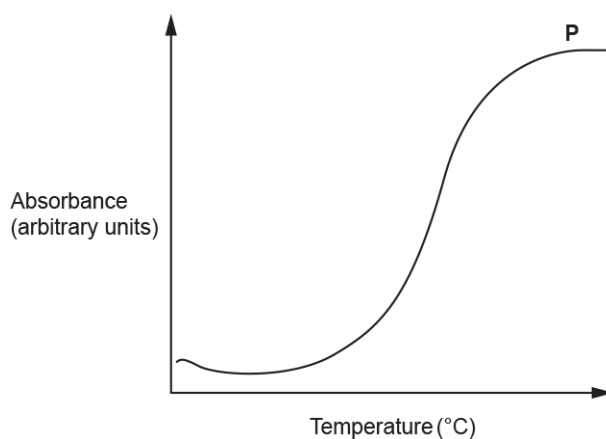


## Biological Membranes

1. The graph below shows readings from a colorimeter as pigment leaks out of beetroot membranes at different temperatures.



Which statement, **A** to **D**, explains why the absorbance stops increasing at point **P**?

- A** The phospholipid bilayer has melted.
- B** Vibration has created spaces between the phospholipids.
- C** Transmembrane proteins have denatured.
- D** Pigment is in equal concentration inside and outside the cells.

Your answer

[1]

2. Cells require vitamins and minerals in order to function correctly. These vitamins and minerals need to cross the plasma membrane.

Vitamins are either fat soluble or water soluble. Vitamins A, D, E and K are fat soluble.

Which of the following combinations enter a cell by facilitated diffusion?

- A** vitamin A and calcium ions
- B** vitamin C and calcium atoms
- C** vitamin C and calcium ions
- D** vitamin A and calcium atoms

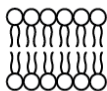
Your answer

[1]

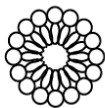
3. When interpreting the results of an experiment to investigate the effect of detergent on plasma membranes, a student looked for a diagram to show what the phospholipids may look like in the presence of detergent.

Which of the diagrams, **A** to **D**, should the student use?

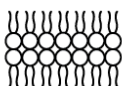
**A**



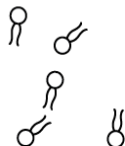
**B**



**C**



**D**



Your answer

[1]

4. Membranes are found within and surrounding cells.

Which of the statements, **A** to **D**, is not a role of membranes in cells?

- A** acts as a barrier between areas
- B** cell signalling
- C** provides support for cell
- D** site of chemical reactions

Your answer

[1]

5. Cut pieces of agar jelly can be used to investigate the factors affecting diffusion rates in cells.

Four pieces of agar jelly containing universal indicator were soaked in the same concentration of hydrochloric acid for one minute.

The cubes were then removed and blotted dry.

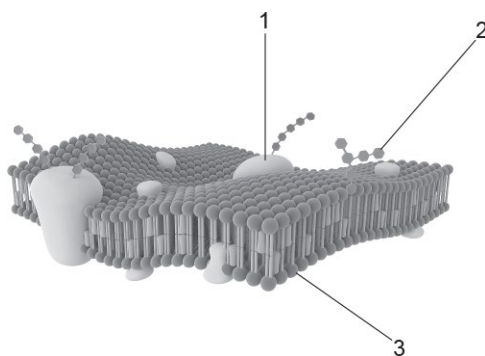
Which of the following pieces of agar jelly would be the first to turn entirely red?

- A** a cube with edges 4 cm each
- B** a cuboid with edges 2 cm, 4 cm and 6 cm
- C** a cuboid with edges 3 cm, 3 cm and 5 cm
- D** a sphere with diameter 4

Your answer

[1]

6. The diagram below shows part of a plasma membrane.



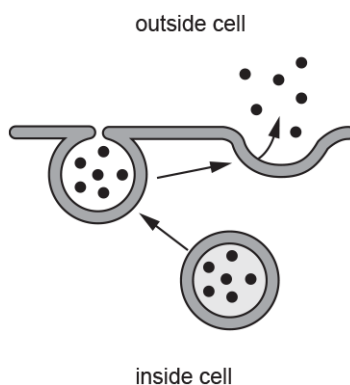
Which of the label lines points to a structure that could contain a sulfur atom?

- A 1, 2 and 3
- B Only 1 and 2
- C Only 2 and 3
- D Only 1

Your answer

[1]

7. The diagram below shows one method of transport across a cell membrane.



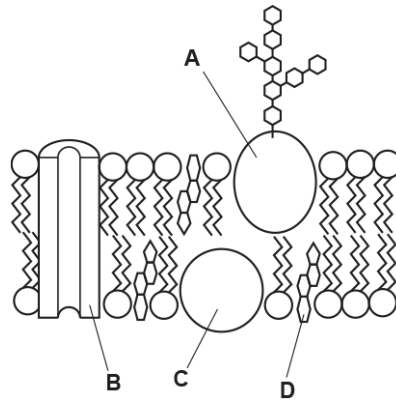
Which of the following options, **A** to **D**, is the name of this method of transport?

- A cytokinesis
- B endocytosis
- C exocytosis
- D phagocytosis

Your answer

[1]

8. The diagram below shows the structure of a plasma membrane.

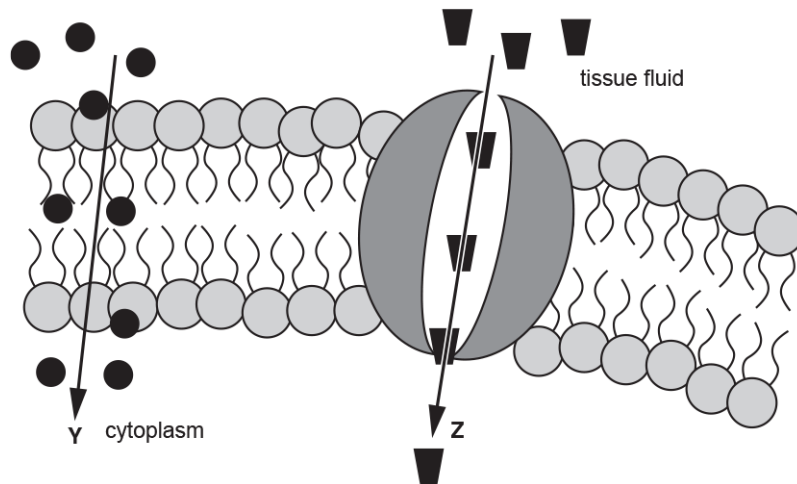


Which label, **A** to **D**, indicates the component of the membrane that can affect its fluidity?

Your answer

[1]

9. This diagram shows the transport of two molecules across a plasma membrane.



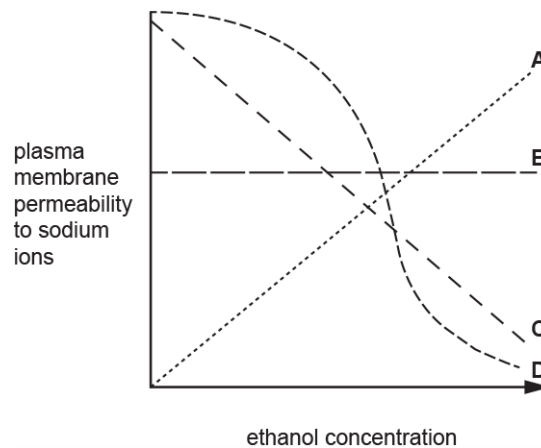
Which row, **A** to **D**, correctly identifies the molecule being transported **and** the mechanism of transport across the plasma membrane?

	<b>Y</b>	<b>Z</b>
<b>A</b>	glucose by active transport	oxygen by diffusion
<b>B</b>	glucose by diffusion	oxygen by active transport
<b>C</b>	oxygen by active transport	glucose by active transport
<b>D</b>	oxygen by diffusion	glucose by diffusion

Your answer

[1]

10. Which of the lines, **A** to **D**, in the graph below, represents the effect of increasing ethanol concentration on the permeability of the plasma membrane to sodium ions?



Your answer

[1]

11. An investigation into how a change in sodium chloride concentration effects osmosis in potato cells concluded that the isotonic point of the potato was 0.25 M.

Which of the statements, **A** to **D**, describes what is happening at the isotonic point?

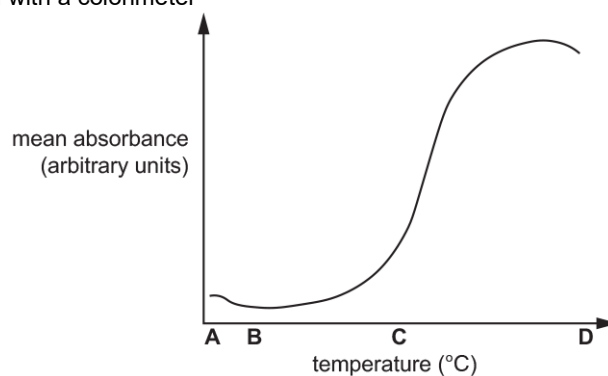
- A** there is a net movement of water from the sodium chloride solution into the potato cells
- B** there is a net movement of water from the cytoplasm of the potato cells into the sodium chloride solution
- C** there is no movement of water into or out of the potato cell cytoplasm
- D** the movement of water into the potato cells is equal to the movement of water out of the potato cells

Your answer

[1]

12. Swiss chard is a leafy green vegetable related to spinach. Some varieties have yellow stalks that have vacuoles containing yellow betaxanthin pigments.

The graph below shows the effect of temperature on the release of these pigments recorded as mean absorbance, when measured with a colorimeter



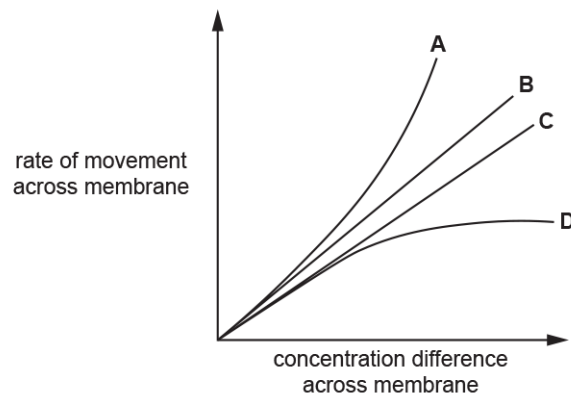
It was deduced that the betaxanthins were released from the vacuole due to the denaturing of proteins in the tonoplast (vacuolar membrane).

Which letter, **A** to **D**, shows the temperature at which the proteins denature?

Your answer

[1]

13. The graph shows the rate of movement of four different substances across a membrane.



The substances shown in the graph are: carbon dioxide, testosterone (a lipid-based hormone), ethanol and sodium ions.

Which of the lines, **A to D**, represents the pattern of movement of sodium ions across a membrane?

Your answer

[1]

14. Which option, **A to D**, describes the role of cholesterol in cell surface membranes in the human body?

- A** Cholesterol binds to phospholipid phosphate heads, increasing the packing of the membrane, therefore reducing the fluidity of the membrane.
- B** Cholesterol binds to phospholipid fatty-acid tails, reducing the packing of the membrane, therefore increasing the fluidity of the membrane.
- C** Cholesterol absorbs ATP, preventing active transport across the membrane.
- D** Cholesterol binds to phospholipid fatty-acid tails, increasing the packing of the membrane, therefore reducing the fluidity of the membrane.

Your answer

[1]

15. Fig. 16.1 shows the results of an osmosis experiment on sections of potato and beetroot. The original mass of each potato section was 4.6 g.

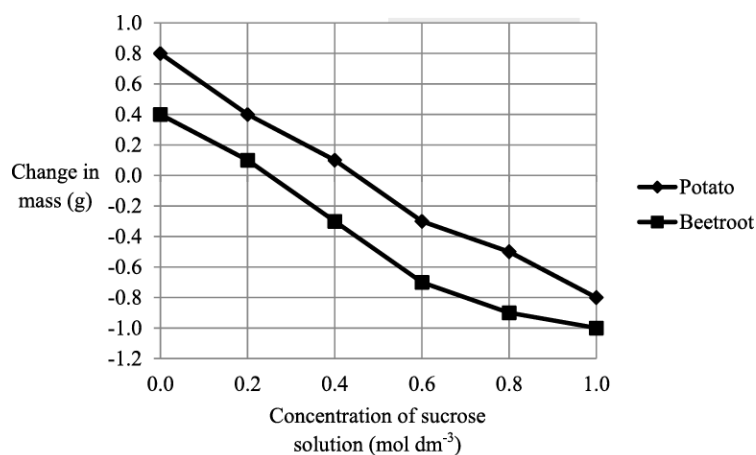


Fig. 16.1

Which option shows the correct percentage change in mass when a potato section was placed in the solution with the highest water potential?

- A -17.4%
- B 10.8%
- C -27.0%
- D 17.4%

Your answer

[1]

16. Which of the following is **not** a role of an intracellular membrane?

- A cell to cell signalling
- B partially permeable barrier
- C site of chemical reactions
- D transport of substances across the membrane

Your answer

[1]