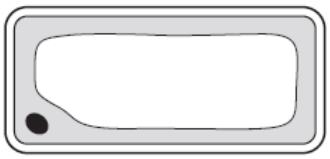
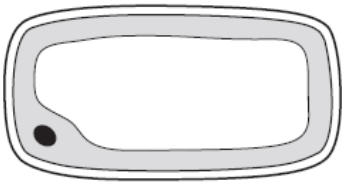
Movement into and out of cells – 2023 November IGCSE 0610

1. Nov/2023 /Paper_ 0610/11/No.6

The diagrams show how a cell appears under the microscope at the start of an experiment and after it has been placed in a dilute solution of salts for 5 minutes.



start of the experiment



after placing in a dilute solution of salts

Which statement explains what happens?

A Dissolved salts enter the cell by diffusion.

B Dissolved salts leave the cell by diffusion.

C Water enters the cell by osmosis.

D Water leaves the cell by osmosis.

2. Nov/2023 /Paper_ 0610/11/No.7

What causes the diffusion of oxygen into a plant cell?

A active transport

B movement of molecules

C osmosis

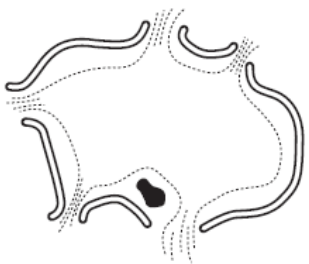
D photosynthesis

3. Nov/2023 /Paper_ 0610/13/No.6

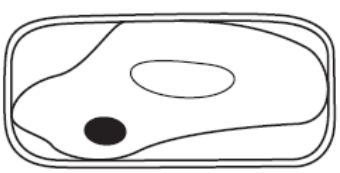
Which diagram shows the appearance of a plant cell after it is placed in pure water?

A

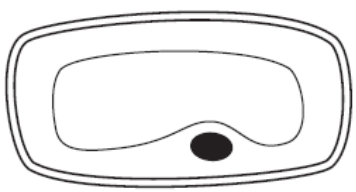
B



C



D



4. Nov/2023 /Paper_ 0610/13/No.7

What would lead to a decrease in diffusion rate into a cell?

A greater concentration gradient

B higher temperature

C larger surface area of cell

D thicker cell wall

5. Nov/2023 /Paper_ 0610/21/No.6

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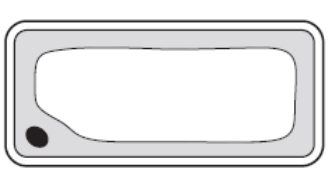
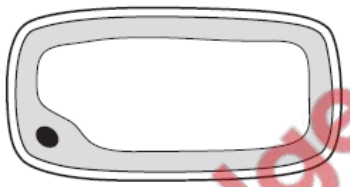


start of the experiment



after placing in a dilute solution of salts

Which statement explains what happens?

A Dissolved salts enter the cell by diffusion.

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C Water enters the cell by osmosis.

D Water leaves the cell by osmosis.

6. Nov/2023 /Paper_ 0610/21/No.7

The concentration of nitrate ions is higher inside a root hair cell than in the soil.

What would be required for the absorption of nitrate ions into the root hair cell?

1 mitochondria

2 oxygen

3 membrane proteins

4 cell wall

A 1, 2, 3 and 4

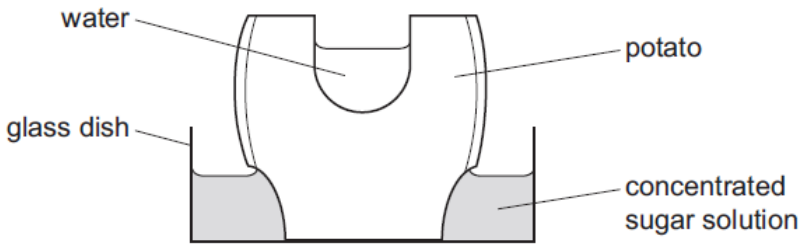
B 1, 2 and 3 only

C 1 and 2 only

D 1 only

7. Nov/2023 /Paper_ 0610/22/No.6

The diagram shows an experiment to investigate osmosis in living cells.



What happens to the volumes of water and sugar solution after 12 hours?

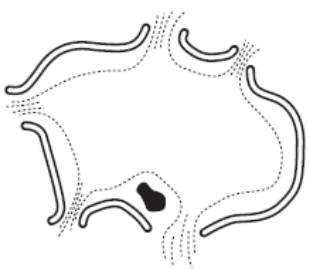
	volume of water	volume of sugar solution
A	decreases	increases
B	increases	increases
C	increases	remains the same
D	remains the same	decreases

8. Nov/2023 /Paper_ 0610/23/No.6

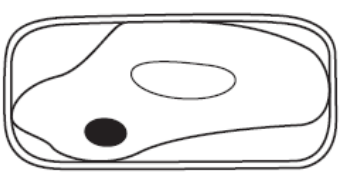
Which diagram shows the appearance of a plant cell after it is placed in pure water?

A

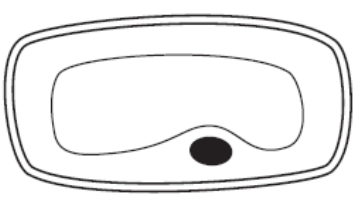
B



C



D



9. Nov/2023 /Paper_ 0610/23/No.7

Which process requires active transport?

A oxygen movement from the alveoli to the blood

B ion uptake by root hair cells from the soil

C water movement through a plant by transpiration pull

D absorption of water into a lacteal in a small intestine villus

10. Nov/2023 /Paper_ 0610/31/No.1

(a) Complete the sentences about movement into and out of cells.

Diffusion is the net movement of particles down a concentration gradient.

The energy for diffusion comes from the ..... energy of random movement of molecules and ions.

Factors that influence diffusion include concentration gradient, ... , and ..... .

Osmosis is the movement of water by diffusion through a ..... permeable membrane.

The movement of particles through a cell membrane against a concentration gradient using energy from ..... is called ..... .

[6]

(b) Fig. 1.1 is a diagram of a normal red blood cell.

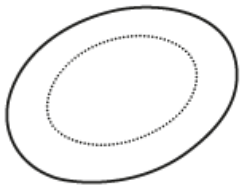


Fig. 1.1

Fig. 1.2 shows three red blood cells that have been placed in different concentrations of a salt solution.

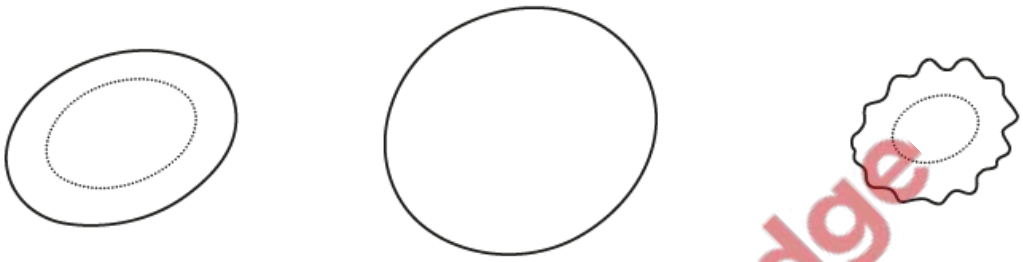


Fig. 1.2

Identify the cell that has been placed in a very concentrated salt solution.

Give reasons for your answer.

cell .....

reasons .....

.....

.....

.....

.....

.....

[3]

(c) Water is needed by all organisms.

State **two** processes in organisms that use water as a solvent.

1 .....

2 .....

[2]

[Total: 11]

11. Nov/2023 /Paper_ 0610/33/No.2

Water moves into and out of cells by osmosis.

(a) State **two** plant cell structures that water moves through to reach the cytoplasm.

1 .....

2 .....

[2]

(b) Potato plant tissue was used to investigate osmosis.

Potato cylinders were placed into different sucrose solutions for 30 minutes.

The masses of the potato cylinders were measured before and after being placed into the solutions.

The difference in mass was calculated for each potato cylinder.

Table 2.1 shows the results of the investigation.

Table 2.1

concentration of sucrose solution / mol per dm^3	starting mass of potato cylinder / g	final mass of potato cylinder / g	difference in mass / g	percentage change in mass
0.0	2.31	2.53	0.22	9.52
0.2	2.35	2.49	0.14	5.96
0.4	2.28	2.34	0.06	2.63
0.6	2.30	2.21	–0.09	
0.8	2.34	2.19	–0.15	–6.41

(i) Using the information in Table 2.1, calculate the **percentage change in mass** for the potato cylinder in the 0.6 mol per dm^3 sucrose solution.

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

Space for working.

..... %

[3]

(ii) Describe the expected appearance of the potato cylinder that was placed in the 0.8 mol per dm^3 sucrose solution for 30 minutes.

.....

.....

..... [1]

(iii) Using the results in Table 2.1, describe how the concentration of sucrose solution affects the percentage change in mass of the potato cylinders.

.....

.....

.....

.....

.....

..... [2]

[Total: 8]