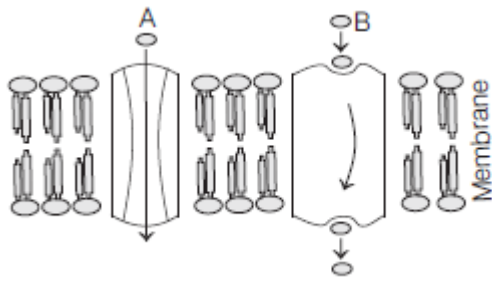
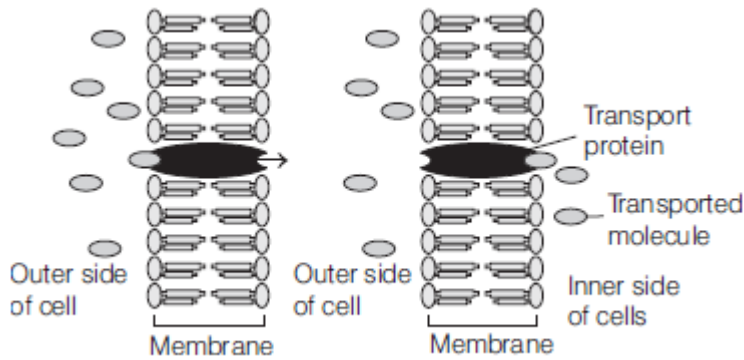


- 1.** Short distance transport of substances like nutrients, water, etc., in plants occurs through
  - (a) diffusion
  - (b) cytoplasmic streaming supplemented by active transport
  - (c) active transport only
  - (d) Both (a) and (b)
- 2.** In plants, long distance transport of organic and inorganic substances occurs through
  - (a) simple permanent tissues
  - (b) complex permanent tissues
  - (c) meristematic tissues
  - (d) epithelial tissues
- 3.** Which of the following is responsible for the transport of water and minerals from roots to stems, leaves, flowers and fruits in rooted plants?
  - (a) Xylem
  - (b) Phloem
  - (c) Cortex
  - (d) Both (a) and (b)
- 4.** Transport of gases, hormones and organic solutes in plants is
  - (a) multidirectional
  - (b) unidirectional
  - (c) in two directions
  - (d) first unidirectional then divides to many directions
- 5.** Movement of molecules, from a region of higher concentration to a region of lower concentration without expenditure of energy can be termed as
  - (a) osmosis
  - (b) passive transport
  - (c) diffusion
  - (d) active transport
- 6.** The rate of diffusion of any substance is not affected by
  - (a) electrical charges of diffusing substances
  - (b) the presence of other substances in the solution
  - (c) molecular size of substances in a solution
  - (d) solubility to diffusing substance in lipids
- 7.** What type of materials do not diffuse or find it difficult to pass through the membranes?
  - (a) Hydrophobic substances
  - (b) Hydrophilic substances
  - (c) Inorganic solutes
  - (d) Both hydrophilic and hydrophobic substances
- 8.** Which of the following affects the transport of molecules when carrier mediated facilitated diffusion is involved?
  - (a) Solubility of molecule in lipids
  - (b) Concentration gradient
  - (c) Availability of carrier molecule
  - (d) All of the above
- 9.** What are the aquaporins in facilitated diffusion process?
  - (a) Lipids
  - (b) Carrier proteins
  - (c) Channel proteins
  - (d) Carrier lipids
- 10.** Water channels are possessed by a membrane to facilitate the movement of hydrophilic substances. These channels are made up of
  - (a) eight similar types of aquaporin
  - (b) eight different types of aquaporin
  - (c) porin proteins
  - (d) None of the above
- 11.** Carrier molecules, involved in facilitated diffusion
  - (a) increase the speed of transport across a membrane
  - (b) undergoes conformational change upon binding of solutes
  - (c) possess specific binding sites for the molecules to be transported
  - (d) All of the above
- 12.** Consider the figure given below. Identify A and B.



- (a) A-Channel protein, B-Carrier protein
- (b) A-Carrier protein, B-Channel protein
- (c) Both A and B are Channel proteins
- (d) Both A and B are Carrier proteins

13. Identify the following process and choose the correct option.



- (a) Simple diffusion
- (b) Facilitated diffusion
- (c) Osmosis
- (d) Deplasmolysis

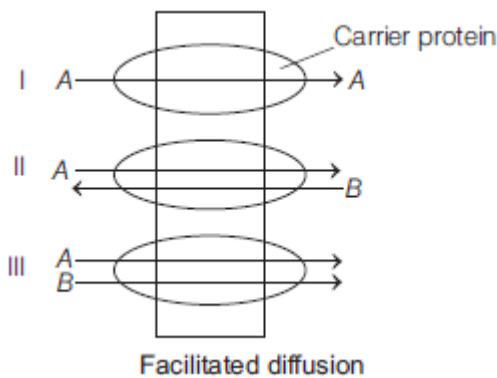
14. Which of the following criteria does not pertain to facilitated transport? **NEET 2013**

- (a) Requirement of special membrane proteins
- (b) High selectivity
- (c) Transport saturation
- (d) Uphill transport

15. Movement of two types of molecules in the same direction is

- (a) symport
- (b) antiport
- (c) uniport
- (d) Both (a) and (b)

16. The given diagram shows transport method of two molecules A and B together. Identify I, II and III and choose the correct option.



- (a) I-Uniport, II-Symport, III-Antiport
- (b) I-Uniport, II-Antiport, III-Symport
- (c) I-Symport, II-Uniport, III-Antiport
- (d) I-Antiport, II-Uniport, III-Uniport

17. What is required for the 'uphill transport' of substances through a membrane?

- (a) Input of energy
- (b) Output of energy
- (c) Pigments
- (d) Nothing is required

18. Which of the following is not a feature of active transport of solutes in plants? **NEET (Odisha) 2019**

- (a) Occurs against concentration gradient
- (b) Non-selective
- (c) Occurs through membranes
- (d) Requires ATP

19. A group of students is studying transport of certain type of molecules in a cell and observe that transport slows down when the cells are treated with poison, i.e. a chemical which inhibits energy production. When under normal conditions, the process was repeated it was observed molecules are transported by

- (a) osmosis (b) active transport  
(c) facilitated diffusion (d) simple diffusion

20. Which of the following pairs is selective and specific mode of transport?

- (a) Passive transport and active transport  
(b) Passive transport and facilitated diffusion  
(c) Facilitated diffusion and active transport  
(d) Simple diffusion and facilitated diffusion

21. The main difference between active and passive transport across cell membrane is **NEET (Odisha) 2019**

- (a) passive transport is non-selective whereas active transport is selective  
(b) passive transport requires a concentration gradient across a biological membrane whereas active transport requires energy to move solutes  
(c) passive transport is confined to anionic carrier proteins whereas active transport is confined to cationic channel proteins  
(d) active transport occurs more rapidly than passive transport

22. Compare the following processes of transport and choose the correct option.

S. No.	Property	Facilitated Diffusion	Active Transport	Simple Diffusion
I.	Highly specific	Yes, it is selective	Yes	No
II.	Use of energy as ATP	Yes	Yes	Yes
III.	Saturation point is reached when all carrier proteins are being used	Yes	No	Yes
IV.	Requires transport proteins	Yes	No	Yes

- (a) Only II (b) Only III  
(c) I, II, III and IV (d) Only I

**C**

23. Active transport of ions by the cell requires

- (a) High temperature (b) ATP  
(c) Alkaline pH (d) Salts

24. Root cap has no function in water absorption, because

- (a) Its vascular system is not directly connected  
(b) Its cells are loosely placed  
(c) It has cells without chloroplast  
(d) It has no root hair

25. Water infiltration will be slowest in

- (a) Black cotton soil (b) Sandy soil  
(c) Red soil (d) Ioamy soil

26. In conifers the water uptake is not much efficient because

- (a) Such plants are acquired much of height  
(b) They have poorly developed or entirely absent root hairs  
(c) Their roots are much branched  
(d) All the above

27. The cohesive force of water is due to

- (a) O bonds (b) H bonds

- (c) *OH* bonds                      (d) *S* bonds

28. Starch is insoluble in water, yet it is accumulated in large quantities in potato tuber because

- (a) It is useful for storage  
(b) Tubers respire slowly  
(c) Starch is synthesized in tubers  
(d) Translocated sucrose is polymerized here

29. Best soil for healthy and vigorous growth of a plant is

- (a) Sandy soil                      (b) Loam  
(c) Clay                              (d) None of these

30. Which of the following is importance of water to the plant life

- (a) In translocation of solutes  
(b) In the mobility of gametes  
(c) Provides support to the aquatic plants  
(d) All the above

1. (d) Short distance transport of substances like nutrients, water, gases, minerals and hormones occurs through diffusion and by cytoplasmic streaming supplemented by active transport.
2. (b) Long distance transport of organic and inorganic substances in plants occurs through the vascular system consisting of complex permanent tissues, i.e. xylem and phloem. This is known as translocation.
3. (a) In rooted plants, transport of water and minerals from roots to stem, leaves, flowers and fruits, occurs through xylem.
4. (a) The direction of translocation, i.e. transport of organic substances and mineral nutrients is multidirectional. However, it is unidirectional in case of water and minerals.
5. (c) Diffusion is the process in which movement of molecules occurs along the concentration gradient, i.e. movement of molecules takes place from its higher concentration to lower concentration without the expenditure of energy.
6. (b) The presence of other substances does not affect the rate of diffusion. In diffusion, electrical charges of diffusing substance, can affect the rate of diffusion. Channel protein allows diffusion of solute or substance of appropriate size, i.e. rate of diffusion is also affected by molecular size of diffused materials and solubility of diffusing substances in lipids.
7. (b) Lipid soluble molecules (hydrophobic) can easily pass through the cell membranes, while hydrophilic (water loving) substances face difficulty to pass through these membranes.
8. (d) In facilitated diffusion, the rate of diffusion is affected by the solubility of molecules in lipids, concentration gradient, molecular size of the molecules, etc. Availability of carrier molecules also affects the rate of transport in facilitated diffusion.
9. (c) Aquaporins are proteins present in cell membranes. They facilitate the transport of water soluble substances. Aquaporins are also known as channel proteins.
10. (b) For the transport of hydrophilic substances, cell membranes possess aquaporins or water channels. These water channels are made up of eight different types of aquaporins.
11. (d) All options are correct for carrier proteins involved in facilitated diffusion, as these facilitate the diffusion of hydrophilic substances through biological membrane. These are specific and allow the cells to select the solute of an appropriate size. Carrier proteins can increase the rate of diffusion and may undergo changes on binding with solutes.
12. (a)
13. (b) The given figure indicates facilitated diffusion. The diffusion of hydrophilic substances along the concentration gradient through fixed membrane transport proteins without involving energy expenditure, is called facilitated diffusion.
14. (d) Uphill transport criteria does not pertain to facilitated diffusion. Uphill transport is the process in which diffusion of a component occurs from a less concentrated stream to a more concentrated permeable stream. Facilitated transport is a form of passive transport in which materials are moved across the plasma membrane by a transport protein down their concentration gradient.
15. (a) When carrier proteins allow movement of two types of molecules together, it is termed as cotransport. It can be further divided into two types; symport and antiport. In symport, two types of molecules are transported in the same direction.
16. (b) In the given diagrams, I is uniport, II is antiport and III is symport. I Uniport occurs when a molecule moves across a membrane independent of other molecules. I Antiport occurs when the two types of molecules move in opposite directions. I Symport occurs when the two types of molecules cross the membrane in same direction.
17. (a)
18. (b) Option (b) is not a feature of active transport of solutes in plants. Active transport of solutes in plants is carried out by membrane proteins. Like enzymes, the carrier proteins are very specific (i.e. selective) in what they carry across the membranes. Active transport, i.e. the uphill transport of molecules uses energy (ATP) to pump molecules against a concentration gradient.

19. (b) In active transport, the movement of solutes occurs against the concentration gradient or chemical potential gradient with the expenditure of energy. Thus, the active transport process will be slowed down when treated with a chemical that inhibits energy production.
20. (c) Facilitated diffusion and active transport are two important processes for the movement of substances, into and out of the cells are selective and specific. This is because both the processes enable the transport of only a few selected materials which do not react with the side chains of the protein transporters involved.
21. (b) The main difference between active and passive transport across the cell is that passive transport requires a concentration gradient across the biological membrane involved. Whereas during active transport, the movement of molecules is from lower concentration to higher concentration that means they move against the concentration gradient by using ATP.
22. (d)
23. (b) Energy is usually provided by ATP or by concentration gradient of ions.
24. (d) Root cap has no function in water absorption because it has no root hair and it is mainly for protection of root tip against any injury.
25. A
26. B
27. B
28. A
29. B
30. (d) Water is the most important constituent of plants and is essential for the maintenance of life, growth and development and helps in reproduction also.