

QUIZ 2-FORM 2 ANSWERS

1. Celery stalks that are immersed in fresh water for several hours become stiff and hard. Similar stalks left in a salt solution become limp and soft. From this we can deduce that the cells of the celery stalks are

- A. hypotonic to both fresh water and the salt solution.
- B. hypertonic to both fresh water and the salt solution.
- C. hypertonic to fresh water but hypotonic to the salt solution.
- D. hypotonic to fresh water but hypertonic to the salt solution.
- E. isotonic with fresh water but hypotonic to the salt solution.

Answer: C

2. Which statement(s) about the sidedness of the plasma membrane is (are) correct?

- A. Parts of proteins that are exposed on the cytoplasmic side of the endoplasmic reticulum are also exposed on the cytoplasmic side of the plasma membrane.
- B. The asymmetrical distribution of membrane proteins, lipids, and carbohydrates across the plasma membrane is determined as the membrane is being constructed.
- C. Every integral membrane protein has specific orientation in the plasma membrane.
- D. The first and second answers are correct.
- E. The first, second, and third answers are all correct.

Answer: E

3. Which of the following is a reasonable explanation for why unsaturated fatty acids help keep any membrane more fluid at lower temperatures?

- A. The double bonds form a kink in the fatty acid tail, forcing adjacent lipids to be further apart.
- B. Unsaturated fatty acids have a higher cholesterol content.
- C. Unsaturated fatty acids permit more water in the interior of the membrane.
- D. The double bonds block interaction among the hydrophilic head groups of the lipids.
- E. The double bonds result in a shorter fatty acid tail.

Answer: A

4. Which of the following would be least likely to diffuse through a plasma membrane without the help of a transport protein?

- A. Hydrophobic molecules
- B. Small, uncharged polar molecules
- C. Large, uncharged polar molecules
- D. Ions
- E. Any of the above would easily diffuse through the membrane.

Answer: D

5. Which of the following imaging techniques would be used to determine whether a group of cells are metabolically active?

- A. Phase Contrast Microscope

- B. Confocal Microscope
- C. CAT Scan
- D. MRI
- E. PET Scan

Answer: E

6. Which of the following is not a function of membrane proteins?
- A. Membrane proteins attach the membrane to the cytoskeleton.
 - B. Membrane proteins provide receptors for chemical messengers.
 - C. Membrane proteins form channels, which move substances across the membrane.
 - D. Membrane proteins with short sugar chains form identification tags that are recognized by other cells.
 - E. All of these are functions of membrane proteins.

Answer: E

7. In the fractionation of homogenized cells using centrifugation, the primary factor that determines whether a specific cellular component ends up in the supernatant or the pellet is
- A. the relative solubility of the component.
 - B. the size and weight of the component.
 - C. the percentage of carbohydrates in the component.
 - D. the number of enzymes in the fraction.
 - E. the presence or absence of lipids in the component.

Answer: B

8. The selective permeability of biological membranes is dependent on which of the following?
- A. the type of transport proteins that are present in the membrane
 - B. the lipid bilayer being permeable to primarily small, nonpolar molecules
 - C. the types of carbohydrates on the surface of the membrane
 - D. A and B only
 - E. A, B, and C

Answer: D

9. Which of the following types of information is (are) most likely to be derived from freeze-fracture of biological samples?
- A. the coded information in DNA
 - B. thin sections (slices) of fixed and embedded cells
 - C. proteins imbedded in membrane bilayers
 - D. patterns of movement in living cells
 - E. all of the above

Answer: C

10. Green olives may be preserved in brine, which is a 30% salt solution. How does this method of preservation prevent contamination by microorganisms?
- A. Bacterial cells shrivel up in high salt solutions, causing the cell to burst.
 - B. High salt concentration lowers the pH, thus inhibiting bacterial metabolism.
 - C. High salt concentration raises the pH, thus inhibiting bacterial metabolism.

- D. A 30% salt solution is hypotonic to the bacteria, so they gain too much water and burst.
- E. A 30% salt solution is hypertonic to the bacteria, so they lose too much water and cannot survive.

Answer: E

BONUS QUESTION

11. According to the New York Times article, “Sleek? Well, No. Complex? Yes, Indeed.,” manatees have a well-developed tactile system due to

- A. Extrasensory nerves in their flippers
- B. Vibrissae on their bodies linked to nerve fibers
- C. Well-developed ridges on the surface of the brain
- D. A special sensory organ in their tongue
- E. All of the above

Answer: B