

# **BIOL-1 Practice Test 02**

## **Modules 5-8: Membranes through Cellular Respiration**

**Instructions:** This practice test covers material from Modules 5-8. Answer all questions to the best of your ability.

---

### **Part A: Multiple Choice (25 questions)**

*Choose the best answer for each question.*

#### **Module 5: Membranes**

**1.** The cell membrane is best described by the:

- A) Lock and key model
- B) Fluid mosaic model
- C) Rigid barrier model
- D) Simple lipid model

**2.** The cell membrane is primarily composed of:

- A) Carbohydrates
- B) Proteins only
- C) Phospholipid bilayer
- D) Nucleic acids

**3.** Phospholipids spontaneously form a bilayer in water because:

- A) They are charged molecules
- B) They have hydrophilic heads and hydrophobic tails
- C) They are completely hydrophobic
- D) They are all the same size

**4.** Cholesterol in the cell membrane functions to:

- A) Transport molecules across the membrane
- B) Help maintain membrane fluidity
- C) Store genetic information
- D) Produce ATP

**5.** Which transport process requires ATP?

- A) Diffusion
- B) Osmosis
- C) Facilitated diffusion
- D) Active transport

**6.** When a cell is placed in a hypotonic solution, water will:

- A) Move out of the cell
- B) Move into the cell
- C) Not move
- D) Move in both directions equally

**7.** A cell in an isotonic solution will experience:

- A) Net water movement into the cell
  - B) Net water movement out of the cell
  - C) No net water movement
  - D) Cell lysis
- 

## **Module 6: Metabolism**

**8.** Enzymes function by:

- A) Increasing activation energy
- B) Decreasing activation energy
- C) Providing energy for reactions
- D) Changing the equilibrium of reactions

**9.** The molecule that stores and transfers energy in all cells is:

- A) Glucose
- B) ATP
- C) DNA
- D) NADH

**10.** The part of an enzyme where the substrate binds is called the:

- A) Allosteric site
- B) Active site
- C) Inhibitor site
- D) Product site

**11.** When an enzyme loses its shape due to heat or pH changes, this is called:

- A) Activation
- B) Denaturation
- C) Inhibition
- D) Catalysis

**12.** ATP releases energy when:

- A) A phosphate group is added
- B) A phosphate bond is broken (hydrolysis)
- C) It binds to DNA
- D) It is stored in the cell

**13.** Which statement about enzymes is TRUE?

- A) Enzymes are used up in reactions
  - B) Enzymes can be reused
  - C) Enzymes are made of carbohydrates
  - D) Enzymes increase the activation energy
-

## **Module 7: Photosynthesis**

**14.** Where do the light-dependent reactions of photosynthesis occur?

- A) Stroma
- B) Thylakoid membranes
- C) Cytoplasm
- D) Mitochondria

**15.** Where does the Calvin cycle occur?

- A) Thylakoid membranes
- B) Stroma
- C) Cytoplasm
- D) Inner mitochondrial membrane

**16.** The Calvin cycle produces:

- A) Oxygen
- B) ATP
- C) Glucose (G3P)
- D) Water

**17.** Photosynthesis occurs in which organelle?

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

**18.** The pigment that captures light energy in plants is:

- A) Hemoglobin
- B) Chlorophyll
- C) Melanin
- D) Carotene only

**19.** What is produced when water is split during the light reactions?

- A) Glucose
  - B) Carbon dioxide
  - C) Oxygen and electrons
  - D) ATP only
- 

## **Module 8: Cellular Respiration**

**20.** The net yield of ATP from glycolysis is:

- A) 0 ATP
- B) 2 ATP
- C) 4 ATP
- D) 36 ATP

**21.** Where does glycolysis occur?

- A) Mitochondrial matrix
- B) Cytoplasm
- C) Thylakoid
- D) Nucleus

**22.** Where does the Krebs cycle (citric acid cycle) occur?

- A) Cytoplasm
- B) Mitochondrial matrix
- C) Thylakoid
- D) Nucleus

**23.** The overall equation for cellular respiration shows that glucose and oxygen produce:

- A) Carbon dioxide and water
- B) Oxygen and glucose
- C) Light and ATP
- D) Protein and lipids

**24.** In the absence of oxygen, cells perform:

- A) Aerobic respiration
- B) Fermentation
- C) Photosynthesis
- D) Calvin cycle

**25.** In cellular respiration, most ATP is produced during:

- A) Glycolysis
  - B) Krebs cycle
  - C) Electron transport chain
  - D) Fermentation
- 

## **Part B: Fill in the Blank (10 questions)**

*Write the correct term in the blank.*

**26.** The phospholipid bilayer is described as a \_\_\_\_\_ mosaic model.

**27.** The process by which water moves across a membrane is called \_\_\_\_\_.

**28.** Transport that requires ATP is called \_\_\_\_\_ transport.

**29.** A solution with a lower solute concentration than the cell is called \_\_\_\_\_.

**30.** Photosynthesis occurs in the \_\_\_\_\_ of plant cells.

**31.** The products of the light reactions that are used in the Calvin cycle are ATP and \_\_\_\_\_.

**32.** The electron transport chain produces most of the \_\_\_\_\_ during cellular respiration.

**33.** The process of breaking down glucose without oxygen is called \_\_\_\_\_.

**34.** The byproduct released when water is split during photosynthesis is \_\_\_\_\_.

**35.** The final electron acceptor in the electron transport chain is \_\_\_\_\_.

---

## **Part C: Short Answer (5 questions)**

*Answer each question in 2-3 complete sentences.*

**36.** Explain the difference between passive transport and active transport. Give one example of each.

**37.** Describe what happens to a cell placed in a hypertonic solution. How would this differ for a plant cell versus an animal cell?

**38.** Compare the light-dependent reactions and the Calvin cycle in terms of where they occur and what they produce.

**39.** Compare photosynthesis and cellular respiration in terms of their inputs and outputs.

- 40.** Explain why we breathe oxygen and exhale carbon dioxide in terms of cellular respiration.

---

*End of Practice Test 02*