

BIOL-1 Practice Test 01

Modules 1-4: Study of Life through Cells

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: Study of Life

- 1.** Which of the following is a characteristic shared by ALL living organisms?
 - A) Movement from place to place
 - B) Made of one or more cells
 - C) Uses photosynthesis for energy
 - D) Reproduces sexually

- 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) Cell → Organ → Tissue → Organ System → Organism

- 3.** In the scientific method, what comes AFTER making an observation?
 - A) Drawing a conclusion
 - B) Conducting an experiment
 - C) Forming a hypothesis
 - D) Publishing results

4. In a controlled experiment, the variable that the scientist changes is called the:

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

5. Homeostasis refers to:

- A) The ability to grow and develop
- B) Maintaining a stable internal environment
- C) Responding to external stimuli
- D) Reproducing to create offspring

6. An organism that makes its own food through photosynthesis is called a(n):

- A) Heterotroph
 - B) Autotroph
 - C) Consumer
 - D) Decomposer
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Module 2: Basic Chemistry

7. What determines the atomic number of an element?

- A) Number of neutrons
- B) Number of electrons
- C) Number of protons
- D) Atomic mass

8. Isotopes of an element differ in their number of:

- A) Protons
- B) Neutrons
- C) Electrons
- D) Electron shells

9. When electrons are TRANSFERRED between atoms, what type of bond is formed?

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

10. Water is considered a polar molecule because:

- A) It contains hydrogen atoms
- B) Electrons are shared unequally between atoms
- C) It can dissolve many substances
- D) It has a high specific heat

11. A solution with a pH of 2 is:

- A) Neutral
- B) Weakly acidic
- C) Strongly acidic
- D) Basic

12. A substance that resists changes in pH is called a:

- A) Solvent
- B) Buffer
- C) Acid
- D) Base

13. The tendency of water molecules to stick together is called:

- A) Adhesion
 - B) Cohesion
 - C) Surface tension
 - D) Capillary action
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Module 3: Organic Molecules

14. Which element is the "backbone" of all organic molecules?

- A) Oxygen
- B) Hydrogen
- C) Carbon
- D) Nitrogen

15. What is the relationship between monomers and polymers?

- A) Polymers are the building blocks of monomers
- B) Monomers link together to form polymers
- C) They are the same thing
- D) Monomers break down polymers

16. In dehydration synthesis, polymers are built by:

- A) Adding water molecules
- B) Removing water molecules
- C) Breaking bonds
- D) Adding energy without changing water

17. Which biomolecule is the body's primary source of quick energy?

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

18. What type of bond holds amino acids together in a protein?

- A) Ionic bond
- B) Hydrogen bond
- C) Peptide bond
- D) Glycosidic bond

19. When a protein loses its shape due to heat or pH changes, this is called:

- A) Hydrolysis
 - B) Denaturation
 - C) Polymerization
 - D) Condensation
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Module 4: Cells

20. According to cell theory, all cells:

- A) Contain a nucleus
- B) Come from pre-existing cells
- C) Are identical in structure
- D) Can survive independently

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

- A) Are larger than eukaryotes
- B) Have more organelles
- C) Lack a membrane-bound nucleus
- D) Cannot reproduce

22. Which organelle is called the "powerhouse of the cell" because it produces ATP?

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

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

- A) Mitochondria
- B) Ribosomes
- C) Nucleus
- D) Cell wall

24. Proteins are synthesized (made) at which organelle?

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

25. The Golgi apparatus functions to:

- A) Produce ATP
 - B) Store DNA
 - C) Package and ship proteins
 - D) Digest waste materials
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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 (DNA).

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

29. The process of breaking down polymers by adding water is called _____.

30. The four most common elements in living things are carbon, hydrogen, oxygen, and _____.

31. A solution with a pH less than 7 is _____.

32. The monomer (building block) of proteins is the _____.

33. Organisms that cannot make their own food and must consume other organisms are called _____.

34. The _____ is the membrane system that includes the ER and Golgi apparatus.

- 35.** According to _____ theory, mitochondria and chloroplasts were once free-living bacteria.
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Part C: Short Answer (4 questions)

Answer each question in 2-3 complete sentences.

- 36.** Name three characteristics that all living things share and briefly describe each one.

- 37.** Explain the difference between an ionic bond and a covalent bond.

- 38.** What are the four major types of biological macromolecules? Name the monomer (building block) for proteins.

39. Compare prokaryotic and eukaryotic cells. Give one example of each type of organism.

End of Practice Test 01