

■ Cytology & Molecular Biology - MCQs

1. Which organism is commonly used as a model to study cell biology due to its simplicity?

- A) Mouse
- B) Drosophila
- C) Escherichia coli
- D) Yeast
- E) Archaea

■ Answer: Escherichia coli

2. Which organelle is responsible for producing energy in the cell?

- A) Golgi apparatus
- B) Mitochondria
- C) Endoplasmic reticulum
- D) Glycocalyx
- E) Nucleus

■ Answer: Mitochondria

3. During cell fractionation, which component sediments first at low-speed centrifugation?

- A) Ribosomes
- B) Nuclei and cytoskeleton
- C) Mitochondria
- D) Glycogen
- E) Lipids

■ Answer: Nuclei and cytoskeleton

4. Which of the following is found exclusively on the outer layer of the plasma membrane?

- A) Phosphatidylinositol
- B) Phosphatidylserine
- C) Glycolipids
- D) Ethanolamine
- E) Phosphatidylinositol

■ Answer: Glycolipids

5. What is the main role of the Glycocalyx?

- A) Energy production
- B) Protein storage
- C) Cell surface protection and recognition
- D) Signal amplification
- E) Cell division regulation

■ Answer: Cell surface protection and recognition

6. What characterizes lipid rafts?

- A) Low cholesterol
- B) High water-soluble proteins
- C) High cholesterol and sphingolipids
- D) No glycolipids
- E) No receptors

■ Answer: High cholesterol and sphingolipids

7. What is the function of caveolae?

- A) Protein synthesis
- B) DNA protection
- C) Endocytosis and signaling regulation
- D) Lipid synthesis
- E) Mitosis

■ Answer: Endocytosis and signaling regulation

8. Integral membrane proteins are:

- A) Only on the outer surface
- B) Do not interact with lipid core
- C) Cross the membrane once or multiple times
- D) Only in cytoplasm
- E) Not related to amino acids

■ Answer: Cross the membrane once or multiple times

9. Peripheral membrane proteins associate with the membrane via:

- A) Covalent bonds
- B) Penetrating lipid layer
- C) Electrostatic interactions
- D) Forming ion channels
- E) DNA fusion

■ Answer: Electrostatic interactions

10. Which of the following is NOT found in bacterial membranes?

- A) Cholesterol
- B) Phospholipids
- C) Proteins
- D) Glycolipids
- E) Water

■ Answer: Cholesterol