

BIOL-8 Practice Test 01

Modules 1-4: Foundations of Human Biology

Instructions: This practice test covers material from Modules 1-4. Answer all questions to the best of your ability.

Part A: Multiple Choice (25 questions)

Choose the best answer for each question.

Module 1: Exploring Life Science

1. Which of the following is a characteristic of ALL living things?

- A) The ability to move
- B) The ability to photosynthesize
- C) Cellular organization
- D) Sexual reproduction

2. What is the correct order of the levels of biological organization, from smallest to largest?

- A) Cell → Tissue → Organ → Organ System → Organism
- B) Tissue → Cell → Organ → Organism → Organ System
- C) Organ → Tissue → Cell → Organ System → Organism
- D) Organism → Organ System → Organ → Tissue → Cell

3. In a controlled experiment, what is the factor that the scientist deliberately changes?

- A) Dependent variable
- B) Independent variable
- C) Control group
- D) Constant

4. What is the difference between a hypothesis and a theory?

- A) Hypotheses are tested; theories are untested guesses
- B) Theories are well-supported by many experiments
- C) They mean the same thing
- D) Hypotheses are always correct

5. Homeostasis refers to:

- A) The process of cell division
- B) Maintaining a stable internal environment
- C) The study of body structure
- D) Energy production in cells

6. Organisms that make their own food are called:

- A) Heterotrophs
 - B) Autotrophs
 - C) Consumers
 - D) Decomposers
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Module 2: Chemistry of Life

7. What subatomic particle determines the atomic number of an element?

- A) Electron
- B) Neutron
- C) Proton
- D) Ion

8. When atoms SHARE electrons, they form a:

- A) Ionic bond
- B) Covalent bond
- C) Hydrogen bond
- D) Metallic bond

9. Water is considered a polar molecule because:

- A) It dissolves salt
- B) It has a high boiling point
- C) Electrons are shared unequally between atoms
- D) It contains hydrogen

10. Which of the following is true about acids?

- A) They have a pH greater than 7
- B) They have a pH less than 7
- C) They have a pH equal to 7
- D) They cannot be measured by pH

11. The four elements most common in living things are:

- A) C, H, O, N
- B) Fe, Ca, K, Na
- C) He, Ne, Ar, Xe
- D) Au, Ag, Cu, Zn

12. Hydrogen bonds are important in water because they:

- A) Make water a solid at room temperature
- B) Give water its unique properties like high specific heat
- C) Prevent water from dissolving substances
- D) Make water nonpolar

13. A substance that releases hydrogen ions (H^+) in solution is called:

- A) A base
 - B) An acid
 - C) A buffer
 - D) A salt
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Module 3: Biomolecules

14. What type of reaction builds polymers by removing water?

- A) Hydrolysis
- B) Dehydration synthesis
- C) Oxidation
- D) Reduction

15. Which macromolecule is the body's primary source of quick energy?

- A) Protein
- B) Lipid
- C) Carbohydrate
- D) Nucleic acid

16. The building blocks (monomers) of proteins are:

- A) Monosaccharides
- B) Amino acids
- C) Nucleotides
- D) Fatty acids

17. What determines the unique shape and function of a protein?

- A) Its color
- B) The sequence of amino acids
- C) The number of carbon atoms
- D) Its location in the cell

18. DNA and RNA are examples of:

- A) Carbohydrates
- B) Lipids
- C) Proteins
- D) Nucleic acids

19. The process of breaking polymers apart by adding water is called:

- A) Dehydration synthesis
 - B) Hydrolysis
 - C) Condensation
 - D) Polymerization
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Module 4: Cellular Function

20. According to cell theory, all cells:

- A) Contain chloroplasts
- B) Come from pre-existing cells
- C) Are the same size
- D) Have a nucleus

21. The main difference between prokaryotic and eukaryotic cells is:

- A) Prokaryotes are larger
- B) Eukaryotes lack ribosomes
- C) Prokaryotes lack a membrane-bound nucleus
- D) Eukaryotes cannot reproduce

22. Which organelle produces ATP through cellular respiration?

- A) Nucleus
- B) Ribosome
- C) Mitochondria
- D) Golgi apparatus

23. Where are proteins made in the cell?

- A) Nucleus
- B) Mitochondria
- C) Ribosomes
- D) Lysosomes

24. Which structure is found in plant cells but NOT in animal cells?

- A) Mitochondria
- B) Ribosomes
- C) Cell wall
- D) Plasma membrane

25. The organelle that modifies, packages, and ships proteins is the:

- A) Nucleus
- B) Ribosome
- C) Mitochondria
- D) Golgi apparatus

Part B: Fill in the Blank (10 questions)

Write the correct term in the blank.

26. The basic unit of life is the _____.

27. The _____ is the organelle that contains the cell's genetic material.

28. Atoms of the same element with different numbers of neutrons are called _____.

29. A solution with a pH greater than 7 is _____.

30. The monomer (building block) of carbohydrates is the _____.

31. Lipids are used for long-term _____ storage.

32. The _____ is the site of protein synthesis in all cells.

33. The three principles of _____ theory state that all living things are made of cells.

34. Plant cells have both mitochondria and _____ for energy.

35. The endoplasmic reticulum covered with ribosomes is called _____ ER.

Part C: Short Answer (4 questions)

Answer each question in 2-3 complete sentences.

36. List three characteristics that all living things share.

37. Compare ionic bonds and covalent bonds. How are they different?

38. Name the four major types of biomolecules and identify which one stores genetic information.

39. Describe two differences between prokaryotic and eukaryotic cells.

End of Practice Test 01