

BIOLOGY SAMPLE TEST

MULTIPLE CHOICE Choose the one alternative that best completes the statement or answers the question.

1. Hydrophobic interactions
 - a. are stronger than hydrogen bonds.
 - b. are stronger than covalent bonds.
 - c. can hold two ions together.
 - d. can hold two nonpolar molecules together.
 - e. are responsible for the surface tension of water.

2. Which of the following statements about the primary structure of a protein is not true?
 - a. It determines the tertiary structure of the protein.
 - b. It is determined by the structure of the corresponding DNA.
 - c. It may be branched.
 - d. It is unique to that protein.
 - e. It is the sequence of amino acids in the protein.

3. Cilia
 - a. are shorter and more numerous than flagella.
 - b. are composed of microfilaments.
 - c. are composed of intermediate filaments.
 - d. propel ribosomes through the cytoplasm.
 - e. are needed for plasmodesmata to function.

4. Which statement about membrane phospholipids is not true?
 - a. They associate to form bilayers.
 - b. They have hydrophobic "tails."
 - c. They have hydrophilic "heads."
 - d. They give the membrane fluidity.
 - e. They flip-flop readily from one side of the membrane to the other.

5. Osmosis is a specific form of
 - a. diffusion.
 - b. facilitated transport.
 - c. active transport.
 - d. secondary active transport.
 - e. movement of water by carrier proteins.

6. Which statement about thermodynamics is true?
 - a. Free energy is used up in an exergonic reaction.
 - b. Free energy cannot be used to do work.

- c. The total amount of energy can change after a chemical transformation.
- d. Free energy can be kinetic but not potential energy.
- e. Entropy has a tendency to increase.

7. Glycolysis

- a. takes place in the mitochondrion.
- b. produces no ATP.
- c. has no connection with the electron transport chain.
- d. is the same thing as fermentation.
- e. reduces two molecules of NAD^+ for every glucose molecule processed.

8. Which statement about eukaryotic chromosomes is not true?

- a. They sometimes consist of two chromatids.
- b. They sometimes consist only of a single chromatid.
- c. They normally possess a single centromere.
- d. They consist only of proteins.
- e. They are clearly visible as defined bodies under the light microscope.

9. Which statement about complementary base pairing is not true?

- a. It plays a role in DNA replication.
- b. In DNA, T pairs with A.
- c. Purines pair with purines, and pyrimidines pair with pyrimidines.
- d. In DNA, C pairs with G.
- e. The base pairs are of equal length.

10. Which of the following is not a difference between RNA and DNA?

- a. RNA has uracil; DNA has thymine.
- b. RNA has ribose; DNA has deoxyribose.
- c. RNA has five bases; DNA has four.
- d. RNA is a single polynucleotide strand; DNA is a double strand.
- e. RNA is relatively smaller than human chromosomal DNA.

11. Which of the following statements about viruses is true?

- a. They are acellular.
- b. They can regulate the movements of substances into and out of the cell.
- c. They can reproduce outside of living cells.
- d. They have subcellular compartments.
- e. They are readily destroyed by antibiotics.

12. DNA sequences found in introns provide

- a. amino acid sequence information.
- b. regulatory information.
- c. no known useful information.
- d. structure for the gene.
- e. alternative DNA splicing possibilities.

13. Steroid hormones such as estrogen act on target cells by

- a. initiating ion channel activity.
- b. binding to membrane proteins.

- c. initiating DNA transcription.
- d. activating enzymes.
- e. binding to membrane lipids.

14. Which of the following glands releases tropic hormones and others, including prolactin?

- a. Anterior pituitary
- b. Pancreas
- c. Thyroid
- d. Posterior pituitary
- e. Adrenal gland

15. Parathyroid hormone

- a. stimulates osteoblasts to lay down new bone.
- b. reduces blood calcium levels.
- c. stimulates calcitonin release.
- d. is produced by the thyroid gland.
- e. is released when blood calcium levels fall.

16. Which of the following muscle types provides contractile force for internal organs?

- a. Rough
- b. Smooth
- c. Skeletal
- d. Cardiac
- e. Striated

17. Which of the following is not a component of plasma?

- a. Gases
- b. Ions
- c. Nutrient molecules
- d. Red blood cells
- e. Proteins

18. Liver cells convert glucose to

- a. glycogen and protein.
- b. glycogen and fat.
- c. fat and protein.
- d. glycogen and amino acids.
- e. fat and amino acids.

19. The functional unit of the kidney is the

- a. Bowman's capsule.
- b. capillary.
- c. glomerulus.
- d. nephron.
- e. renal tubule.

20. The parasympathetic division controls

- a. fight-or-flight response.

- b. increased heart rate and blood pressure.
- c. increased digestion and decreased heart rate.
- d. increased release of epinephrine and production of glucose.
- e. increased heart rate and decreased digestion.

SAMPLE TEST