IGCSE BIOLOGY 0610

Exam-style Practice Paper: Diffusion and Osmosis

Topic practice paper in the style of Cambridge IGCSE Biology (0610), Theory questions.

CANDIDATE NAME	
CLASS	
DATE	

Time: 40 minutes **Total: 34 marks**

You will need: a ruler; a sharp HB pencil; a calculator

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, class and date in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Show your working in calculations.
- Questions marked **Extended** cover Extended (Supplement) content.

INFORMATION

- The total mark for this paper is 34.
- The number of marks for each question or part question is shown in brackets [ ].

For teacher's use

Question	1	2	3	4	Total
Max	9	12	9	4	34
Mark					

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1 Diffusion is one way that substances move into and out of cells.

(a) Define the term *diffusion*.

.....

.....

..... [2]

(b) Fig. 1.1 shows the oxygen molecules inside and outside a cell.

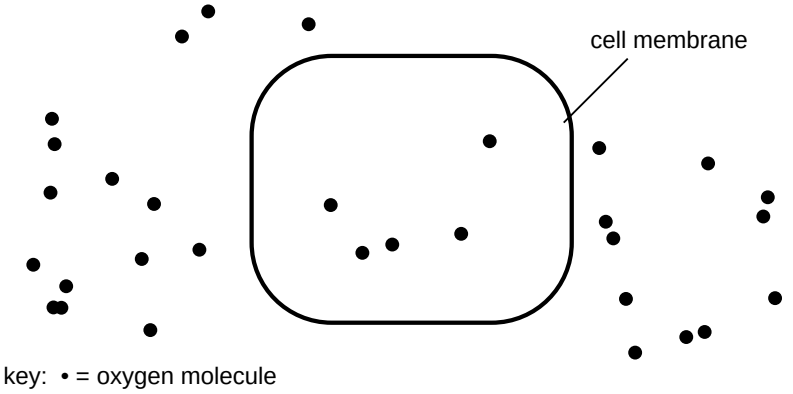

Fig. 1.1

State the direction of the net movement of oxygen. Explain your answer.

.....

..... [2]

(c) State **two** factors that increase the rate of diffusion into a cell.

1 .....

2 ..... [2]

(d) State where the energy for diffusion comes from.

.....

..... [1]

(e) Explain why diffusion is faster at a higher temperature.

.....

.....

..... [2]

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2 A student investigated osmosis in potato. She cut five equal cylinders of potato and weighed them. She put each cylinder into a different concentration of sucrose solution for 1 hour, then dried and weighed them again.

Table 2.1 shows her results.

concentration of sucrose solution / mol per dm^3	**0.0**	**0.2**	**0.4**	**0.6**	**0.8**
mass at start / g	2.50	2.50	2.50	2.50	2.50
mass after 1 hour / g	2.80	2.62	2.45	2.30	2.18
percentage change in mass / %	+12.0	+4.8			–12.8

Table 2.1

(a) Calculate the percentage change in mass for the cylinders in 0.4 and 0.6 mol per dm^3 sucrose solution. Write your answers in Table 2.1. Show your working.

.....

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..... [2]

(b) On the grid in Fig. 2.1, plot the percentage change in mass against the concentration of sucrose solution. Draw a line of best fit.

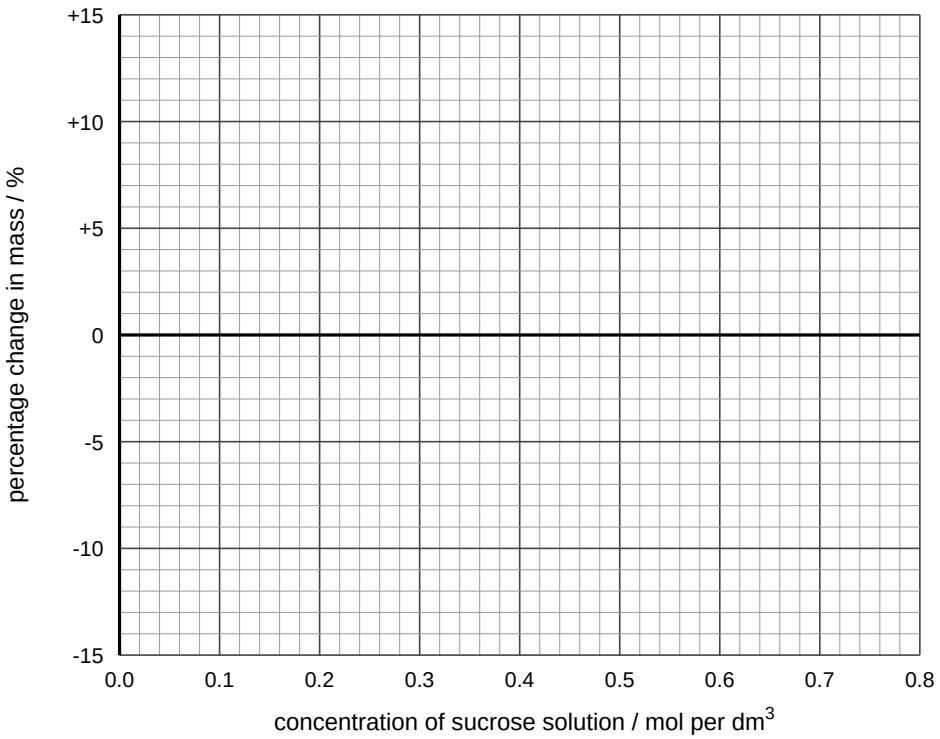

Fig. 2.1

[3]

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(c) Use your graph to estimate the concentration of sucrose solution that would cause **no** change in mass.

..... mol per dm^3 [1]

(d) Explain why the cylinder in 0.0 mol per dm^3 (distilled water) gained mass.

.....

.....

.....

..... [3]

(e) Suggest why the student calculated the **percentage** change in mass instead of the change in mass.

.....

..... [1]

(f) State **two** variables that the student should keep the same in this investigation.

1 .....

2 ..... [2]

Extended

3 Fig. 3.1 shows two plant cells from the same leaf. Cell **A** was in pure water. Cell **B** was in a concentrated salt solution.

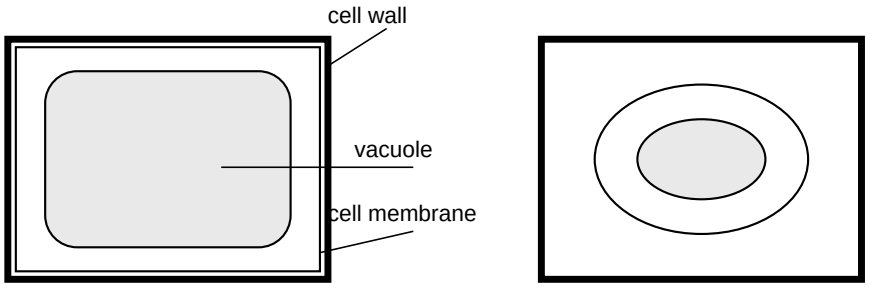

Fig. 3.1

(a) (i) Name the condition of cell **B**.

..... [1]

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(ii) Explain what has happened to cell **B**.

.....

.....

.....

..... [3]

(b) A red blood cell bursts when it is placed in distilled water, but a plant cell does not burst. Explain why.

.....

.....

.....

..... [3]

(c) Explain why turgor pressure is important to plants.

.....

.....

..... [2]

4 Table 4.1 compares diffusion, osmosis and active transport.

Put a tick in each box where the statement is correct. Each row may have one or more ticks.

statement	**diffusion**	**osmosis**	**active transport**
requires energy from respiration			
only water molecules move			
particles move against a concentration gradient			
can happen through a non-living partially permeable membrane, such as Visking tubing			

Table 4.1

[4]

END OF PAPER

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