

BIOLOGY

1. Specify the correct statement
 - A) **Drosophila, Solpuga and Woodlouse belong to the same class, but to different orders**
 - B) **lobster belongs to the same class as solpuga**
 - C) **heliconius belongs to the same class as the gadfly**
 - D) **Drosophila is of the type as bitinia**
2. In the Drosophila fly, the gray body dominates the black wings over the rudimentary wings. These genes are located in a single pair of autosomal chromosomes. The distance between the genes is 17%. The diheterozygous female (dominant genes obtained from one of the parents) is crossed with a digozygous male with a gray body and rudimentary wings. What are the descendants of the phenotype, if when crossing the gamete AB will be unviable?
 - A) **Black body, rudimentary wings, black body with normal wings**
 - B) **Gray body with rudimentary wings, gray body with normal wings**
 - C) **Black body, rudimentary wings, gray body with normal wings**
 - D) **Gray body with rudimentary wings, black body with normal wings**
3. Establish the correct sequence of systematic groups of animals to which the beaver belongs.
 - A) **marten squad - class mammals - subtype chordates - vertebrate type**
 - B) **Detachment marten - subclass placental - mammal class - vertebrate subtype - chord type**
 - C) **Family marten - order predatory mammals - placental subclass - vertebrate type - chord subtype**
 - D) **Family wolf - order predatory mammals - subclass placental - type mammals**
4. Group the plants and their life form: a) tree b) shrub c) shrub d) grass; 1) Blackberry. 2) licorice 3) ezhovnik 4) karagach
 - A) **a-1 b-4 c-2 d-3**
 - B) **a-4 b-2 c-1 d-3**
 - C) **a-2 b-2 c-3 d-4**
 - D) **a-4 b-1 c-3 d-2**
5. Indicate the scientific works of I.I. Pavlov
 - 1) created a study on conditioned reflexes
 - 2) discovered the process of phagocytosis
 - 3) divided the higher nervous activity of a man into four types
 - 4) first produced and applied a serum vaccine to prevent rabies
 - 5) studied muscle and tendon sensitivity
 - A) **1,3**
 - B) **1,2**
 - C) **4,5**
 - D) **3,4**
6. Indicate a single-membrane organoid containing enzymes (a) and a non-membrane organoid synthesizing enzymes (b)
 - 1) ribosome
 - 2) mitochondria
 - 3) lysosome
 - 4) vacuole
 - 5) Golgi apparatus
 - 6) endoplasmic reticulum
 - A) **a-2 b-3**
 - B) **a-4 b-5**
 - C) **a-3 b-6**
 - D) **a-3 b-1**
7. Specify invertebrate consumers of the 1st (a) and 2nd order (b).
 - 1) a vampire;
 - 2) polyps;
 - 3) carkidon;
 - 4) incarsion;
 - 5) termite;
 - 6) swallow;
 - 7) bison;
 - 8) harmful turtle;
 - A) **a-2,4; b-3,7;**
 - B) **a-5,8. b -1,6**
 - C) **a-5,8. b -2,4**
 - D) **a-2,4; b-1,6;**
8. 880 guanyl nucleotides were detected in the DNA molecule, which make up 22% of the total number of all nucleotides in this DNA. Determine the amount of adenyl bases
 - A) **1120**
 - B) **1760**
 - C) **2240**
 - D) **880**
9. State the results of natural (a) and artificial (b) selection.
 - 1) merino
 - 2) mouflon
 - 3) tarpan
 - 4) pigeon
 - 5) peacock
 - 6) manchurian pheasant
 - 7) local cotton
 - 8) barbadian cotton
 - A) **a-2,6 b-4,7**
 - B) **a-2,4 b-1,8**
 - C) **a-3,4 b-5,8**
 - D) **a-5,7 b-4,6**
10. The food chain consists of a plant mouse-snake-hedgehog; The weight of the first order consumer is 15 tons. Indicate the total biomass (kg) of the first and fourth order consumers.
 - A) **15500**
 - B) **15150**
 - C) **16500**
 - D) **16650**
11. Indicate the correct judgments. The asexual generation of aurine hair...
 - 1) is called a sporophyte.
 - 2) bisexual.
 - 3) forms spermatozoa.
 - 4) forms spores.
 - 5) leafy plant.
 - 6) has a rhizoid
 - 7) has antirides and archegonia.
 - A) **4,5**
 - B) **3,4**
 - C) **1,6**
 - D) **2,5**
12. Specify the correct sequence of the appearance of the evolution of organs in the animal world;
 - 1) lungs;
 - 2) above the pharyngeal ganglion;
 - 3) the sexual organ;
 - 4) anus;
 - 5) egg cell;
 - 6) the spine;
 - 7) three-chamber heart;
 - 8) the diaphragm;
 - A) **3, 5, 2, 4, 1, 6, 7, 8**
 - B) **3, 5, 4, 2, 1, 6, 8, 7;**
 - C) **5, 3, 4, 2, 1, 6, 7, 8**
 - D) **5, 3, 2, 4, 6, 1, 7, 8**
13. Specify the correct statements about the process of mitosis in the somatic cell of a chimpanzee
 - 1) at the end of prophase the number of two-chromatic chromosomes is 96
 - 2) at the end of anaphase the number of two-chromatid chromosomes is 96
 - 3) at the end of prophase the number of two-chromatic chromosomes 48
 - 4) at the end of anaphase the number of single-chromatid chromosomes is 96
 - 5) at the beginning of metaphase the number of two-chromatide chromosomes is 48
 - 6) in the G2 stage of interphase the number of two-chromatide chromosomes is 48
 - A) **4,6**
 - B) **2,5**
 - C) **2,3**
 - D) **1,5**
14. Specify the answer in which the properties of the humerus are correctly grouped.
 - 1-long bone;
 - 2 forms a joint;
 - 3-upper part is connected to the sternum;
 - 4-free bone of the upper limbs;
 - 5-bone of the shoulder girdle;
 - A) **2,5**
 - B) **1,5**
 - C) **3,4**
 - D) **2,4**
15. Specify the correct statement
 - A) **Glands of the gastric mucosa secrete trypsin and lipase enzymes**
 - B) **The ducts of the human liver and pancreas open into the sigmoid colon**
 - C) **A group of human skin glands include sweat, sebaceous and milk.**
 - D) **Enzymes of the human salivary glands are involved in the breakdown of proteins**

16. Specify the correct statement
- A) **The main organ that, under the influence of the hormone insulin, reduces blood sugar levels is the liver.**
- B) **The hormone of the posterior lobe of the pituitary gland intermedin regulates pigment metabolism**
- C) **The glucocorticoid hormone of the adrenal cortex decreases the sugar content in the blood.**
- D) **Increased hormone production of thyroxine leads to thyrotoxicosis**
17. Specify the correct statement
- A) **nostoc refers to chemotrophs**
- B) **among fungi there are photosynthetic organisms**
- C) **lactic acid bacteria are autotrophs**
- D) **nodule bacteria live in symbiosis with dicotyledonous plants**
18. Indicate signs of Klinefelter syndrome (a) and Shereshevsky-Turner syndrome (b).
- 1) associated with changes in the number of autosomes
 2) associated with changes in the number of sex chromosomes
 3) gene mutation
 4) genomic mutation
 5) patient 44 has autosomes
 6) patient has 45 chromosomes
 7) patient has 45 autosomes
- A) **a-2,7 b-4,5** B) **a-1,5 b-2,6** C) **a-3,6 b-2,5**
 D) **a-4,5 b-2,6**
19. If the number of chromosomes in a diploid cell is designated $2n$, determine the chromosome set of the egg cell (a), microspore (b), generative cell (c), zygote (d), central cell (e), endosperm cells (f), seedling (g), germ stalk cells (h)
- A) **a-n; b-n; c-n; d-n; e-2n; f-3n; g-n; h-2n**
 B) **a-n; b-n; c-2n; d-2n; e-3n; f-3n; g-3n; h-2n.**
 C) **a-n; b-n; c-n; d-2n; e-2n; f-3n; g-2n; h-2n.**
 D) **a-n; b-n; c-n; d-n; e-2n; f-3n; g-2n; h-2n.**
20. Indicate signs of sympatric (a) and allopatric (b) speciation
- 1) expansion of the range of the original species
 2) stability of the range of the original species
 3) separation of the range of the species by mountains and rivers
 4) diversity of variability of individuals within the range
 5) diversity of habitats within the stable range
- A) **a-3 b-4** B) **a-1 b-4** C) **a-4 b-2** D) **a-5 b-3**