Practice Question Set For GCSE
Subject : Biology
Paper-1 Topic: B1 Cell Biology

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

A student investigated the effect of different concentrations of sugar solution on pieces of potato.

This is the method used.

1. Cut five pieces of potato.
2. Record the starting mass of each piece of potato.
3. Place each piece of potato in a different concentration of sugar solution.
4. After 24 hours remove the pieces of potato from the solutions.
5. Record the final mass of each piece of potato.
6. Calculate the change in mass for each piece of potato.

(a) What is the independent variable?

Tick (✓) **one** box.

Change in mass of the pieces of potato ☐

Concentration of the sugar solution ☐

Length of time the pieces of potato are in the solution ☐

Starting mass of the pieces of potato ☐

(1)

The table below shows the results.

Concentration of sugar solution in mol/dm^3	**Mass of potato at start in grams**	**Mass of potato after 24 hours in grams**	**Change in mass in grams**
0.0	7.94	10.14	2.20
0.1	7.95	9.10	1.15
0.2	7.96	8.21	0.25
0.3	7.93	7.53	–0.40

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0.4	7.93	7.18	–0.75
0.5	7.95	7.00	–0.95

(b) Explain why the potato in 0.0 mol/dm^3 sugar solution increased in mass.

_____

_____

_____

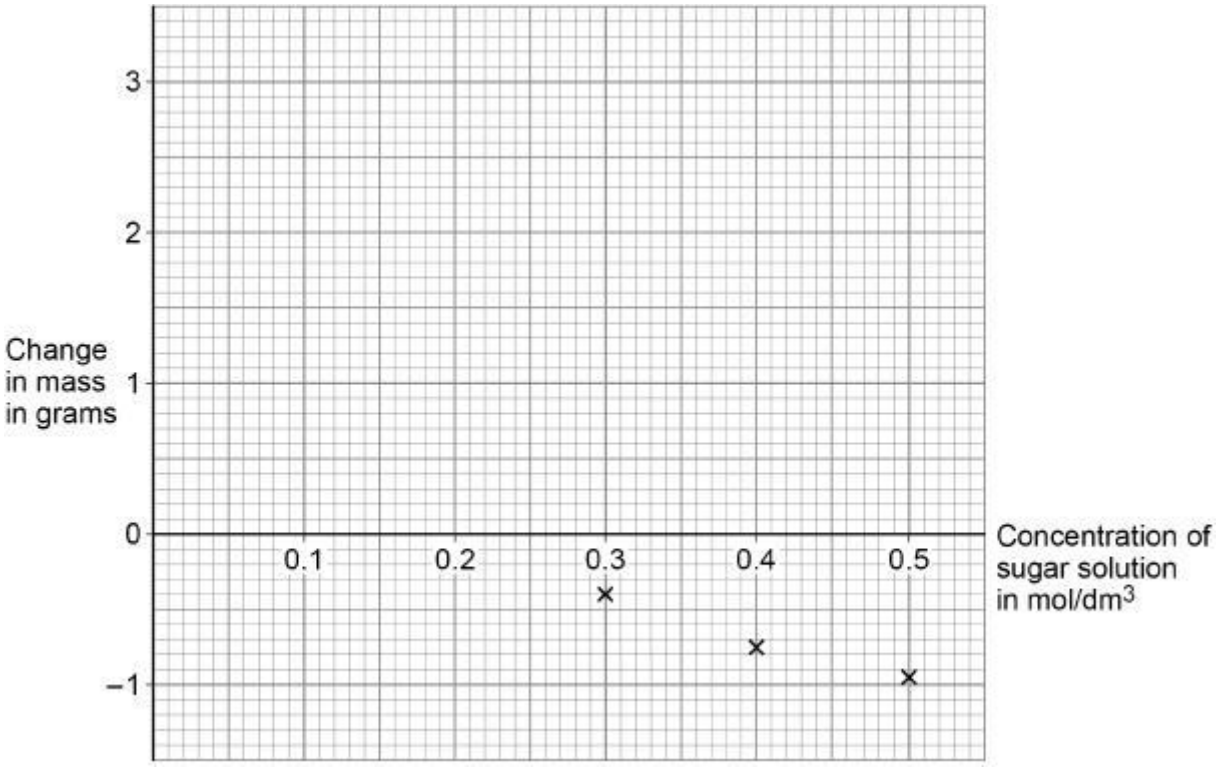
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(2)

(c) Complete the graph below.

Some of the results have been plotted for you.

You should:
- plot the data from table above
- draw a line of best fit through all the points.



(2)

(d) The mass of a piece of potato does **not** change when:

concentration of solution inside cells = concentration of solution outside cells

Determine the concentration of sugar solution inside the potato cells.

Use the graph above.

Concentration = _____ mol/dm^3

(1)

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The table is repeated below.

Concentration of sugar solution in mol/dm^3	Mass of potato at start in grams	Mass of potato after 24 hours in grams	Change in mass in grams
0.0	7.94	10.14	2.20
0.1	7.95	9.10	1.15
0.2	7.96	8.21	0.25
0.3	7.93	7.53	–0.40
0.4	7.93	7.18	–0.75
0.5	7.95	7.00	–0.95

(e) Calculate the percentage change in mass for the potato in 0.2 mol/dm^3 sugar solution.

Use table above.

Use the equation:

$$\text{percentage change in mass} = \frac{\text{change in mass}}{\text{mass of potato at start}} \times 100$$

Give your answer to 3 significant figures.

_____

_____

_____

_____

_____

Percentage change in mass (3 significant figures) = _____ %

(3)

(Total 9 marks)

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Q2.

This question is about cell structures.

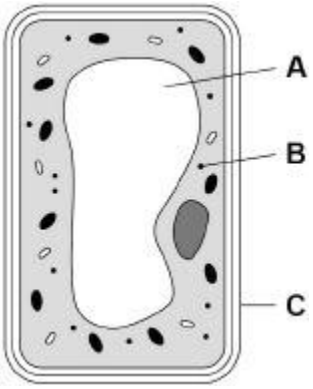
(a) Draw **one** line from each cell structure to the type of cell where the structure is found.

Cell Structure	Type of cell where the structure is found
Nucleus	Prokaryotic cells
Permanent vacuole	Plant cells only
Plasmid	Eukaryotic cells

(2)

(b) **Figure 1** shows a plant cell.

Figure 1



What are the names of structures **A**, **B** and **C**?

Tick **one** box.

Structure A	Structure B	Structure C	
Chloroplast	Vacuole	Cell wall	☐
Nucleus	Chloroplast	Cell membrane	☐
Vacuole	Mitochondrion	Cell membrane	☐
Vacuole	Ribosome	Cell wall	☐

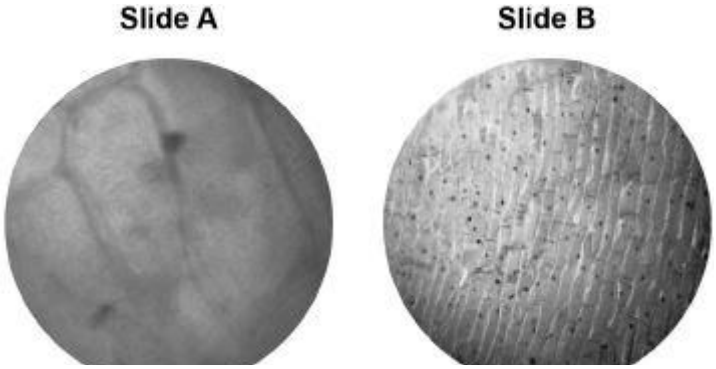
(1)

A student observed slides of onion cells using a microscope.

Figure 2 shows two of the slides the student observed.

Figure 2

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The cells on the slides are **not** clear to see.

(c) Describe how the student should adjust the microscope to see the cells on Slide A more clearly.

_____

_____

(1)

(d) Describe how the student should adjust the microscope to see the cells on Slide B more clearly.

_____

_____

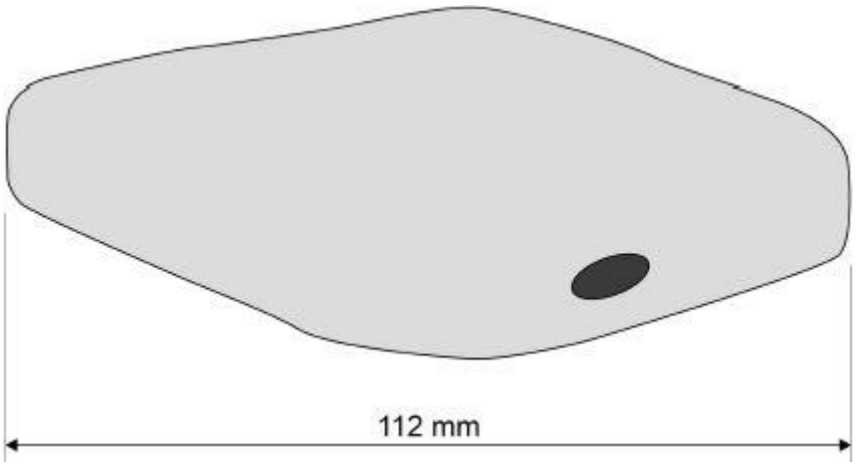
_____

(2)

(e) The student made the necessary adjustments to get a clear image.

Figure 3 shows the student's drawing of one of the cells.

Figure 3



The real length of the cell was 280 micrometres (μm).

Calculate the magnification of the drawing.

_____

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_____

_____

_____

_____

Magnification = × _____

(3)

(Total 9 marks)

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