non-heritable) variation and its properties. Heritable variation and its types: combinations and mutations. Mutations. Types of mutations. Mutagenic factors.

Genome organization in various groups of organisms. Cytoplasmic heredity.

Laws of variability. Modification (non-heritable) variability, its properties and statistical rules. Rate of reaction. Variation series. Variation curve.

Hereditary variability and its types: combinative and mutational. Types of mutations. Mutagenes. Spontaneous mutations. The law of homologous series of heritable variability.

Biotechnology, genetic and cellular engineering. Genetically modified and chimaera organisms.

Ecosystem level of organization

Ecological factors. Ecological factors: abiotic, biotic and anthropogenic. Limiting factor. The law of optimum. Ecological valency of the species (limits of endurance). Euryecic and stenoecic organisms. Interaction of environmental factors. Types of biotic interactions (competition, predation, parasitism, mutualism, commensalism). Adaptation. Adaptive biological rhythms of organisms. Photoperiodism. Biological rhythms.

Habitat. Major types of habitat of living organisms: aerial, aquatic and terrestrial. The living organism as the special type of habitat. Life forms of organisms.

Population and species. Biological species. Species criteria. Area. Ecological niche. A population. Population characteristics. Population fluctuations. Gene pool.

Ecosystems. Energy transformation in ecosystem. Producers. Consumers. Decomposers. Ecological pyramids. 10% rule.

Food chains. Trophy level. Trophy net. The rule of the ecological pyramid. Types of ecological pyramids.

Ecosystem development. Succession. Self-regulation of ecosystems. Agrocenosis.

Biosphere. Noosphere. The living matter of the biosphere, its properties and functions. Circulation of substances and energy flows in the biosphere as the necessary conditions for its existence.

Modern ecological problems: growth of the planet's population, erosion and soil contamination, growth of large cities, destruction of forests, irrational use of water and energy resources, possible climate changes, negative impacts on biodiversity.

Protection of species diversity of living organisms. Protected areas (biosphere reserves and nature reserves, nature reserves, national and landscape parks). The concept of ecological network. Legislation of Ukraine about environmental protection. Basic documents of nature conservation activities (Red Book, Green Book, White and Black Lists). International cooperation in the field of nature protection.

Evolution of living world

Fundamentals of Evolutionary Doctrine. Evolution. Phylogeny. Phylogenetic series. Main propositions of Darwin’s theory of evolution. Divergence, convergence, parallelism. Similar and homologous organs. Rudiments and atavisms. Mimicry and its species.

Synthetic theory of evolution. Microevolution. Natural selection. Species formation. Macroevolution. Biological progress (aromorphosis, idioadaptation, degeneration) and regression (relicts).

Historical development and diversity of the organic world. Modern system of the organic world. Principles of classification of organisms. Taxonomic units.

The division of the geological history of the Earth into an era, periods and epoch. The main events that occurred in one or another geological periods of Earth's history.

INDICATIVE QUESTIONS FOR TRAINING

1. General properties of life. Levels of organization of life. Research methods in Biology.

2. Chemical composition of cells. Functions of water, salts and other inorganic compounds in the organism.
3. Organic compounds in cells. Notion of biopolymers and their monomers.
4. Carbohydrate structure and functions. Structure and functions of lipids. Protein structure and functions. Structure and properties of enzymes.
5. Structure, properties and functions of nucleic acids (DNA, RNA). ATP.
6. Biologically active substances (vitamins, hormones) and their functions.
7. General propositions of modern cell theory. Cell types (prokaryotic and eukaryotic).
8. Plasma membrane. Transport across plasma membrane. Cytoplasm.
9. Double-membranous organelles: mitochondria, plastids. Single-membranous organelles: endoplasmic reticulum, Golgi apparatus, lysosomes, peroxisimes. Non-membranous organelles of the cell: ribosomes, cytoskeleton, centrosome.
10. Cell nucleus: structure and functions. Chromosomes: features of structure and their chemical composition.
11. Cell cycle. Mitosis. Stages of mitosis.
12. Meiosis. Stages of meiosis.
13. Anabolic and catabolic pathways of metabolism. Autotrophy and heterotrophy. Aerobic and anaerobic respiration. Photosynthesis.
14. DNA replication. Genetic code and its properties. Protein synthesis. Transcription. Translation.
15. Chemical composition, structure and reproduction of viruses.
16. Prokaryotic cell structure. Life processes of bacteria. Role of bacteria in ecosystems and human life.
17. Kingdom Plantae: general characteristics. Plant tissues. Vegetative and reproductive organs of plants. Life processes of plants.
18. Biodiversity of plants. Role of plants in ecosystems and human life.
19. General characteristics of fungi. Fungi structure. Role of fungi in ecosystems and human life. Lichens and their role in ecosystems and human life.
20. Protista: general characteristics.
21. Kingdom Animalia: general characteristics. Biodiversity of animals (chidarians, flatworms, roundworms, annelids, molluscs, arthropods, chordates).
22. Role of animals in ecosystems and human life.
23. Human taxonomic position within the living world.
24. Structure and functions of human tissue types (epithelial, muscular, nervous and connective tissues).
25. Internal environment of human body. Blood composition and functions, circulation. Lymph. Homeostasis.
26. Human respiratory system: structure and functions.
27. Human digestive system: organs structure and functions. Nutrition. Energy demand in human. Major stages of catabolism of proteins, carbohydrates and fats in humans.
28. Human excretory system: structure and functions.
29. Nervous and humoral regulation of activities in human body. Human endocrine system: structure and functions. Human nervous system: structure and functions. Reflex, reflex arc.
30. Human sensory systems (vision, auditory, olfaction, gustatory, somatic sensation): structure and functions.
31. Higher nervous activity. Conditioned and unconditioned reflexes.
32. Modes of reproduction: asexual and sexual.
33. Heredity and variation. Methods of genetic researches. Gene, genotype, phenotype.
34. Mendelian laws of inheritance and their statistical features. Gene interaction.
35. Chromosome theory of inheritance. Genetics of sex. Cytoplasmic inheritance.
36. Modification (nonheritable) variation and its properties. Heritable variation and its types: combinations and mutations. Mutations. Types of mutations. Mutagenic factors.

37. Artificial selection and its forms.
38. Ecological factors: abiotic, biotic and anthropogenic. Types of biotic interactions (competition, predation, parasitism, mutualism, commensalism). Biological rhythms.
39. Major types of habitat of living organisms.
40. Biological species. Species criteria. Area. Ecological niche. A population. Population characteristics. Population fluctuations. Gene pool.
41. Ecosystems. Energy transformation in ecosystem. Producers. Consumers. Decomposers. Ecological pyramids 10% rule.
42. Biosphere. Components of the biosphere. Properties and functions of biotic component of biosphere. Noosphere. Modern ecological problems.
43. Main propositions of Darwin's theory of evolution. Factors of evolution: gene flow, genetic drift, natural selection.
44. The concept of microevolution. Types of speciation.
45. The results of evolution: biological diversity and adaptations of organisms to their environment.

EVALUATION CRITERIA, EVALUATION STRUCTURE, PROCEDURE FOR ASSESSING THE READINESS OF ENTRANTS

The entrance test in biology is a written control of the entrant's knowledge. Written entry work is rated from 100 to 200 points. The total number of written assignments is 25. All tasks are short-answer. If done correctly, the entrant receives 4,8 points for it, otherwise – 0 points. It takes 60 minutes to complete the work.

Assessment of works on the entrance exam is carried out according to the following formula: 100 +k*4,8, where k – the number of correct answers.

An applicant, who scores less than 100 points on the entrance exam, receives a "failed" grade.

КРИТЕРІЇ ОЦІНЮВАННЯ, СТРУКТУРА ОЦІНЮВАННЯ, ПРОЦЕДУРА ОЦІНЮВАННЯ ПІДГОТОВЛЕНОСТІ АБІТУРІЄНТІВ

Вступне випробування з біології – це письмовий контроль знань вступника. Письмова вступна робота оцінюється від 100 до 200 балів. Загальна кількість письмових завдань – 25. Усі завдання є завданнями з короткою відповіддю. Якщо воно виконане правильно, абітурієнт отримує за нього 4,8 бали, в іншому випадку – 0 балів. На виконання роботи відводиться 60 хвилин.

Оцінювання робіт на вступному іспиті здійснюється за наступною формулою: 100 +k*4,8, де k – кількість правильних відповідей.

Вступник, який набрав менше 100 балів із вступного випробування, отримує оцінку «не склав».

References

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3. Reece J.B., Urry L.A., Cain M.L., et al. (2014). Campbell biology. Boston: Pearson, 1488 p.