

AQA, OCR, Edexcel

A Level

A Level Biology

Biological Membrane Questions

Name:

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Total Marks: /28

Biological Membranes

Cells and organelles are surrounded by membranes. Membranes have a number of very important functions including providing structure to the cell.

1.

a) One of the cell membranes most important roles is to control what substances enter and leave the cell.

i) Membranes also allow recognition by other cells. Why is this important in relation to the immune system? (2 marks)

ii) Identify one of other function of the membrane and give a reason why this is important. (2 mark)

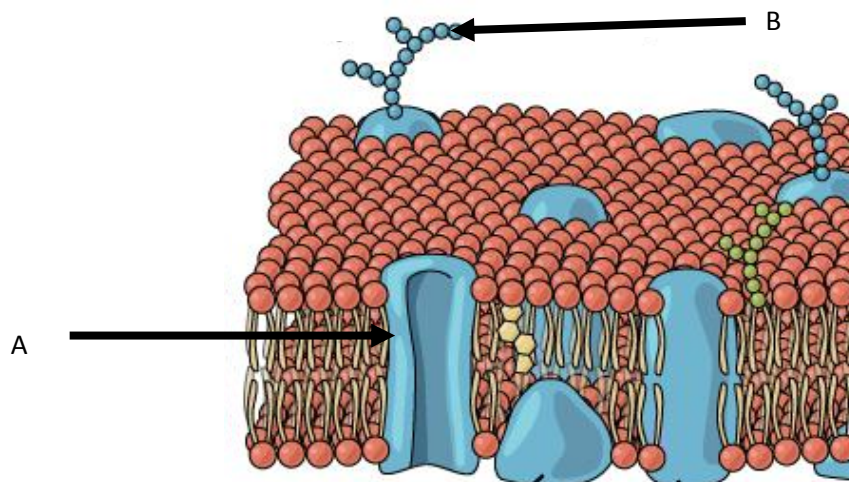
iii) Identify an organelle in an animal cell with a membrane and state why the presence of a membrane is important in the function of the organelle. (2 marks)

b) The cell membrane structure is similar across all cells.

i) Describe the structure of the cell membrane using the terms 'phospholipid bilayer' and 'fluid mosaic model'. (6 marks)

ii) The more unsaturated fatty acids present in the membrane the more fluid it is. Cholesterol also affects the fluidity of the membrane. Why is it key that there isn't too much or too little cholesterol present in the membrane for optimum cell function? (2 marks)

c) The drawing below shows the cell surface membrane.



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i) What is the arrow labelled A pointing to, and what is the role of this membrane component? (2 mark)

ii) Arrow B is pointing to a different structure on the cell membrane, what is the name of it and what is its role in cell function? (2 marks)

2. The cell membrane is very selective about what molecules can pass through it.

a)

i) Identify two types of molecules that can pass directly through the phospholipid bilayer. (2 marks)

ii) Identify two types of molecules that cannot pass directly through the membrane and give examples of each (4 marks)

b) One of the main features of the cell surface membrane is that it is partially permeable, so allowing the transfer of substance between its internal and external environments.

i) Using your knowledge of the fluid mosaic model, explain how the membrane acts as a barrier to water-soluble molecules. (2 marks)

ii) Temperature also affects membrane permeability. Temperatures that are too high can denature proteins in the membrane, increasing permeability. How could temperature below 0°C affect cell membrane permeability? (3 marks)