Multiple Choice Questions

1. What is the primary function of the plasma membrane in terms of transport?

A) To synthesize proteins
B) To store genetic information
C) To regulate what enters and leaves the cell
D) To provide structural support

2. Which of the following types of transport requires energy?

A) Passive transport
B) Active transport
C) Endocytosis
D) Exocytosis

3. What is the process by which cells take in substances by engulfing them with their membrane?

A) Endocytosis
B) Exocytosis
C) Phagocytosis
D) All of the above are correct, but endocytosis is the general term

4. Which type of transport involves the movement of molecules from high to low concentration without energy?

A) Active transport
B) Passive transport
C) Endocytosis
D) Exocytosis

5. What is the term for the movement of water molecules through a selectively permeable membrane?

A) Osmosis
B) Diffusion
C) Active transport
D) Endocytosis

6. Which of the following is an example of active transport?

A) Sodium-potassium pump
B) Osmosis
C) Diffusion
D) A is correct, but B and C are not

7. What is the role of vesicles in transport across the cell membrane?

A) To synthesize proteins
B) To store genetic information
C) To transport substances in and out of the cell
D) To provide structural support

8. Which process involves the release of substances from the cell by fusing vesicles with the plasma membrane?

A) Endocytosis
B) Exocytosis
C) Phagocytosis
D) Pinocytosis

9. What is the term for the movement of molecules from low to high concentration using energy?

A) Passive transport
B) Active transport
C) Osmosis
D) Diffusion

10. Which type of transport is involved in the uptake of nutrients by cells?

A) Osmosis
B) Diffusion
C) Endocytosis

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D) All of the above can be involved, but endocytosis is specific for large molecules

11. What is the purpose of the sodium-potassium pump in cells?

A) To synthesize proteins
B) To store genetic information
C) To maintain ion balance
D) To provide structural support

12. Which of the following is a type of passive transport?

A) Active transport
B) Diffusion
C) Endocytosis
D) Exocytosis

13. What happens to cells placed in a hypertonic solution?

A) They swell and burst
B) They shrink
C) They remain unchanged
D) B is correct

14. Which process involves the uptake of small molecules and fluids by cells?

A) Phagocytosis
B) Pinocytosis
C) Endocytosis
D) All of the above are correct, but pinocytosis is specific for fluids

15. What is the term for the movement of substances through a cell membrane with the help of transport proteins?

A) Passive transport
B) Facilitated diffusion
C) Active transport
D) Osmosis

16. Which type of transport does not require transport proteins?

A) Active transport
B) Simple diffusion
C) Facilitated diffusion
D) Osmosis

17. What is the role of aquaporins in cells?

A) To transport ions
B) To synthesize proteins
C) To facilitate water transport
D) To provide structural support

18. Which of the following is an example of facilitated diffusion?

A) Sodium-potassium pump
B) Glucose transport
C) Osmosis
D) Phagocytosis

19. What is the term for the movement of cells through the cell membrane by engulfing solid particles?

A) Pinocytosis
B) Phagocytosis
C) Endocytosis
D) All of the above are correct, but phagocytosis is specific for solid particles

20. Which process involves the movement of water into a cell, causing it to swell and potentially burst?

A) Isotonic solution
B) Hypertonic solution
C) Hypotonic solution
D) None of the above

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True/False Questions

1. **True or False**: All transport across the cell membrane requires energy.
    - **Suggestion**: Passive transport does not require energy.
2. **True or False**: Osmosis is the movement of water molecules through a selectively permeable membrane.
    - **Suggestion**: Osmosis involves water movement.
3. **True or False**: Endocytosis is the process by which cells release substances.
    - **Suggestion**: Exocytosis is the process of releasing substances.
4. **True or False**: The sodium-potassium pump is an example of passive transport.
    - **Suggestion**: The sodium-potassium pump is an example of active transport.
5. **True or False**: Diffusion is a type of active transport.
    - **Suggestion**: Diffusion is a type of passive transport.
6. **True or False**: Cells placed in a hypotonic solution will shrink.
    - **Suggestion**: Cells in a hypotonic solution will swell.
7. **True or False**: Facilitated diffusion requires energy.
    - **Suggestion**: Facilitated diffusion is a type of passive transport.
8. **True or False**: Phagocytosis is a type of endocytosis that involves the uptake of solid particles.
    - **Suggestion**: Phagocytosis involves solid particles.
9. **True or False**: Exocytosis involves the uptake of substances into the cell.
    - **Suggestion**: Exocytosis involves the release of substances from the cell.
10. **True or False**: Aquaporins are proteins that facilitate ion transport.
    - **Suggestion**: Aquaporins facilitate water transport.
11. **True or False**: Simple diffusion does not require transport proteins.
    - **Suggestion**: Simple diffusion occurs without transport proteins.
12. **True or False**: All cells are isotonic to their environment.
    - **Suggestion**: Cells can be in isotonic, hypotonic, or hypertonic environments.
13. **True or False**: Pinocytosis is the uptake of small molecules and fluids.
    - **Suggestion**: Pinocytosis involves fluids and small molecules.

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14. **True or False**: Active transport always moves substances from high to low concentration.

    - **Suggestion**: Active transport moves substances from low to high concentration.

15. **True or False**: The plasma membrane is impermeable to all substances.

    - **Suggestion**: The plasma membrane is selectively permeable.

Short Answer Questions

1. **Explain the difference between active and passive transport.**

Answer: Active transport involves moving substances from low to high concentration using energy, while passive transport moves substances from high to low concentration without energy.

2. **Describe the role of vesicles in cellular transport.**

Answer: Vesicles are involved in endocytosis and exocytosis, helping to transport substances into and out of the cell.

3. **What is osmosis, and how does it affect cells?**

Answer: Osmosis is the movement of water through a selectively permeable membrane. It affects cells by causing them to swell in hypotonic solutions and shrink in hypertonic solutions.

4. **Explain the function of the sodium-potassium pump.**

Answer: The sodium-potassium pump maintains ion balance by moving sodium ions out of the cell and potassium ions into the cell, using energy.

5. **What is facilitated diffusion, and how does it occur?**

Answer: Facilitated diffusion is a type of passive transport that involves transport proteins to help substances move across the membrane.

Fill-in-the-Blank Questions

1. The _ membrane regulates what enters and leaves the cell.

Answer:

2. _ transport requires energy to move substances against their concentration gradient.

Answer:

3. _ is the process by which cells take in substances by engulfing them with their membrane.

Answer:

4. The movement of water molecules through a selectively permeable membrane is known as _.

Answer:

5. _ involves the release of substances from the cell by fusing vesicles with the plasma membrane.

Answer:

6. _ is a type of passive transport that involves transport proteins.

Answer

7. Cells placed in a _ solution will swell and potentially burst.

Answer:

8. _ proteins facilitate water transport across the cell membrane.

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Answer:

9. _ is the uptake of small molecules and fluids by cells.

Answer:

10. The _ pump is an example of active transport that maintains ion balance.

Answer:

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