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

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

Water is lost from the leaves of a plant through stomata.

(a) What is the process by which water is lost from the leaves of a plant?

Tick (✓) **one** box.

Osmosis ☐

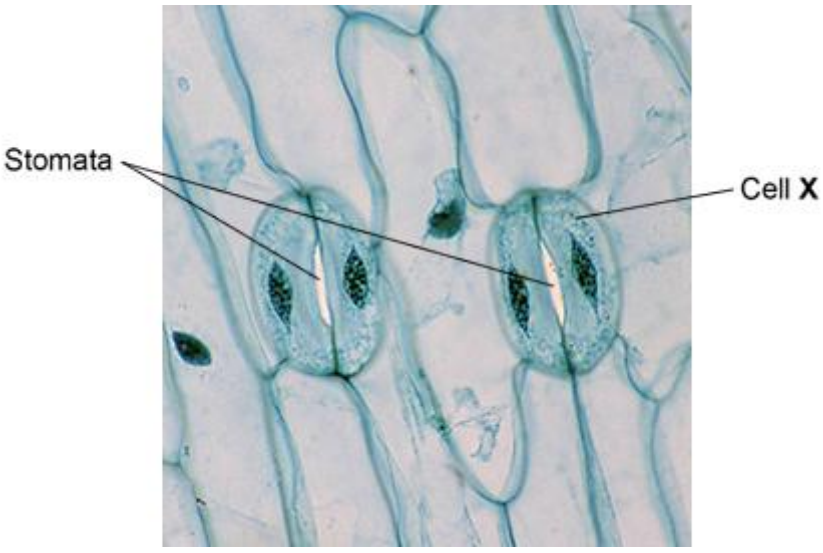
Photosynthesis ☐

Transpiration ☐

(1)

Figure 1 shows stomata on the lower surface of a leaf.

Figure 1



(b) What is the name of cell **X**?

Tick (✓) **one** box.

Epidermal cell ☐

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Guard cell ☐

Palisade cell ☐

Xylem cell ☐

(1)

(c) The length of cell **X** is 25 mm when viewed at a magnification of ×800

Calculate the real length of cell **X**.

Give your answer in micrometres (µm).

1 mm = 1000 µm

Use the equation:

$$\text{real length of cell} = \frac{\text{size of image}}{\text{magnification}}$$

Real length of cell **X** = _____ µm

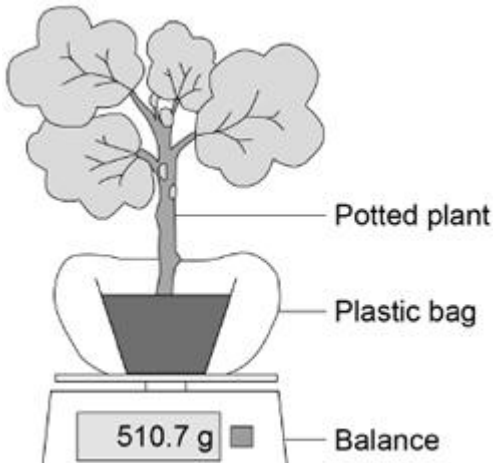
(3)

A student measured the mass of water lost from some similar plants.
The plants were at different temperatures.

Figure 2 shows the apparatus used.

Figure 2

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This is the method used.

1. Seal a plastic bag around the pot of a potted plant.
2. Place the potted plant with the bag on a balance in a room at 20 °C
3. Record the mass.
4. After 3 hours record the mass again.
5. Calculate the mass of water lost from the plant.
6. Repeat steps 1–5 at 25 °C and at 30 °C with other similar plants.

(d) What was the independent variable in this investigation?

Tick (✓) **one** box.

- Initial mass of the plant ☐
- Length of time the plant was left ☐
- Mass of water lost ☐
- Temperature of the room ☐

(1)

(e) Suggest why the student sealed a plastic bag around the pot.

_____

_____

(1)

The table shows the student's results.

Temperature in °C	Mass at the start in g	Mass after 3 hours in g	Mass of water lost in 3 hours in g
20	510.7	508.6	2.1
25	510.4	507.1	3.3

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30	**X**	506.3	4.9

(f) What is the resolution of the balance used in this investigation?

Tick **one** box.

0.1 g ☐ 1.0 g ☐ 100 g ☐ 500 g ☐

(1)

(g) Calculate value **X** in the table above.

_____

_____

X = _____ g

(1)

(h) Give **one** conclusion that can be made from the results in the table above.

_____

_____

(1)

(i) Give **two** factors that might affect the rate of water loss from the leaves.

Do **not** refer to temperature in your answer.

1 _____

2 _____

(2)

(Total 12 marks)

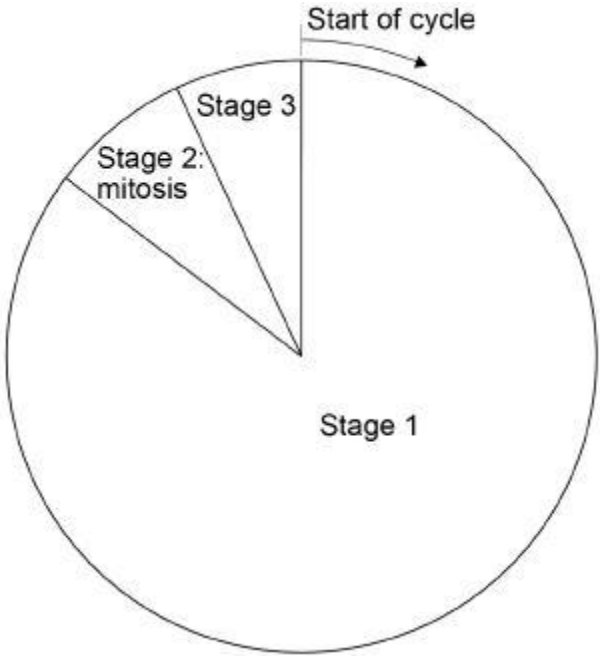
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Q2.

Cells divide in a series of stages called the cell cycle.

Stage 2 of the cycle is mitosis.

The diagram below shows a simplified cell cycle for a human body cell.



(a) Draw **one** line from each stage in the cell cycle to what happens during that stage.

Stage in the cell cycle	**What happens during that stage**
Stage 1	Nucleus divides
Stage 2	Cell divides into two
Stage 3	Copies of the DNA are made

(2)

(b) The mass of DNA in a human body cell at the start of the cell cycle is 6 picograms.

What mass of DNA will be in each of the new cells produced by this cell division?

Tick **one** box.

3 picograms ☐

6 picograms ☐

9 picograms ☐

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12 picograms ☐

(1)

(c) Stem cells are undifferentiated cells.

Which statement about stem cells is correct?

Tick **one** box.

Animal stem cells are found in meristems ☐

Animal stem cells divide by meiosis ☐

Meristem cells in plants can differentiate throughout the life of the plant ☐

Meristem cells in plants can only differentiate into one type of cell ☐

(1)

Stem cells from human embryos can differentiate into most types of human cell.

Research is being done into the use of embryonic stem cells in medical treatments.

The long-term effects of using embryonic stem cells in patients are not well understood.

In therapeutic cloning, human embryos are produced using a donated human egg cell and a cell from the patient.

- The embryo produced contains the same genetic information as the patient.
- Stem cells are taken from the embryo and stimulated to divide to form cells the patient needs.
- The embryo is then destroyed.

(d) Suggest **two** advantages of therapeutic cloning.

1. _____

_____

2. _____

_____

(2)

(e) Suggest **two** disadvantages of therapeutic cloning.

1. _____

_____

2. _____

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(2)
(Total 8 marks)

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