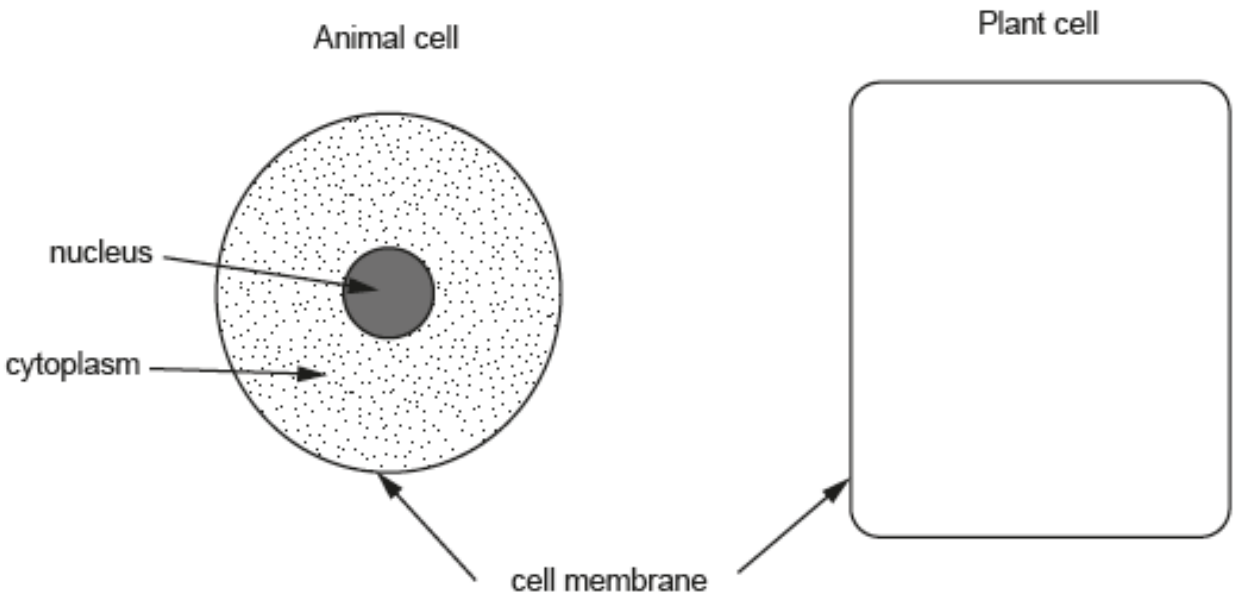
Unit 1.1 Cells and movement across membranes - Higher

1 *(a)* (i) The diagrams below show an animal cell and the **cell membrane** of a plant cell. Complete the drawing of the plant cell. *No labels are required.* [2]



(ii) State the function of the cell membrane. [1]

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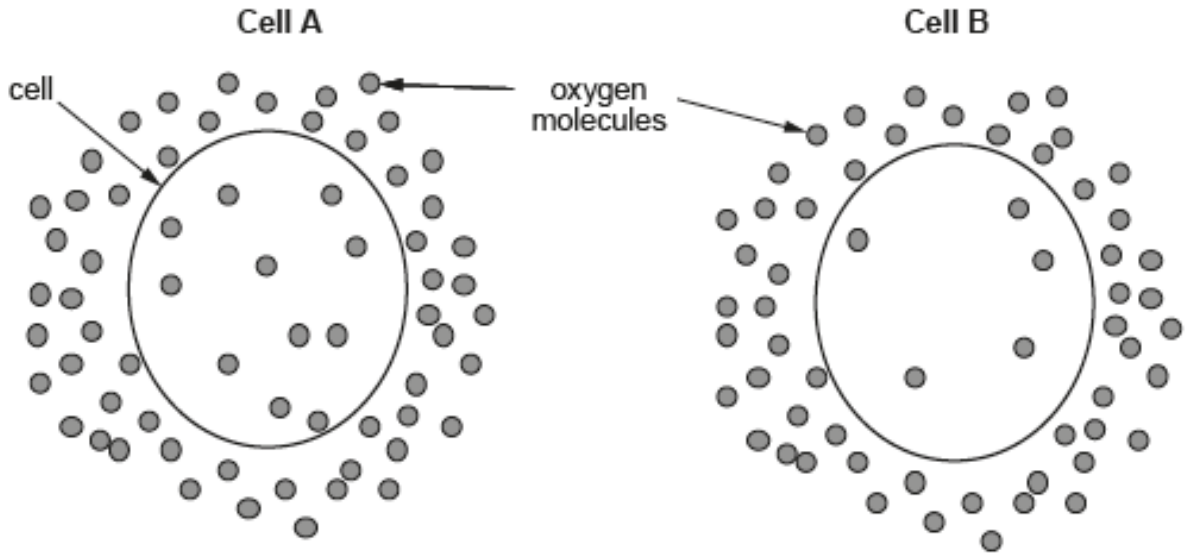
(b) The diagrams below show two cells which are carrying out respiration. Oxygen molecules are shown inside and outside both cells.



Examiner only

(i) Answer the following questions by placing a tick [✓] in the correct box. [3]

I. In cell **A** the oxygen molecules move:

into the cell ☐

out of the cell ☐

no net movement. ☐

II. In cell **B** the oxygen molecules move:

into the cell ☐

out of the cell ☐

no net movement. ☐

III. Into which cell would there be the greater net movement of oxygen:

cell **A** ☐

cell B? ☐

(ii) Name the process by which the oxygen molecules are moving. [1]

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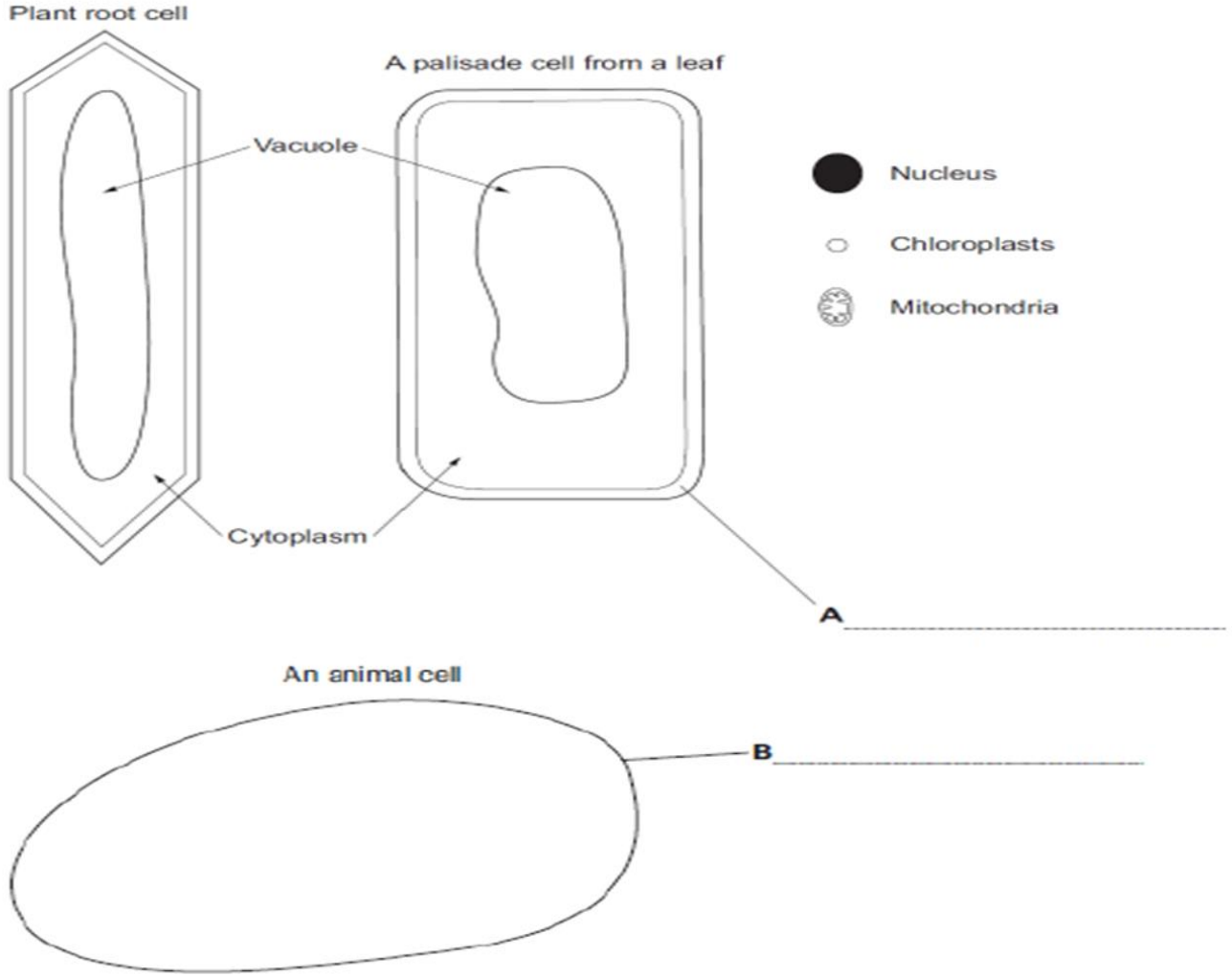
2 The drawings show sections through three different cells and some structures normally found in SOME of them.

(a) Using the key given, carefully **draw** chloroplasts, mitochondria and a nucleus where they belong in the cells below in their correct positions. [7]



(b) **Label** the parts **A** and **B** on the diagrams. [2]

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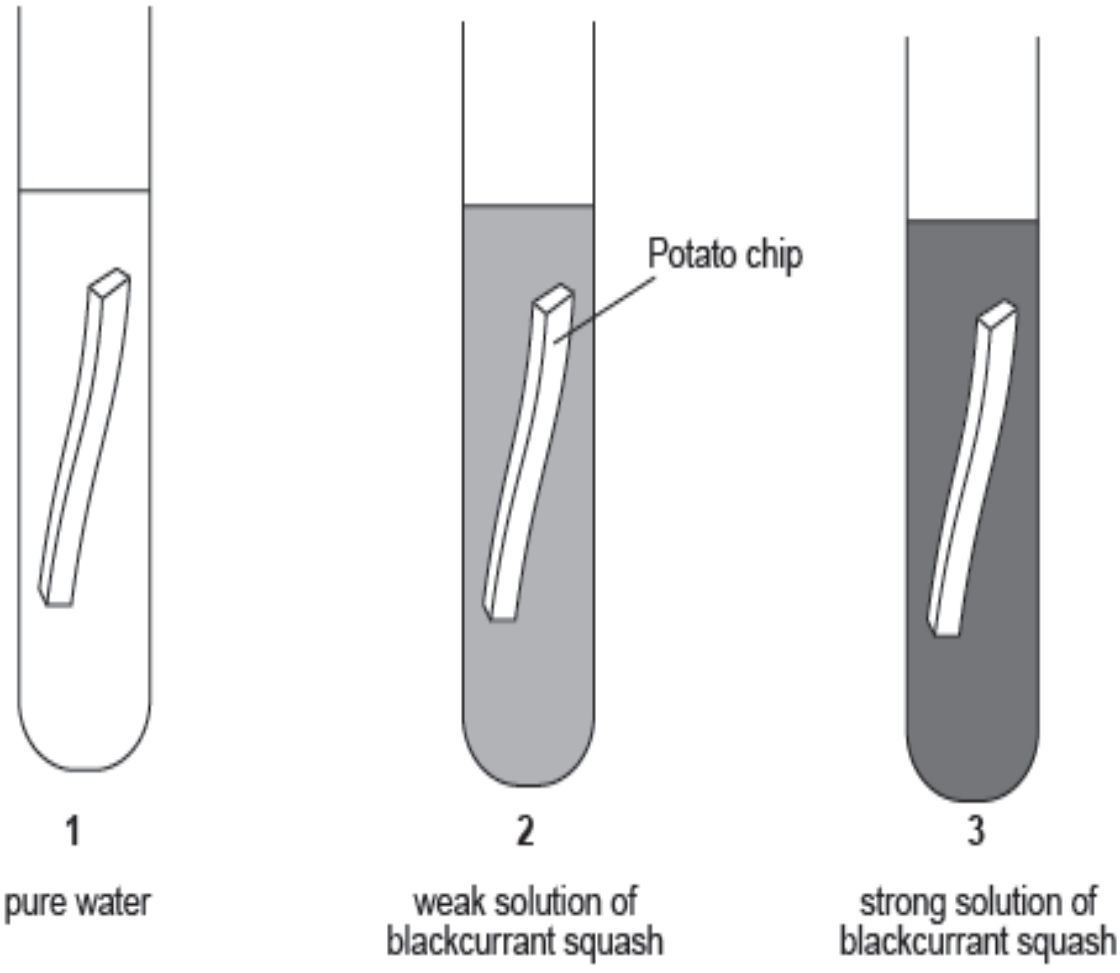
3 *(a)* Complete the sentence using some of the words below. [2]

low **fully permeable** **high** **semi-permeable**

During osmosis, water moves from a region where it is in a ..... concentration to a region where it is in a ..... concentration, through a ..... membrane.

(b) Ceri and Sajid investigated osmosis in potato chips.
They set up three test tubes containing blackcurrant squash and water as shown in the diagram below. Blackcurrant squash contains sugar.
A potato chip of exactly the same size and mass was added to each tube.



(i) State the number of the tube which contained the **lowest** concentration of **water**. [1]

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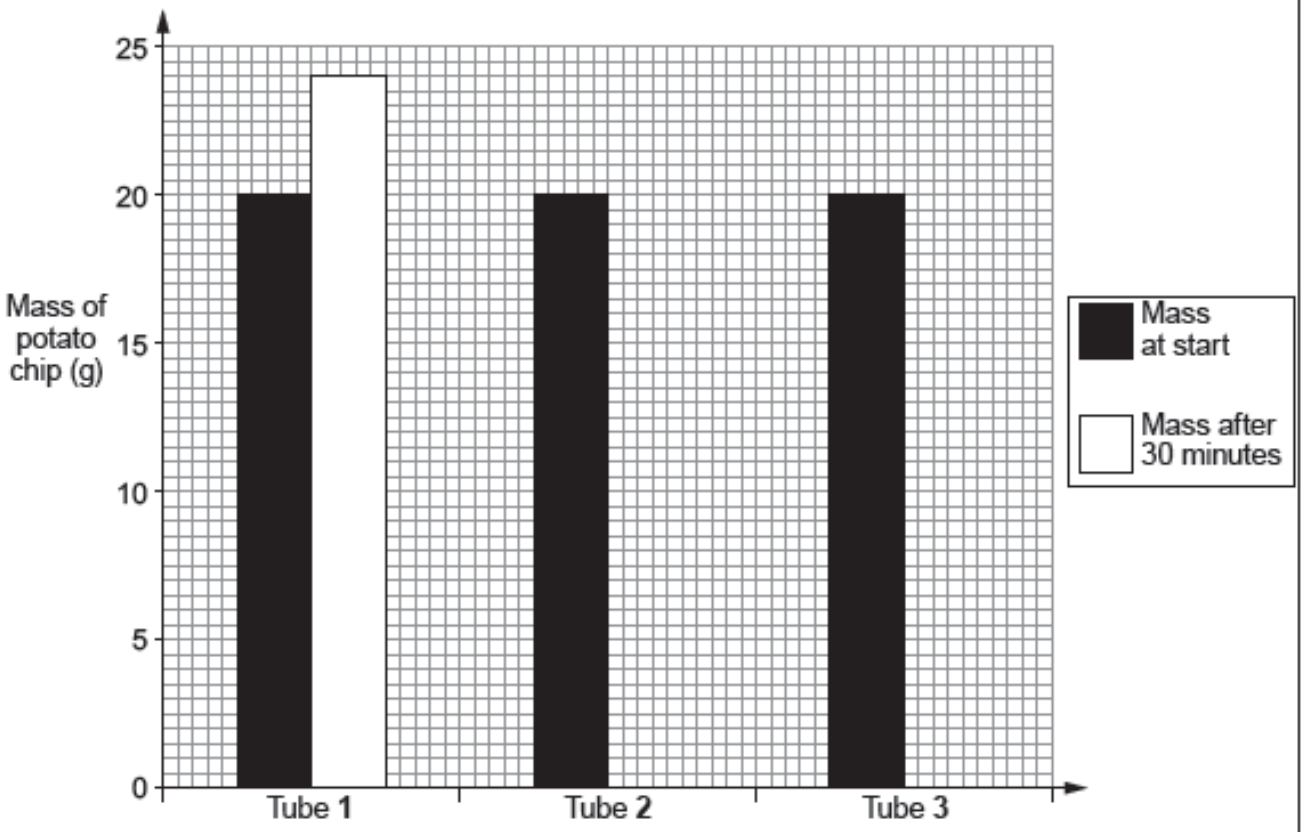
Examiner only

After 30 minutes they removed the potato chips and recorded the mass of each.

Tube	Mass of potato chips at start (g)	Mass of potato chips after 30 minutes (g)
1	.....	.....
2	.....	20
3	.....	15



(ii) Use the bar chart to **complete** the results table above. [1]

(iii) **Complete** the bar chart for tubes **2** and **3**. [1]

(iv) State the number of the tube in which the concentration of water in the chips was the **same** as that in the solution, giving a reason for your answer. [1]

Number of tube .....

Reason .....

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(v) Explain why the potato chip in tube **1** gained mass. [2]

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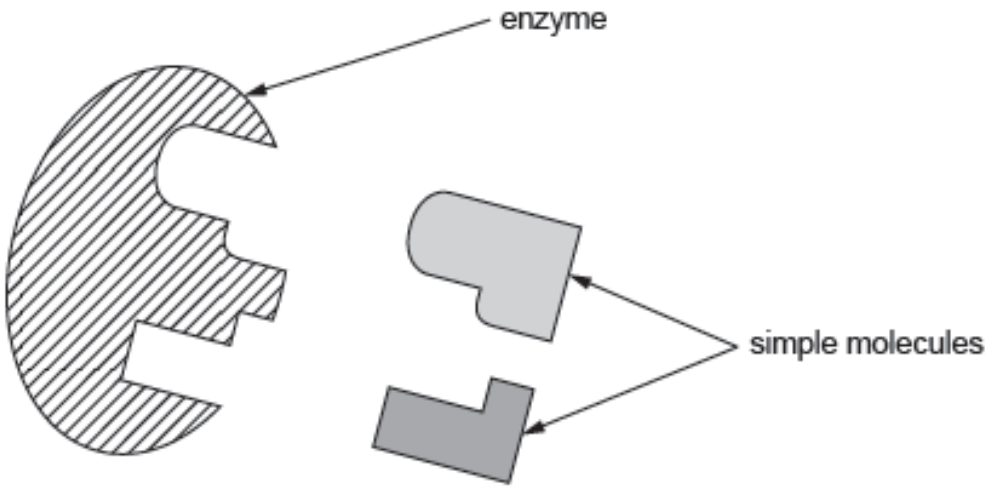
(a) (i) The diagram shows an enzyme which builds up complex molecules from simple molecules.



Complete the diagram below to show the next stage in the reaction between this enzyme and the two simple molecules shown above. [2]

(ii) What name is given to this **model** of enzyme action?

[1]

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(iii) Explain how boiling would affect the action of the enzyme shown in the diagrams above. [2]

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10. In 2010, an accident happened at an offshore oil well in Louisiana. Many thousands of tonnes of oil leaked out and caused massive pollution to oyster fisheries.
Oysters live in sea water with a salt concentration of 2%.
In order to flush away the oil, fresh water was pumped over the oysters. This lowered the salt concentration to almost zero and caused most of the oysters to die.

(a) Explain why most of the oysters died. [6 QWC]