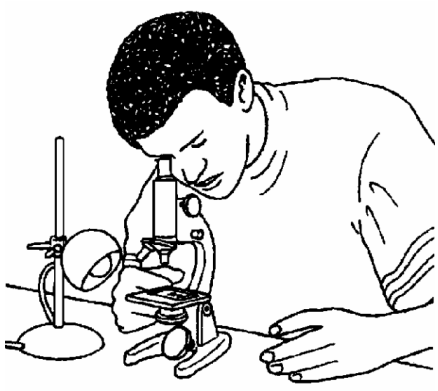
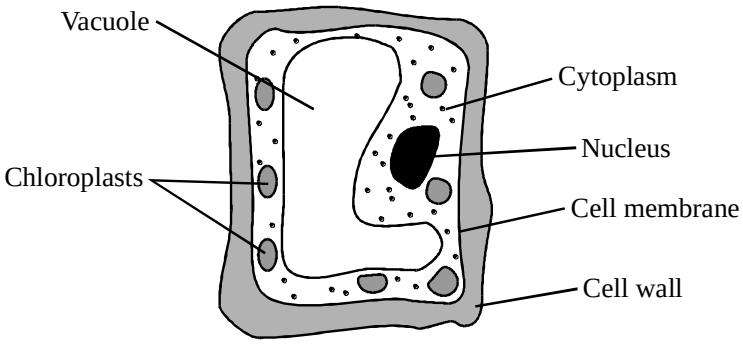
Cells, Diffusion & Osmosis Questions

(a) This student is examining plant cells.



This shows the student's labelled diagram of one of the plant cells.



Complete each, of the following sentences.

(i) The cell wall is made of ..... .

(ii) The function of the cell wall is to ..... the cell.

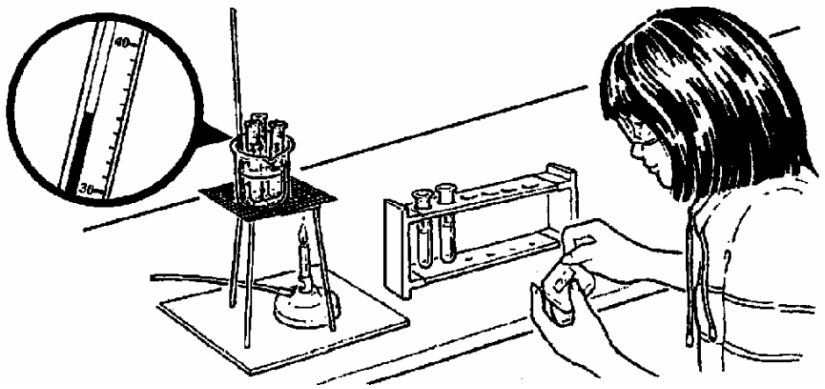
(iii) Chloroplasts contain ..... which is needed for

..... .

(iv) The vacuole contains ..... which is mostly water.

(5)

(b) This student is investigating enzymes.



(i) What is the temperature of the water in the beaker?

..... **°C**

(1)

(ii) What does an enzyme do?

.....

.....

.....

.....

(2)

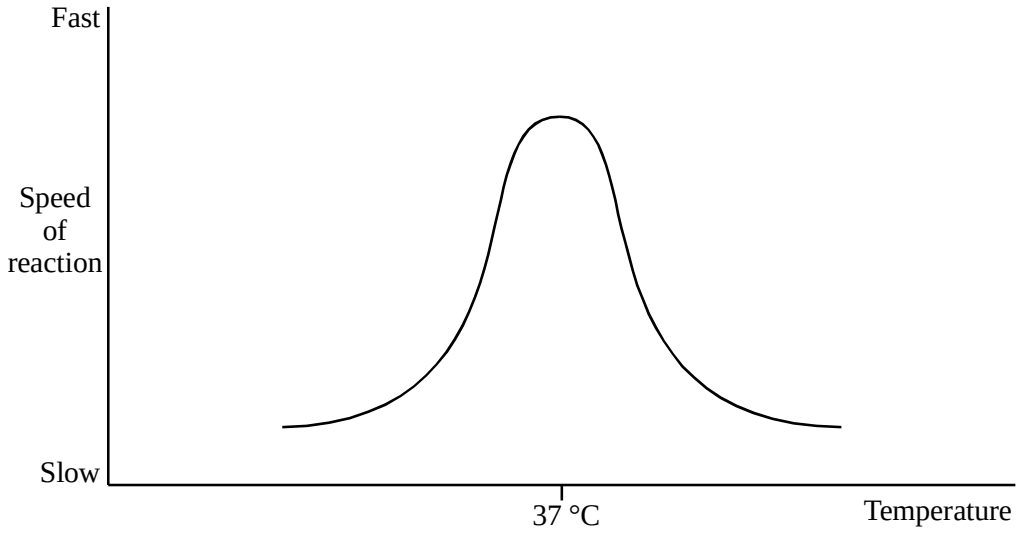
(iii) Enzymes have many uses. For example they are used in some washing powders. Give **two** examples of other uses for which enzymes, or products containing enzymes, are sold.

1. .....

2. .....

(2)

(c) An enzyme is used in a chemical reaction. The graph shows the speed of the reaction at different temperatures.



(i) Complete the following sentence in your own words.

At 37 °C the reaction .....

.....

(1)

(ii) What makes you think that this enzyme could work well in the human body.?

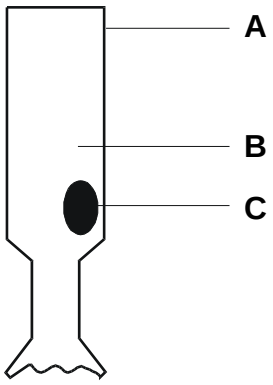
.....

.....

(1)

(Total 12 marks)

The drawing below shows a light-sensitive (receptor) cell from the eye. The structures labelled A, B and C, can be found in most animal cells.



(a) Name the structures labelled A, B and C.

A .....

B .....

C .....

(3)

(b) Describe, as fully as you can, what happens in the nervous system when this receptor cell is stimulated by light.

.....

.....

.....

.....

(3)

(Total 6 marks)

(a) Put a tick (✓) in the correct boxes in the table below to show which of the parts given are present in the cells and organisms listed.

	CYTOPLASM	NUCLEUS	CELL WALL	GENES
Leaf mesophyll cell				
Sperm				

(2)

(b) (i) What is the main job of a leaf mesophyll cell?

.....

.....

(1)

(ii) Explain **one** way in which the structure of the leaf mesophyll cell helps it to carry out its job.

.....

.....

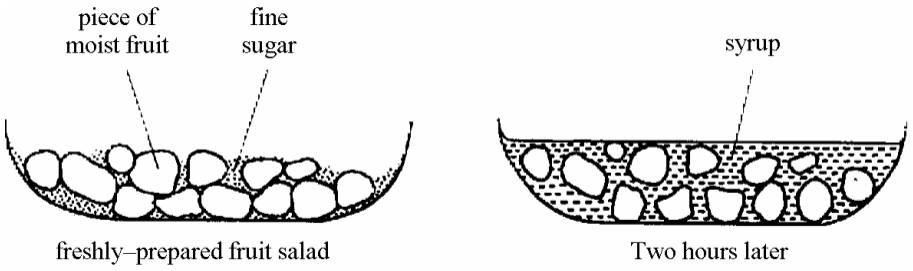
.....

.....

(2)

(Total 5 marks

A cook prepares a fresh fruit salad by cutting up a variety of fruits and placing them in a bowl with layers of sugar in between. After two hours the fruit is surrounded by syrup (concentrated sugar solution).



Explain, as fully as you can, why syrup (concentrated sugar solution) was produced after two hours.

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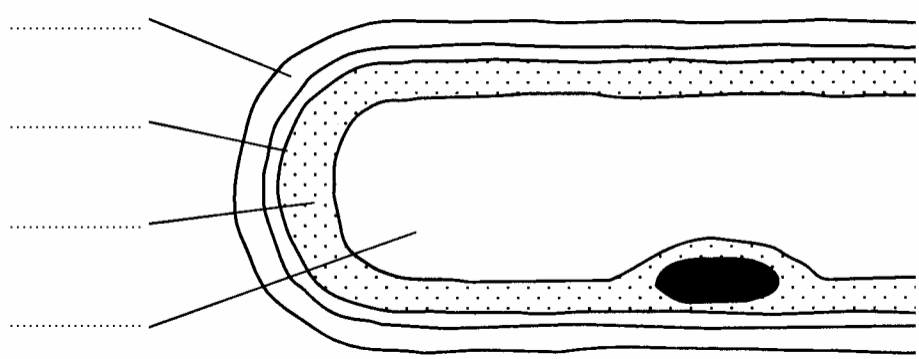
.....

(Total 4 marks)

The drawing shows part of a root hair cell.

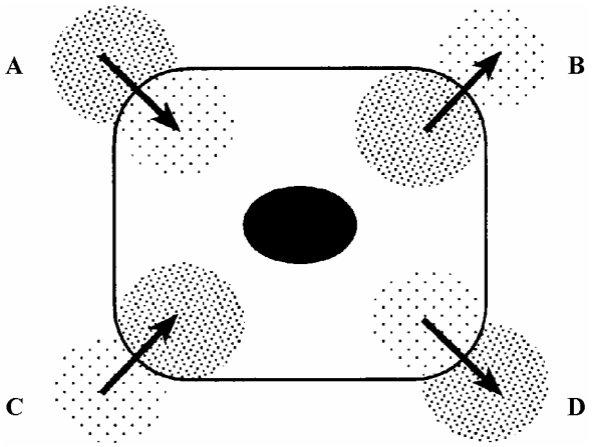


(a) Use words from the list to label the parts of the root hair cell.

cell membrane **cell wall** **cytoplasm** **nucleus** **vacuole**

(4)

(b) The diagram shows four ways in which molecules may move into and out of a cell.
The dots show the concentration of molecules.



The cell is respiring aerobically.
Which arrow, **A**, **B**, **C** or **D** represents:

(i) movement of oxygen molecules; .....

(ii) movement of carbon dioxide molecules? .....

(2)

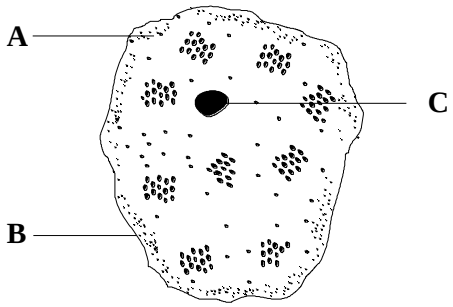
(c) Name the process by which these gases move into and out of the cell.

.....

(1)

(Total 7 marks)

The diagram shows an animal cell.



(a) Name **each** labelled part and give its function.

A Name .....

Function .....

.....

B Name .....

Function .....

.....

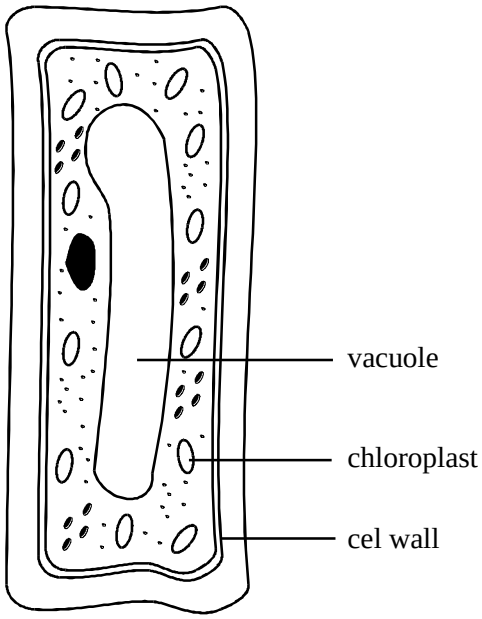
C Name .....

Function .....

.....

(6)

(b) (i) This plant cell also contains chloroplasts, a cell wall and a vacuole. Label **each** of these parts on the diagram.



(3)

(ii) Give the function of these parts of a plant cell.

Chloroplast function .....

.....

Cell wall function .....

.....

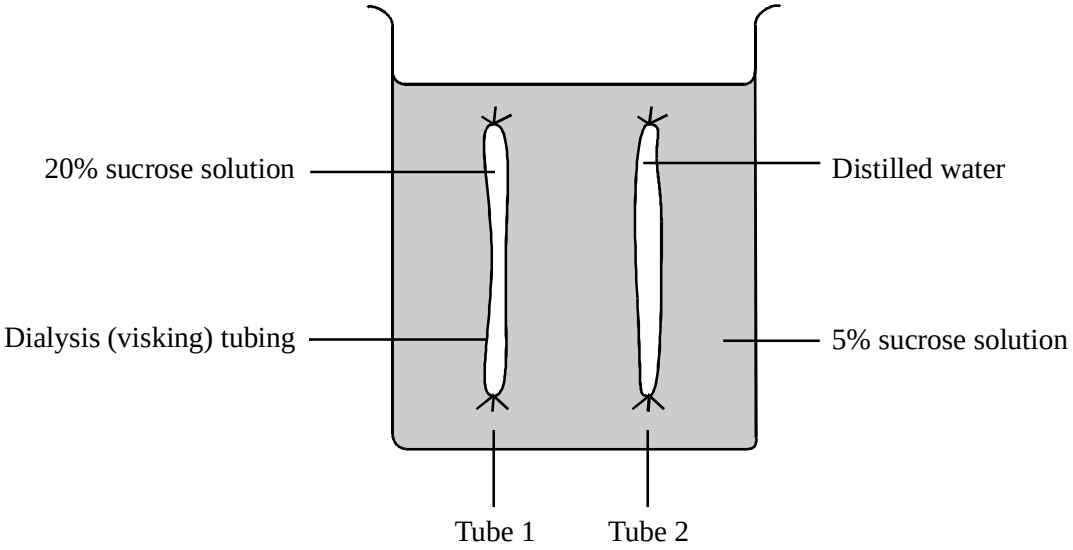
Vacuole function .....

.....

(3)

(Total 12 marks)

Some students set up this experiment to investigate osmosis. They filled two pieces of dialysis [visking] tubing with different liquids and left them both in a beaker of *5%* sucrose solution for an hour.



(a) Describe and explain the likely results after one hour.

.....

.....

.....

.....

.....

.....

.....

.....

(6)

(b) Describe **two** examples where osmosis is used in living things.

.....

.....

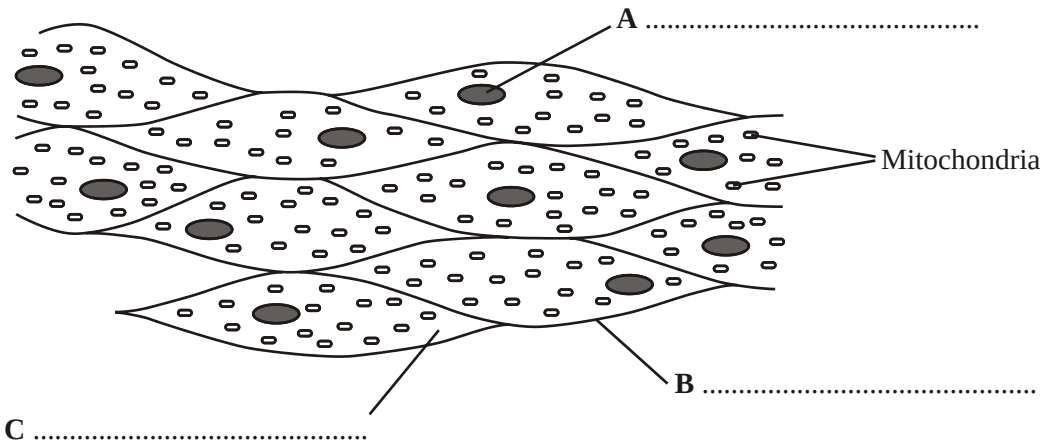
.....

.....

(2)

(Total 8 marks)

The diagram shows a group of muscle cells from the wall of the intestine.



(a) On the diagram, use words from the box to name the structures labelled **A**, **B** and **C**.

cell membrane	**cell wall**	**chloroplast**	**cytoplasm**	**nucleus**

(3)

(b) How are these muscle cells adapted to release a lot of energy?

.....

.....

.....

(2)

(Total 5 marks)

In fish and chip shops, potatoes are cut into chips several hours before they are cooked.

The amount of water in the chips must be kept constant during this time.

To keep the water in the chips constant, the chips are kept in salt solution.

A student investigated the effect of different concentrations of salt solution on the mass of chips.

- He weighed each of five chips. He placed each chip into a different concentration of salt solution. After one hour he removed the chips, then reweighed them.

His results are shown in the table.

Concentration of salt solution	**0 M**	**0.5 M**	**1 M**	**2 M**	**3 M**
Mass of chip at start in grams	2.6	2.8	2.8	2.5	2.6
Mass of chip after one hour in grams	2.7	2.8	2.7	2.3	2.1

(a) (i) In which concentration of salt solution did the chip gain mass?

..... M

(1)

(ii) Complete the sentence by drawing a ring around the correct answer in the box.

The chip gained mass because water entered by

digestion
osmosis
respiration

(1)

(b) In which concentration of salt solution should the chips be kept?

..... M

Give a reason for your answer.

.....

(2)

(c) How could the student have made his investigation more reliable?

.....

.....

(1) (Total 5 mark