

## Ecology

Part 1-1. Test 1-1.

Please select and mark one or several correct answers.

1. The source of energy for 1<sup>st</sup> order consumers is:

- A) plant food
- B) animal food
- C) minerals, carbon dioxide, and water
- D) light

2. When T4 bacteriophage infects a bacterium, the following is injected into the latter:

- A) whole viral particle
- B) phage DNA and tail proteins
- C) only phage DNA
- D) phage DNA and capsid proteins

3. Chromosomes are pulled to the poles during:

- A) metaphase
- B) prophase
- C) interphase
- D) telophase

5. Of the listed below, only the following is a polymer:

- A) glucose
- B) glycine
- C) glycogen
- D) guanine

6. The following vitamin is required for blood clotting:

- A) D
- B) E
- C) B<sub>12</sub>
- D) K

7. Of the blood cells, the following cells are of most stable and uniform shape:

- A) thrombocytes
- B) erythrocytes
- C) phagocytes
- D) lymphocytes

8. Adrenalin is secreted in:

- A) the thyroid
- B) the pancreas
- C) the pituitary gland
- D) the adrenal glands

9. The nervous system of lancelet is located:

- A) above the notocord
- B) beneath the notocord
- C) inside the notocord

D) along the sides of the notochord

10. Genetic information of the virus of tobacco mosaic virus is contained in:

- A) RNA
- B) DNA
- C) capsid proteins
- D) DNA and RNA

11. Inside the cell, energy is stored in the form of:

- A) ATP
- B) GTP
- C) AMP
- D) cAMP

12. Electron transport chains in eukaryotes are in:

- A) mitochondrial membrane
- B) mitochondrial matrix
- C) ribosomes
- D) chloroplasts

13. Population comprises individuals:

- A) of various species
- B) related to same food chain
- C) of one species
- D) having same ecological niches

15. Eukaryotic genes are located in:

- A) plasmids
- B) heterochromatin
- C) euchromatin
- D) telomeres

16. Non-membranous cell components include:

- A) lysosomes
- B) ribosomes
- C) peroxisomes
- D) mitochondria

Part 1-2.

Please provide a free-form answer

1. Algae. General characteristics. Cell and thallus structure. Pigments of algae, their role in the adaptation to the environment and in taxonomy. Distribution and the role of algae in nature
2. The structure of the lung in different groups of organisms. The mechanisms of pulmonary respiration.
3. The sex chromosomes. Sex-linked inheritance. Inheritance in the case of non-segregated sex chromosomes. Crossover.
4. The metabolism of microorganisms. Types of how microorganisms feed. Types of ATP formation in microorganisms. Microbial electron transport chains.
5. Trophic relationships and energy flows. Trophic levels: producers, consumers and decomposers; trophic chains and networks.

6. Key stages of photobiological processes.