

## Practice Questions 1: Cell Membrane

1. The process of osmosis would explain the net movement of water into a cell if the percentage of

- A. water was 90% inside the cell and 95% outside the cell
- B. protein was 30% inside the cell and 35% outside the cell
- C. water was 95% inside the cell and 90% outside the cell
- D. water and protein was equal inside and outside the cell

2. Which statement best describes the plasma membrane of a living plant cell?

- A. It selectively regulates the passage of substances into and out of the cell.
- B. It is composed of proteins and carbohydrates only.
- C. It has the same permeability to all substances found inside or outside the cell.
- D. It is a double protein layer with floating lipid molecules.

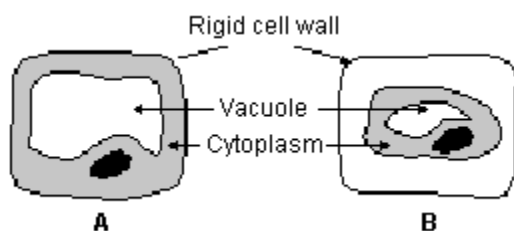
3.



The diagram represents a white blood cell engulfing some bacteria. The structure labeled X is most likely a

- A. nucleus
- B. centriole
- C. ribosome
- D. vacuole

4.

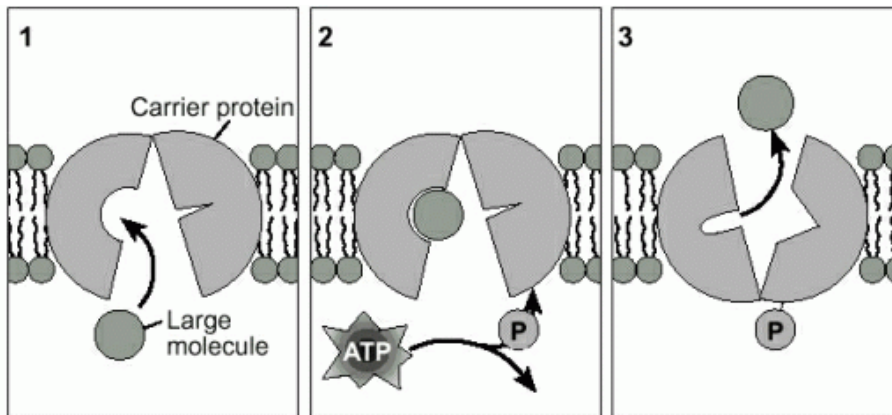


A biologist observed a plant cell in a drop of water as shown in diagram A. The biologist added a 10% salt solution to the slide and observed the cell as shown in diagram B. The change in appearance of the cell resulted from

- A. more salt moving out of the cell than into the cell
- B. more salt moving into the cell than out of the cell
- C. more water moving into the cell than out of the cell
- D. more water moving out of the cell than into the cell

5. 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.

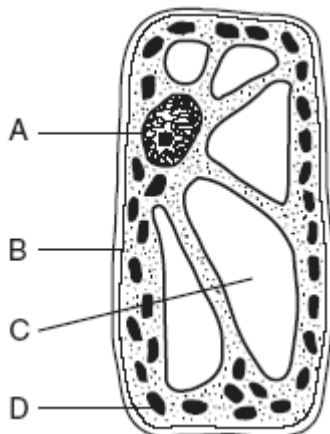
6.



The diagram represents movement of a large molecule across a membrane.

Which process is best represented in this diagram?

- A. active transport
  - B. diffusion
  - C. protein building
  - D. gene manipulation
7. Which letter indicates a cell structure that directly controls the movement of molecules into and out of the cell?

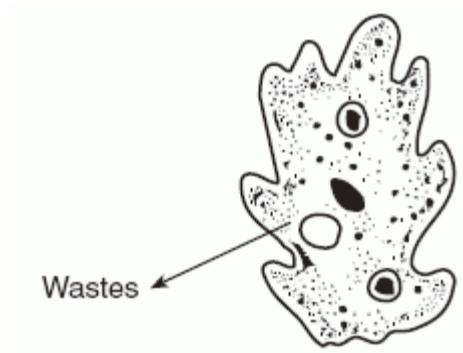


- A. A
- B. B
- C. C
- D. D

8. Which sequence represents the correct order of levels of organization found in a complex organism?

- A. cells → organelles → organs → organ systems → tissues
- B. tissues → organs → organ systems → organelles → cells
- C. organelles → cells → tissues → organs → organ systems
- D. organs → organ systems → cells → tissues → organelles

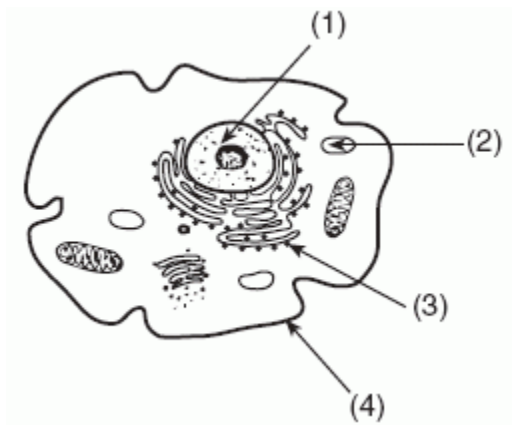
9. A single-celled organism is represented in the diagram below. An activity is indicated by the arrow.



If this activity requires the use of energy, which substance would be the source of this energy?

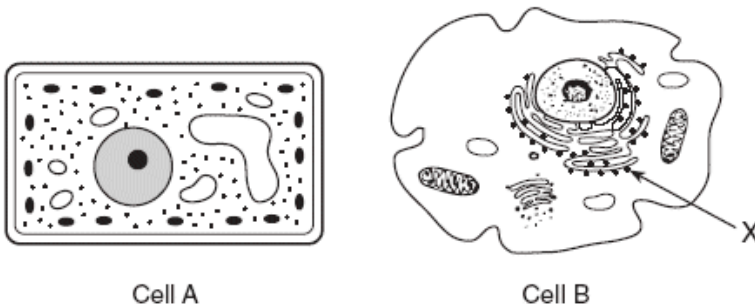
- A. DNA
- B. ATP
- C. a hormone
- D. an antibody

10. In the diagram below, which structure performs a function similar to a function of the human lungs?



- A. structure 1
- B. structure 2
- C. structure 3
- D. structure 4

11. Base your answer to the question on the diagrams below and on your knowledge of biology. The diagrams represent two different cells and some of their parts. The diagrams are not drawn to scale.



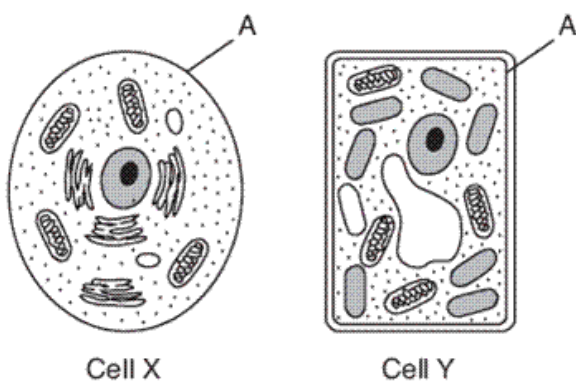
Identify an organelle in cell A that is the site of autotrophic nutrition.

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12. Damage to which structure will most directly disrupt water balance within a single-celled organism?

- A. ribosome
- B. cell membrane
- C. nucleus
- D. chloroplast

13. The diagram below represents two cells, X and Y.



Which statement is correct concerning the structure labeled A?

- A. It aids in the removal of metabolic wastes in both cell X and cell Y.
- B. It is involved in cell communication in cell X, but not in cell Y.
- C. It prevents the absorption of  $\text{CO}_2$  in cell X and  $\text{O}_2$  in cell Y.
- D. It represents the cell wall in cell X and the cell membrane in cell Y.

14. The function of a cell depends primarily on its

- A. life span
- B. color
- C. structure
- D. movement

15. Which structures are listed in order from the least complex to the most complex?

- A. plant cell, leaf, chloroplast, rose bush
- B. chloroplast, plant cell, leaf, rose bush
- C. chloroplast, leaf, plant cell, rose bush
- D. rose bush, leaf, plant cell, chloroplast

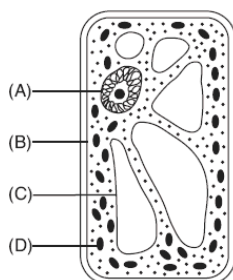
16. The ameba represented in the diagram below is a single-celled organism.



Which two processes are most closely associated with structure A?

- A. insertion and deletion
- B. nervous regulation and circulation
- C. active transport and diffusion
- D. replication and photosynthesis

17. In the cell shown below, which lettered structure is responsible for the excretion of most cellular wastes



- A. A
- B. B
- C. C
- D. D

18. Which set of functions is directly controlled by the cell membrane?

- A. protein synthesis, respiration, digestion of food molecules
- B. active transport, recognition of chemical messages, protection
- C. enzyme production, elimination of large molecules, duplication of DNA codes
- D. release of ATP molecules, regulation of cell reproduction, food production

19. Base your answer to the question on the information below and on your knowledge of biology.

A student prepared four different red blood cell suspensions, as shown in the chart below.

Suspension	Contents
A	red blood cells in normal blood serum (0.7% salt solution)
B	red blood cells in 10% salt solution
C	red blood cells in distilled water
D	red blood cells in tap water

Which suspension would contain red blood cells that would appear wrinkled and reduced in volume?

- A. *A*
- B. *B*
- C. *C*
- D. *D*

20. 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. chloroplasts
- C. cell membrane
- D. chromosomes

## Answer Key

1. A
2. A
3. D
4. D
5. C
6. A
7. B
8. C
9. B
10. D
11. Chloroplast
12. B
13. A
14. C
15. B
16. C
17. B
18. B
19. B
20. C