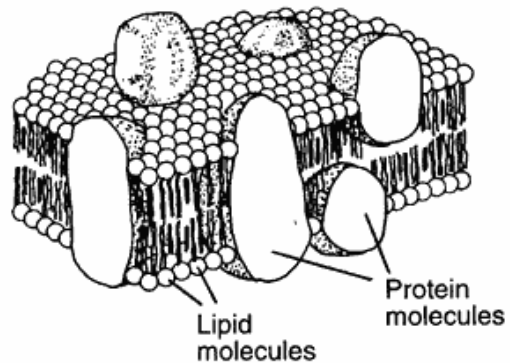


Assignment #4

Directions: Answer each of the following questions as accurately as possible

- ___1. Which structure is most directly responsible for maintaining homeostasis in all cells?
(a) chloroplast
(b) mitochondria
(c) cell membrane
(d) cell wall

- ___2. Which cell structure is represented by the three-dimensional diagram to the right?
(a) chloroplast
(b) mitochondria
(c) plasma membrane
(d) chromosome

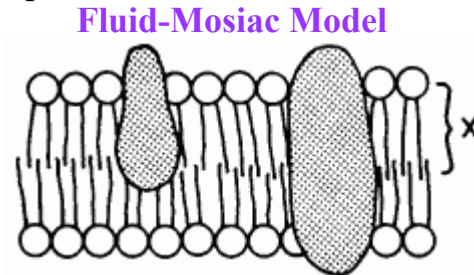


- ___3. The fluid-mosaic model of the cell membrane suggests that the membrane is primarily composed of -
(a) proteins and starches.
(b) sugars and proteins.
(c) carbohydrates and lipids.
(d) proteins and lipids.
- ___4. Which statement regarding the functioning of the cell membrane of all organisms is **not** correct?
(a) The cell membrane forms a boundary that separates the cellular contents from the outside environment.
(b) The cell membrane is capable of receiving and recognizing chemical signals.
(c) The cell membrane forms a barrier that keeps all substances that might harm the cell from entering the cell.
(d) The cell membrane controls the movement of molecules into and out of the cell.
- ___5. A secondary function of cell membranes in humans is the -
(a) synthesis of the amino acids.
(b) replication of genetic material.
(c) production of energy.
(d) recognition of certain chemicals.

- ___6. In the human body, oxygen is absorbed by the lungs and nutrients are absorbed by the small intestine. In a single-celled organism, this absorption directly involves the -
- (a) nucleus.
 - (b) cell membrane.
 - (c) chloroplasts.
 - (d) chromosomes.

- ___7. The diagram below represents a section of a plasma membrane. What does structure X represent?

- (a) a protein
- (b) glucose
- (c) a lipid (phospholipid)
- (d) glycogen



- ___8. Plasma membranes are selectively permeable. This means that -
- (a) anything can pass into or out of a cell
 - (b) the plasma membrane allows some substances to enter or leave a cell more easily than others.
 - (c) glucose cannot enter the cell.
 - (d) the plasma membranes must be very thick.

- ___9. Which of the following statements regarding membrane function is *false*?
- (a) The plasma membrane forms a selective barrier around the cell.
 - (b) The plasma membrane plays a role in cell to cell communication.
 - (c) The plasma membrane has receptors for chemical messages.
 - (d) The plasma membrane is the control center of the cell.

(nucleus)

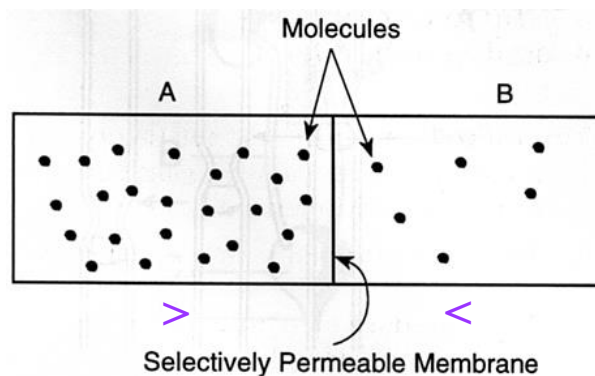
- ___10. Oxygen crosses a plasma membrane by -
- (a) osmosis.
 - (b) pinocytosis.
 - (c) active transport.
 - (d) passive transport.

- ___11. Osmosis can be defined as -
- (a) the diffusion of water.
 - (b) the diffusion of fats.
 - (c) the diffusion of glucose.
 - (d) the diffusion of salt.

- ___12. You are adrift in the Atlantic Ocean, and, being thirsty, drink the surrounding seawater. As a result -
- (a) you quench your thirst.
 - (b) you dehydrate yourself.
 - (c) your cells become turgid.
 - (d) your cells lyse from excessive water intake.

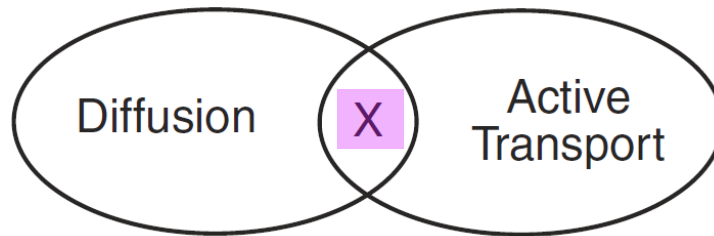
- ___13. Which of the following processes can move a substance against its concentration gradient?
 (a) osmosis (c) passive transport
 (b) diffusion (d) active transport
- ___14. The process of a white blood cell engulfing a bacterium is called -
 (a) diffusion. (c) pinocytosis.
 (b) osmosis. (d) phagocytosis.
- ___15. Phagocytosis is to “cell eating” as pinocytosis is to cell -
 (a) osmosis. (c) drinking.
 (b) chewing. (d) lysis.

Base your answers to questions 16 - 18 on the diagram below shows the same type of molecule in area A and area B.



- ___16. This movement of molecules from area A to area B is the result of the process of -
 (a) osmosis. (c) passive transport.
 (b) diffusion. (d) active transport.
- ___17. This movement of molecules from area B to area A is the result of the process of -
 (a) osmosis. (c) passive transport.
 (b) diffusion. (d) active transport.
- ___18. This movement of molecules from side B to Side A requires -
 (a) sunlight. (c) salt.
 (b) water. (d) ATP.

___19. The diagram below represents two processes that occur in organisms.



A characteristic that the two processes have in common is that each process -

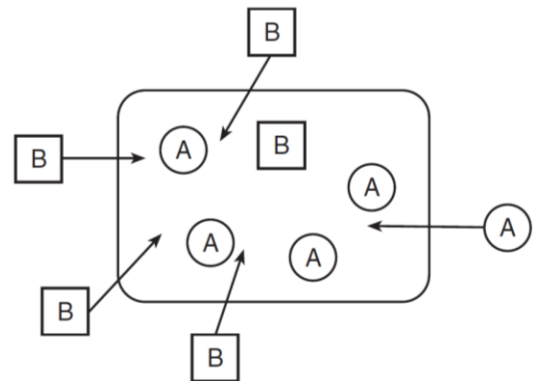
- (a) uses ATP.
- (b) uses oxygen.
- (c) requires enzymes.
- (d) moves molecules.

___20. Molecules A and B come in contact with the cell membrane of the same cell. Molecule A passes through the membrane readily, but molecule B does not.

Which statement could describe molecules A and B?

- (a) Molecule A is a protein, and molecule B is a fat.
- (b) Molecule A is a starch, and molecule B is a simple sugar.
- (c) Molecule A is an amino acid, and molecule B is a simple sugar.
- (d) Molecule A is a simple sugar, and molecule B is a starch.

Base your answers to questions 21 - 23 on the diagram to the right representing a cell and molecules A and B in its environment.



___21. ATP is most likely being used for -

- (a) substance A to enter the cell.
- (b) substance B to enter the cell.
- (c) both substances to enter the cell.
- (d) neither substance to enter the cell.

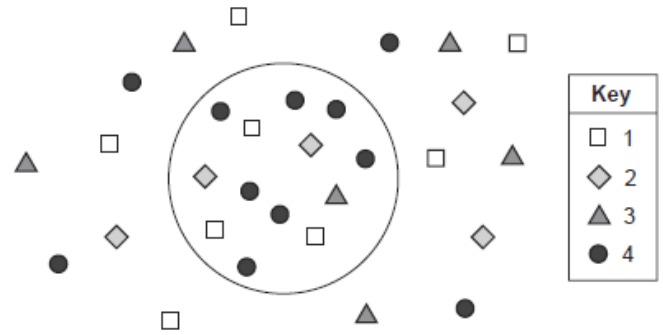
___22. This movement of molecules B is the result of the process of -

- (a) osmosis.
- (b) diffusion.
- (c) passive transport.
- (d) active transport.

___23. This movement of molecules A is the result of the process of -

- (a) osmosis.
- (b) diffusion.
- (c) passive transport.
- (d) active transport.

Base your answers to questions 24 – 26 on the diagram to the right representing a cell and some molecules in its environment.



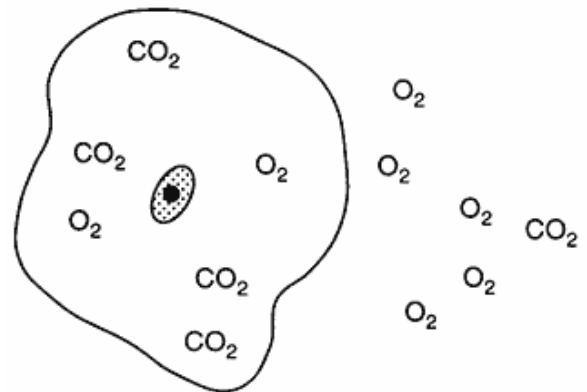
- ___24. Which molecule(s) would require the use of energy in order to be brought into the cell?
 (a) 1 only (c) 2 and 3
 (b) 1 and 2 (d) 4 only

- ___25. Which molecule(s) would not require the use of energy in order to be brought into the cell?
 (a) 1 (b) 1 and 2 (c) 1, 2 and 3 (d) 1, 2, 3 and 4

- ___26. Which molecule(s) would require the use of energy in order to be brought out of the cell?
 (a) 1 (b) 1 and 2 (c) 1, 2 and 3 (d) 1, 2, 3 and 4

- ___27. Which molecule(s) would not require the use of energy in order to be brought out of the cell?
 (a) 1 (b) 1 and 2 (c) 3 and 4 (d) 4 only

- ___28. The diagram to the right represents a cell in water. Formulas of molecules that can move freely across the cell membrane are shown. Some molecules are located inside the cell and others are in the water outside the cell.



Based on the distribution of these molecules, what would most likely happen after a period of time?

- (a) The concentration of O₂ will increase inside the cell.
 (b) The concentration of CO₂ will remain the same inside the cell.
 (c) The concentration of O₂ will remain the same outside the cell.
 (d) The concentration of CO₂ will decrease outside the cell.