

Revision Sheet

IGCSE Biology · Unit 3 Movement into and out of cells

10 vocabulary items · 28 marks of exam questions (6 questions)

Part 1 · Vocabulary review (10 items). The terms this unit is examined on most. Mark it yourself from the answer key.

Section A · Chinese to English

Write the English word.

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Part 2 · Exam questions (28 marks, 6 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

- 11** Samples of plant cells from the same species are immersed in three different liquids. The low concentration sucrose solution has a higher water potential than the plant cell cytoplasm. The high concentration sucrose solution has a lower water potential than the plant cell cytoplasm.

What is the state of the cells in the different liquids?

	distilled water	low concentration sucrose solution	high concentration sucrose solution
A	turgid	plasmolysed	flaccid
B	flaccid	turgid	plasmolysed
C	flaccid	plasmolysed	flaccid
D	turgid	turgid	plasmolysed

- 12** Which process requires energy from respiration?

- ☐ **A** active transport
- B** diffusion
- C** osmosis
- D** transpiration

- 13** What will increase the rate of diffusion across a gas exchange surface?

- ☐ **A** a decrease in the concentration gradient
- B** a decrease in the diffusion distance
- C** a decrease in the kinetic energy of molecules
- D** a decrease in the surface area of the gas exchange surface

- 14** What is a reason why oxygen diffuses into the blood from an alveolus in the lungs?

- ☐ **A** The oxygen concentration in the alveolus is greater than the carbon dioxide concentration in the blood.
- B** The oxygen concentration in the alveolus is greater than the oxygen concentration in the blood.
- C** The oxygen concentration in the blood is greater than the oxygen concentration in the alveolus.
- D** The oxygen concentration in the blood is greater than the carbon dioxide concentration in the alveolus.

15 (a) Water is an important biological molecule.

The box on the left contains the word 'Water'.

The boxes on the right contain some sentence endings.

Draw a line from the box on the left to each correct statement about water.

Draw **three** lines.

Water

breaks down to release energy.

dissolves many substances.

is a solute.

is produced in photosynthesis.

is required for digestion.

is required for germination.

[3]

(b) Students investigated the movement of water in model animal cells using dialysis tubing.

Fig. 1.1 is a diagram of the apparatus used in the investigation.

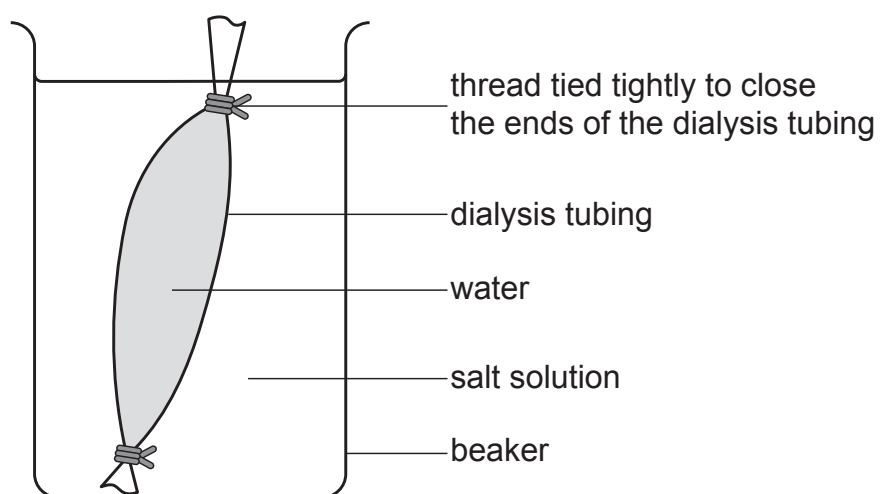


Fig. 1.1

(i) State the name of the part in Fig. 1.1 which represents:

the partially permeable membrane of an animal cell

.....

the cytoplasm of an animal cell.

..... [2]

(ii) Draw an arrow **on Fig. 1.1** to show the direction of water movement during the investigation.

[1]

(iii) State the name of the process of water diffusing across a partially permeable membrane.

..... [1]

(c) Animal cells placed in pure water will burst.

State the structure that prevents a **plant** cell from bursting when it is placed in pure water.

..... [1]

[Total: 8]

16 (a) A student investigated osmosis in potato plant cells.

He immersed cubes of potato tissue in water and different concentrations of sucrose solution for 30 minutes.

The masses of the potato cubes were measured before and after immersion.

The percentage changes in mass were calculated.

Table 2.1 shows the results.

Table 2.1

concentration of sucrose solution / mol dm ⁻³	mass of potato cube before immersion / g	mass of potato cube after immersion / g	percentage change in mass
0.00	1.32	1.50	13.64
0.20	1.34	1.49	11.19
0.40	1.30	1.34	3.08
0.60	1.33	1.29	−3.01
0.80	1.22	1.12	−8.20
1.00	1.28	1.11	

(i) Using the information in Table 2.1, calculate the percentage change in mass at 1.00 mol dm⁻³.

Give your answer to **two** decimal places.

Space for working.

..... %

[3]

- (ii) Using the information in Table 2.1, explain the difference in the results between the 0.6 mol dm⁻³ and the 0.8 mol dm⁻³ sucrose solutions.

Use the term water potential in your answer.

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..... [5]

- (iii) Describe the expected appearance of a cell from a potato cube that has been immersed in distilled water for 30 minutes.

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- (b) Describe how the process of active transport differs from the process of osmosis.

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..... [3]

(c) State the type of plant cells that use active transport to absorb mineral ions from the environment.

..... [1]

(d) Explain the effect of a lack of magnesium ions on the colour of plant leaves.

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..... [2]

[Total: 16]