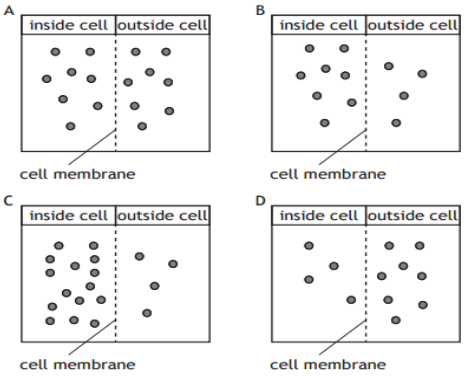
Cells Homework 6

1. In the diagrams below, the circles represent molecules on either side of a cell membrane.

In which of these diagrams would the molecules move into a cell by diffusion?



2. The movement of water from an area of high water concentration to an area of lower water concentration through a selectively permeable membrane is called

A diffusion

B osmosis

C plasmolysis

D active transport

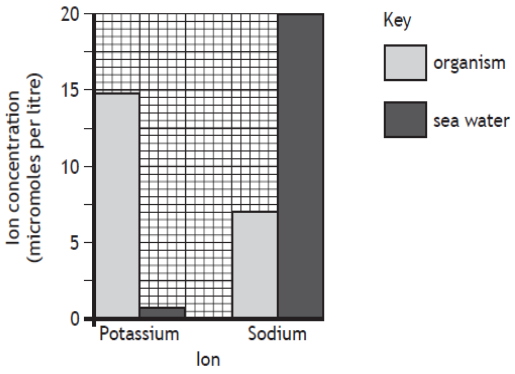
3. Four cylinders of potato tissue were weighed and each was placed into a salt Solution of a different concentration.

The cylinders were reweighed after one hour and the results are shown below.

Salt Solution	Initial mass of potato cylinder (g)	Final mass of potato cylinder (g)
A	10·0	7·0
B	10·0	9·4
C	10·0	11·2
D	10·0	12·6

In which salt solution would most potato cells be plasmolysed.

4. The graph shows the concentration of ions in a single celled organism and the sea water surrounding it.



Use the graph to identify which of the following statements is correct.

A sodium ions will move into the organism by active transport

B sodium ions will move out of the organism by diffusion

C potassium ions will move out of the organism by active transport

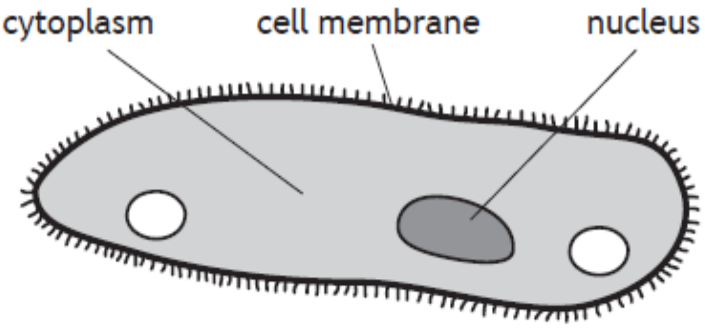
D potassium ions will move into the organisms by active transport

5. Which line in the table below identifies the direction of diffusion of the three substances during muscle contraction?

	Substance		
	Glucose	Oxygen	Carbon dioxide
A	out	out	in
B	in	out	in
C	out	in	out
D	in	in	out

1. *Paramecium* is a single-celled organism which lives in fresh water.

The following diagram shows some of its structures.



(a) (i) Choose one of the following structures by ticking (✓) one of the boxes and describe its function. 1

Cytoplasm ☐ Cell membrane ☐ Nucleus ☐

Function _____ 1

_____

(ii) The water concentration outside the paramecium is higher than the water concentration of the cytoplasm. This causes the diffusion of water into the cell.

Name this movement of water. 1 1

_____

(b) Name the structure present in a plant cell which prevents it from bursting when full of water. 1

1

_____

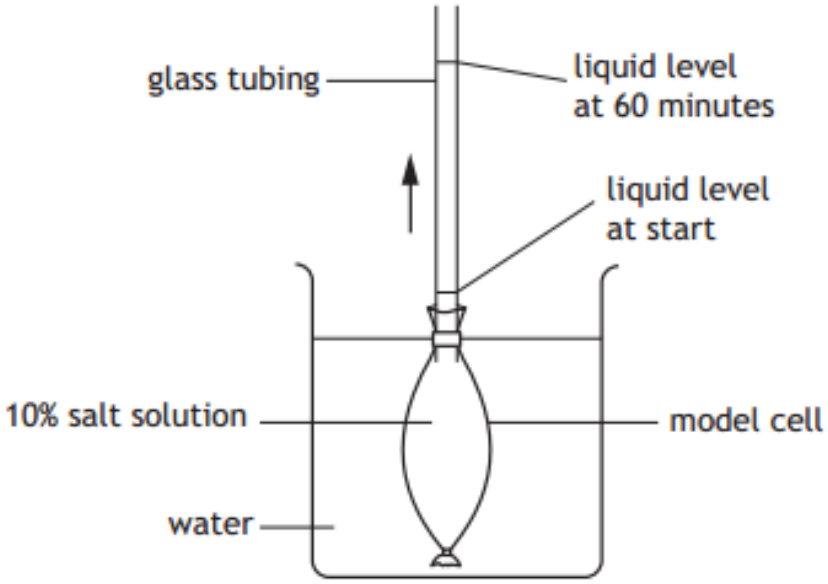
(c) Describe the function of the mitochondria.

_____

_____ 1

2

The apparatus shown below was used to investigate the movement of water into and out of a model cell. The model cell had a selectively permeable membrane.



The liquid level in the glass tubing was measured every 10 minutes for 60 minutes.

The results are shown in the table below.

Time (minutes)	*Liquid level* (mm)
0	10
10	22
20	32
30	40
40	48
50	56
60	64

(a) Name the process which caused the liquid level to rise. 1

_____

(b) Explain how this process caused the liquid level to rise. **2**

_____

_____

_____

(c) Calculate the average rate of movement of liquid in the glass tubing. **1**

Space for calculation

_____ mm per minute

(d) When the investigation was repeated, the average rate of movement of liquid was slower.

Suggest **one** difference in the way that the investigation was set up that could have caused this change in results. **1**

_____

_____

e) State the term for animal cells and plant cells placed into strong salt solution.

Animal cell _____

Plant cell _____ **2**

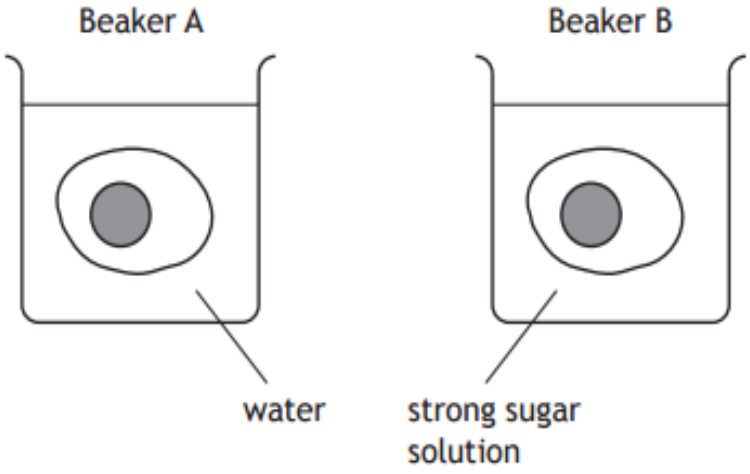
f) Define the process of osmosis.

_____

_____ **1**

3 (a) Shells can be removed from eggs by dissolving them in vinegar for 2–3 days. The egg contents remain inside a thin membrane.

In an investigation the shells from two eggs were removed. The eggs were then weighed and placed in beakers as shown below.



After 2 hours the eggs were removed from the beakers, blotted dry and reweighed. The results are shown in the following table.

Beaker	*Mass at start* (g)	*Mass after 2 hours* (g)	*Percentage change in mass*
A	54·0	67·5	
B	52·1	47·8	−8·2

(i) Complete the table by calculating the percentage change in mass for beaker A. **1**

Space for calculation

(ii) Suggest why the eggs were blotted dry before being reweighed. **1**

_____

_____

(a) (continued)

(iii) Choose either beaker A or B and explain how osmosis caused the change in mass of the eggs in that beaker. **2**

Beaker _____

Explanation _____

_____

_____

(b) The movement of molecules in or out of cells can be by passive or active transport.

Describe **one** difference between passive and active transport. **1**

_____

_____

C) Name the two components that make up the membrane 2

1. _____

2. _____

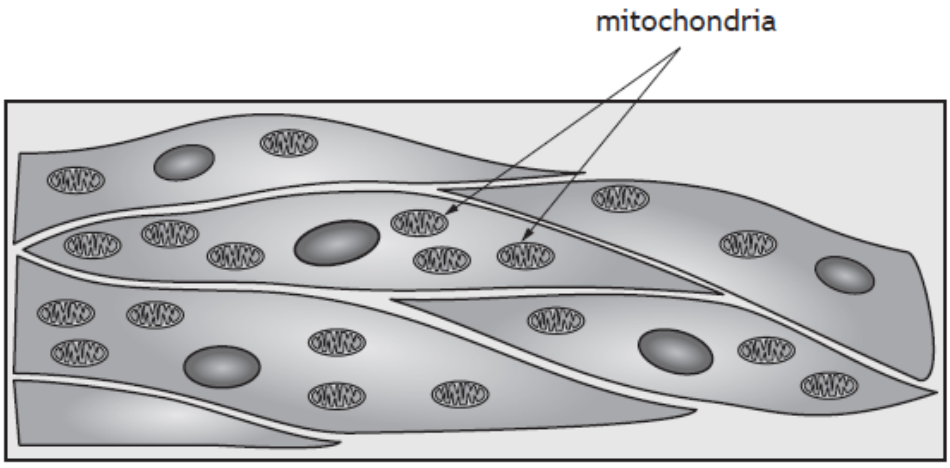
d) Describe the function of the ribosomes? 1

_____

_____

Total Marks- 25 marks

4 The diagram below shows muscle cells.



(a) (i) Explain why muscle cells require many mitochondria. 1

(ii) Name **one** substance produced by a cell carrying out aerobic respiration. 1

(b) A muscle cell will carry out fermentation when oxygen is not available.

Describe the fermentation pathway in muscle cells. 3

Total Marks– 30 marks