Ministry of Health Care of Ukraine
Ivano-Frankivsk National Medical University

"Approved"
Head of Admission Committee
Rector of Ivano-Frankivsk
Medical University
Professor M.M. Rozhko
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PROGRAMME
of interview in Biology

for foreigners and individuals without citizenship according to the Chapter XIII of the Admission Rules to the Ivano-Frankivsk National Medical University in 2017

Ivano-Frankivsk – 2017

Explanatory Note

At the interview in Biology the the university entrant must show

a) knowledge of major concepts, laws relative with the structure, life and development of plant, animal and human organisms;

b) knowledge of morphological features and life of plants, animals, fungi, prokaryotes and humans;

c) knowledge of major groups of plants and classification of animals;

d) the ability to justify conclusions, concerned about the explanation of natural phenomena with an illustration from the practice of agricultural and industrial production, health.

List of Questions for an Interview
MAIN PARTS

Introduction. General Biology.

1. Biology - the complex science of wildlife. Relationship of biology with other sciences.
2. Basic methods of biological research.
3. The current definition of life, its main features. Levels of organization of living matter.

Molecular Level of Organization of Life

4. The elemental composition of living organisms. Water and other inorganic compounds cells.
5. Organic compounds of living systems. Structure, properties and values of fat and carbohydrates.
6. Structure, properties and biological significance of proteins.
7. Enzymes and their role in the body. ATP, its structure and function.
8. Nucleic acid. DNA. Samopodvoyennya DNA. DNA code.
9. Protein biosynthesis and its stages. Cellular level of organization of life.
10. Key provisions of the cell theory. Structural features of prokaryotes and eukaryotes cells.
11. Cell - structural and functional unit of living. Methods of cytological investigations.
12. Chemical composition and molecular structure of cell membranes, the role of membranes.
13. Cytoplasm and its main components.
14. Photosynthesis.
15. Nucleus and its components. The biological role of the nucleus.
16. The structure of mitotic chromosomes. Karyotype.
17. The cell life cycle. Interphase. Mitosis and its phases.
18. Asexual reproduction of organisms, its biological significance.
19. Sexual reproduction of organisms. Structure of gametes.
20. Meiosis and its phases. The biological significance of meiosis.
21. Gametogenesis (formation germ cells). Fertilization and its forms.

22. Metabolism (metabolic rate). Plastic (assimilation) and energy (dissimilation) exchange. Stages of energy metabolism.

Noncellular Forms of Organization of Life.

23. Noncellular forms of life - viruses. Structure and properties of viruses.
24. Prions. Diseases of humans and animals, cause by prions.

Organismal level of Organization of Life

25. Drobyanky. General characteristic of the kingdom.
26. The value of nature and human life representatives of kingdom Drob'yanky.
27. Bacteria. Structure, livelihoods, nutrition and reproduction.
28. General characteristics of kingdom Plants.
29. General characteristics of algae. Department Green algae (for example, Chlamydomonas and ulotryks).
30. Department of Diatoms algae . Features of the structure, life processes and distribution. The role of diatoms in nature and human life.
31. Division of brown and red algaes. Features of the structure, life processes and distribution. The role of these algaes in nature and human life.
32. Mosses. General characteristics. Features of the structure, reproduction, the value of nature and human life.
33. Pteridophytes. General characteristics, structure, reproduction, and their importance in nature and in human life.
34. Lycopsids and Horsetail. General characteristics, structure and reproduction, and their importance in nature and human life.
35. Department of Gymnosperms. General characteristics, structure and reproduction.
36. Variety of gymnosperms, and their importance in nature and human life.
37. Root and its functions. Types of roots. Types of root systems.
38. External and internal structure of the root.
39. Mutation of roots and their functions.
40. Sprout, its structure and function. Variebility of sprouts. Development of shoot buds.
41. Stem - axis escape. Functions of the stem. Growth of stem in length.
42. The internal structure of the stems of woody plants. Formation of annual rings.
43. Mutation of the sprout and its parts.
44. Leaf. External structure of the leaf. Functions of leaf.
45. The internal structure of the leaf. Mutation of the leaf.
46. Vegetative reproduction of plants, its types and biological significance.
47. Flower - a body of seed reproduction of plants. Structure and variability of flowers.
48. Floscule, their variability and biological significance. Fertilization and its ways.
49. Fertilization in flowering plants. The structure of the seed.
50. A variability of fruits. Spread of fruits.

51. Movement inorganic and organic substances through the stalk.
52. Absorption of water and minerals from the soil. The soil and its significance in the life of plants. The concept of fertilizers.
53. General characteristics of angiosperms and their classification.
54. Variability of angiosperms and their classification.
55. Characteristic of class Dicotyledones. Family Cruciferous (Cabbage). Characteristic features, variety, biological characteristics and economic value.
56. Characterization of class Dicotyledones. Family Rose (pink). Characteristic features, variety, biological characteristics and economic value.
57. Characterization of class Dicotyledones. Family Fabaceae and Solanaceae. Characteristic features, variety, biological characteristics and economic value.
58. Characterization of class Dicotyledones. Family Compositae (Asteraceae). Characteristic features, variety, biological characteristics and economic value.
59. Characterization of class Monocots. Family Liliaceae and Cereals. Characteristic features, variety, biological characteristics and economic value.
60. Kingdom Fungi. General description of the kingdom. Cap mushrooms, especially their structure and processes of life.
61. Mould fungi. Mukor. Penicillium. Yeast.
62. Mushrooms - parasites of plants. The value of fungi in nature and farming rights.
63. Lichens. Features of the structure, nutrition and reproduction. The role of lichens in nature and human life.
64. Zoology - the study of animals. General characteristics of the animal kingdom. Terms of animals in the organic world, their main features.
65. The concept of systematic units in zoology.
66. General characteristics of subkingdom celled animals. Features of the structure and processes of unicellular life.
67. Amoeba.Momement, nutrition, respiration, excretion, reproduction, formation of cysts.
68. Green euglena, structure and characteristics of supply.
69. Parasitic unicellular organismes: dysentery amoeba, trypanosomy, malaria plasmodium. Their structure, life cycle development, ways to prevent infection.
70. Infusorium. Structure, the basic processes of life. Irritability.
71. Marine unicellular : foramenifera, radiolarians. Soil unicellular.
72. General characteristics of the type of Cnidaria.
73. Features of the structure and processes of life for example coelenterates hydra.
74. A variety of marine coelenterates.
75. General characteristics of the type of Flatworms.
76. Characteristic of class Ciliata worms at the example of planarian.
77. Characteristic of class Flukes: structural features, distribution and life processes.
78. Liver flukes, its structure, life cycle development, ways to prevent infection.
79. Cat flukes, its structure, life cycle development, ways to prevent infection.
80. Class Cestodae worms, characteristics, structure and processes of life.
81. Taenia saginata, its structure, life cycle development, ways to prevent infection.

82. Pork tapeworm, its structure, life cycle development, ways to prevent infection.
83. Dyphylobotrium latum, its structure, life cycle development, ways to prevent infection.
84. Echinococcus, its structure, life cycle of development, ways to prevent infection.
85. General characteristics of the type Nematodes.
86. Human roundworm. Structure, development life cycle, how to prevent infection.
87. Pinworms and Trichinella. Their structure, life cycle development, ways to prevent infection.
88. General characteristics of type Annelida.
89.Polycheta (nereyis). The value of nature and human life.
90. Olygocheta (tubifex). Role of worms in the processes of soil formation.
91. Class Leeches (medical leech) value in medicine.
92. General description of the type of shellfish.
93. Characteristics of the class Gastropoda. Role of gastropods in nature and human life.
94. Class Bivalves. Features of bivalve molluscs. The role of bivalves in nature and human life.
95. Class Cephalopods. Features of cephalopods. The role of cephalopods in nature and human life.
96. General characteristics of the type of Arthropods.
97. Crustaceans. General characteristics of the class.
98. A variety of crustaceans and their economic value.
99. General characteristics of class Arachnida an example spider.
100. Ticks. The outer structure. The value of nature and human life.
101. General characteristics Class Insects. Reproduction. Types of insects.
102. Oders of insects with incomplete metamorphosis: Orthoptera, Lice. Characteristic of oders representatives.
103. Oders of insects with complete transformations: coleopteran (beetles), Lepidoptera (butterflies). Hymenoptera. Characteristic of representatives.
104. Oders of insects with complete transformations: Flies, Fleas, characteristic of representatives. The role of insects in nature and human life.
105. Apply of insects in biological methods of pest control in agriculture. Privacy of insects.
106. General characteristics of the type of Chordata. Variety of chordates.
107. Class Cephalohordata. External and internal structure, especially the vital processes at the example of Amphioxus.
108. Class Chondrichthyes, general characteristics.
109. Variety of cartilaginous fish (rows sharks, rays). The economic significance of cartilaginous fish.
110. Class of bony fish, general characteristics.
111. A variety of Bony fishes
112. Reproduction, spawning and development of fish.
113. Class Amphibians, general characteristic of class.
114. Reproduction and development of amphibians. Seasonal events in the life of amphibians.
115. A variety of amphibians. The importance of amphibians in nature and human life. Privacy amphibians.
116. Class Reptiles, general characteristic of the class.

117. A variety of reptiles. Series: Scaly, Turtles, Crocodiles. Value of reptiles in nature and human life. Privacy reptiles.
118. General characteristics of the class Birds. External structure, covering the body. Skeleton. Muscles.
119. The internal structure of birds: digestive, respiratory, circulatory, excretory, nervous, reproductive system. Senses.
120. Reproduction and development of birds.
121. Seasonal events in the life of birds. Sedentary, nomadic and migratory birds. Flights of birds.
122. A variety of birds.
123. A variety of birds (series: Woodpeckers, Falconiformes, Herons).
124. The value of birds in nature and human life. Poultry. Protection of Birds.
125. Mammals, general description of a class. Habitat. The outer structure. Skeleton. Muscular system.
126. Features of the internal structure of mammals. The digestive system. Respiratory. circulatory, nervous, reproductive, excretory system. Senses.
127. Reproduction and development of mammals. Caring for offspring.
128. A variety of mammals.Marsupials. Placental mammals (bats and insectivorous number).
129. A variety of mammals. Characteristic of oders: Rodents, Carnivores, Pinnipeds, Cetaceans.
130. A variety of mammals. Characterization of oders: Artiodactyles, Primates.
131. Meaning mammals in nature and human life. Livestock. Privacy mammals.
132. Human. Man's position in the organic world.
133. Fabric of the human body, their types. Structure and function.
134. The basic idea of the nervous system and its role in the regulation and coordination functions.
135. Structure and function of the spinal cord.
136. Structure and function of the brain.
137. Autonomous (vegetative) nervous system, a role in the regulation of the internal organs.
138. Humoral regulation. Hormones and their biological effects.
139. Endocrine glands of man and their functions.
140. Mixed glands secretion their functions.
141. The value of the locomotor system. Human skeleton: structure and structural features of the skeleton in relation to bipedal locomotion.
142. Types of communication bones. Composition, structure and properties of bone.
143. Muscles, their structure and function. Regulation of muscles.
144. The main groups of muscles of the human body.
145. Work of muscles, fatigue of muscles. Effect of exercise and work on the musculoskeletal system of humans.
146. Functions, composition and significance of blood.
147. Platelets, their structure and function. Coagulation.
148. Blood groups.
149. Immunity and its species.
150. Structure and heart function. Nervous and humoral control of the heart.
151. The structure of the blood vessels. Large and small circulation.

152. The movement of blood through the vessels. Regulation of circulation.
153. Structure and function of the respiratory system.
154. Gas exchange in the lungs and tissues.
155. Respiratory movements and their regulation. Hygiene breathing.
156. Structure and function of the digestive system. Methods of etching.
157. The structure of the mouth. Digestion in the mouth.
158. The structure of the stomach. Digestion in the stomach.
159. Structure and function of small and large intestines.
160. Vitamins and their importance in metabolism.
161. Structure and function of the urinary system.
162. Structure and function of the skin. Occupational skin.
163. Visual Analyzer. Structure and function of the organs of vision. Hygiene of view. Preventing its violation.
164. Analyzer hearing. Structure and function of the hearing. Occupational hearing.
165. Higher nervous activity of man as the basis of human behavior.
166. Unconditioned and conditioned reflexes.
167. Inhibition of conditioned reflexes.
168. Man's consciousness as a function of the higher parts of the brain.
169. Physiological basis of language and thought.
170. Perception of stimuli as the initial stage of mental processes. Types of memory.
171. Sleep, its value. Hygiene of sleep.
172. Biological adaptive rhythms in man.
173. The Descent of Man. Driving forces anthropology.
174. The evolution of man. The main stages of the historical development of the species Homo sapiens.
175. Subject, tasks and methods of genetics. The concept of the genotype. Allelic genes. Homozygotes and heterozygotes.
176. Uniformity of first-generation hybrids. Cytological basis of uniformity of the first generation. The interim nature of inheritance.
177. Law of cleavage of s signs. The statistical nature of the phenomenon of splitting. Cytological basis splitting displays signs in the second generation. The law of purity of gametes.
178. The law of independent inheritance and its cytological basis.
179. Phenomenon linked inheritance. Debonding.
180. Chromosomal theory of heredity.
181. Genetics article. Inheritance, linked with sex.
182. The interaction of genes and their types.
183. The role of the interaction of genotype and environment in shaping the phenotype. Modification variability. Norms of reaction. Statistical regularities modification variability.
184. Hereditary variability and its types. Mutational variability. Types of mutations.
185. Mutations (somatic, generative, spontaneous and induced). The frequency and causes of mutations. The concept of mutagens. Artificial obtain mutations.
186. The law of homologous series of genetic variability of organisms.
187. Centers of diversity and origin of cultivated plants.
188. Fundamentals selection. Basic methods of selection.

189. Genetic basis of plant breeding.
190. Genetic basis of selection of microorganisms. Biotechnology.
191. Genetic and cellular engineering. Cloning.
192. Methods of inheritance rights. Adverse effects of toxic substances, alcohol, drugs and smoking on human heredity.
193. Embryonic (embryonic) stage of development (on the animal organism).
194. Postembryonic development and its stages and types of animals.

Suborganismic Level of Organization of Life

195. Patterns of influence of environmental factors on organisms. The limiting factors.
196. Environmental factors, their classification and characterization. Integrated effect of environmental factors on the body.
197. Biological rhythms are adaptive organisms. Photoperiodicity and its biological significance.
198. The concept of biogeocoenosis and ecosystem. The interaction of organisms in Biogeocenoses.
199. Self-regulation in biogeocoenose. Changes biocenosis. The concept of succession types of successions and their causes.
200. Artificial ecosystems (agrocenosis). Features of their structure and functioning.
201. Biosphere and its borders. The role of living organisms in the transformation layers of the Earth.
202. Living matter and its function in the biosphere.
203. Circulation of substances in the biosphere as a necessary condition of its existence.
204. Impact of human activities on the state of the biosphere.
205. Problems of environment. Environmental legislation of Ukraine. International cooperation in the protection of nature.
206. The concept of Red and Green books. Protected areas and their types.
207. Development of evolutionary views. Summary of the pre-Darwinian period of biology.
208. Basic theory of evolution of Charles Darwin.
209. Synthetic theory of evolution, its main provisions.
210. The concept of microevolution. Population - elementary unit of evolution. Elementary factors of evolution.
211. Type and its main criteria. Population structure type. Population wave.
212. Natural selection. Forms of natural selection.
213. Speciation. Types of speciation.
214. Evidence of the historical development of flora and fauna (comparative anatomical and embryological studies).
215. The concept of biological progress and regress. Ways to achieve biological progress.
216. Problems of life on Earth and the knowledge of its merits. The main hypothesis.
217. Separation of the Earth's geological history into eras, periods and epochs.
218. Features of evolution of prokaryotes and eukaryotes.
219. Development of life in Cenozoic era. The emergence of man and his role in the biosphere.

EVALUATIONAL CRITERIA
of interview in Biology
for foreigners and individuals without citizenship according to the Chapter XIII
of the Admission Rules to the Ivano-Frankivsk National Medical University in 2017

Entrants who are admitted to the University on the interview results basis answer three questions in accordance with the interview programme in Biology.

The entrant providing the correct answer to questions, showing knowledge of basic biological mechanisms and laws, peculiarities of structure, life and development of living organisms, the ability to justify conclusions gets assessment "Level of knowledge sufficient - 1 point

The entrant gets assessment " Level of knowledge insufficient - 0 points" under the circumstances

1) sufficient mistakes in he answers to two or three questions;
2) misuse of terminology, lack of knowledge of basic biological theories, hypotheses, laws and regularities.

Classification of Mistakes and Inaccuracies in Answers at the Interview in Biology:

Significant mistakes:

1. Incorrect definition of biological theories, hypotheses, laws, patterns and notions.
2. Wrong examples for grounding the theoretical positions.
3. The answer does not reflect the contents of the question.
4. Ignorance in the structure and vital processes of living organisms.

Insignificant mistakes:

1. Inaccurate or partially incomplete explaination of the biological theories, hypotheses, laws, patterns and notions.
2. There are no examples that illustrate and substantiate the answer to the question.

Inaccuracies:

1. Mistakes in bringing systematic categories and major organ systems.
2. Wrong names, terms, biological phenomena.