

AQA - Cell Biology – GCSE Biology Paper 1

1. June/2021/Paper_1F/No1

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 Cells are the building blocks of life.

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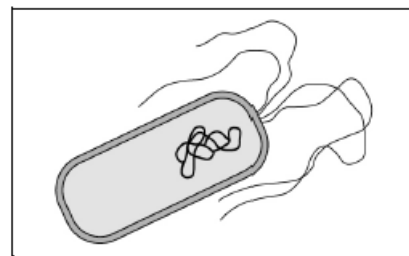
 Draw **one** line from each type of organism to the diagram of one of its cells.

[3 marks]

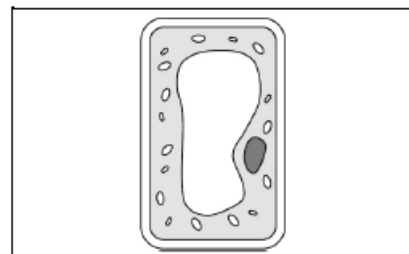
Type of organism

Diagram of one cell

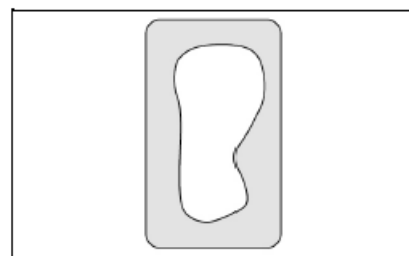
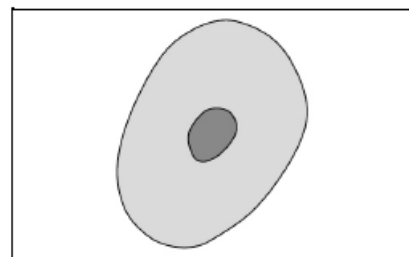
Animal



Bacterium



Plant



0 1 . 2 Cells contain structures. These structures have different functions.

Draw **one** line from each function to the correct structure.

[3 marks]

Function

Structure

Contains genetic information

Cell membrane

Cell wall

Controls what enters and leaves a cell

Chloroplast

Where photosynthesis happens

Nucleus

0 1 . 3 Chemicals are produced in cells.

Complete the sentences.

Choose answers from the box.

[4 marks]

cellulose	DNA	glycogen	starch	urea
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A chemical excreted by animals is _____.

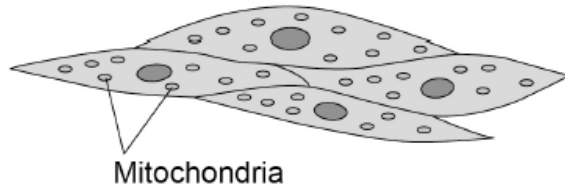
A chemical stored in animal cells is _____.

A chemical stored in plant cells is _____.

A chemical that strengthens plant cell walls is _____.

Figure 1 shows a diagram of muscle cells.

Figure 1



0 1 . 4

Give one function of muscle cells.

[1 mark]

0 1 . 5

Explain how muscle cells are adapted for their function.

Use Figure 1.

[2 marks]

0 1 . 6 One muscle cell was 0.05 mm wide.

When viewed using a microscope the image of the muscle cell was 2 mm wide.

Calculate the magnification used to view the cell.

Use the equation:

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

[2 marks]

Magnification = × _____

2. June/2021/Paper_1H/No.1

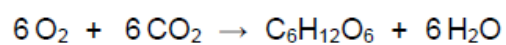
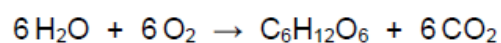
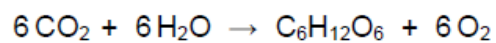
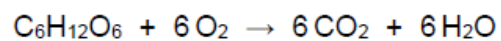
0 1

Plants absorb light for photosynthesis.

0 1 . 1

Which is the equation for photosynthesis?

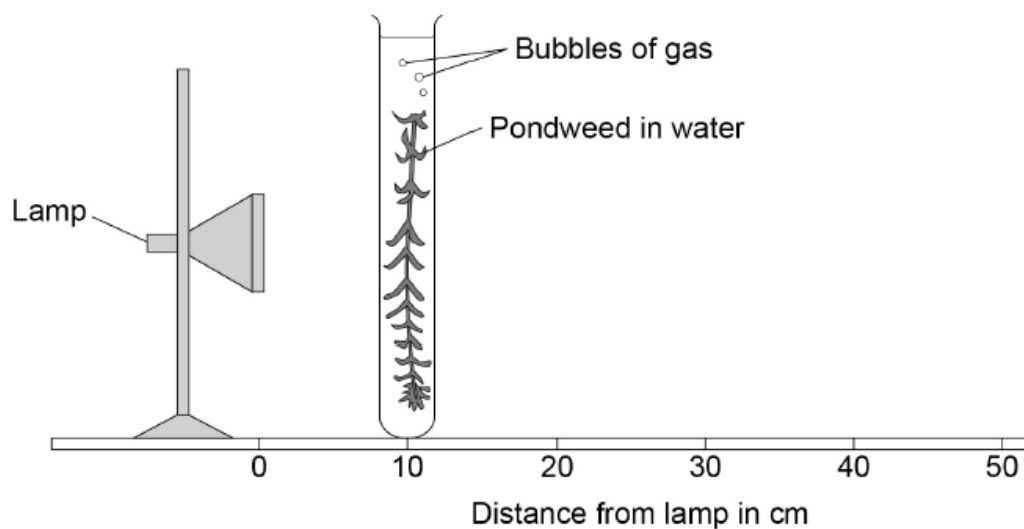
[1 mark]

Tick (✓) **one** box.

A student investigated the effect of light intensity on the rate of photosynthesis.

Figure 1 shows the apparatus.

Figure 1



This is the method used.

1. Set up the apparatus as shown in **Figure 1**.
2. Place the pondweed 10 cm away from the lamp.
3. Switch on the lamp.
4. Record the number of bubbles of gas produced in 5 minutes.
5. Repeat steps 2 to 4 with the pondweed at different distances from the lamp.

0 1 . 2 What was the independent variable in this investigation?

[1 mark]

Tick (✓) **one** box.

Distance of the pondweed from the lamp

Length of the piece of pondweed

Number of bubbles of gas produced

Time taken to collect the gas

The lamp gets warm when it is on. This causes the temperature of the water to increase.

0 1 . 3

Explain how an increase in temperature would affect the results of this investigation.

[2 marks]

0 1 . 4

Suggest **one** way the investigation could be improved so the temperature of the water does **not** increase.

[1 mark]

0 1 . 5

Suggest **two** improvements to the investigation so the results would be more valid.

Do **not** refer to controlling the temperature of the water.

[2 marks]

1 _____

2 _____

Table 1 shows the results.

Table 1

Distance of pondweed from the lamp in cm	Number of bubbles of gas produced in 5 minutes
10	120
20	56
30	31
40	16
50	10

0 1 . 6 Calculate the rate of photosynthesis when the pondweed was 40 cm from the lamp.

Give the rate of photosynthesis as the number of bubbles of gas produced per minute. **[1 mark]**

Rate = _____ bubbles of gas produced per minute

0 1 . 7 Give **one** conclusion that can be made from **Table 1**.

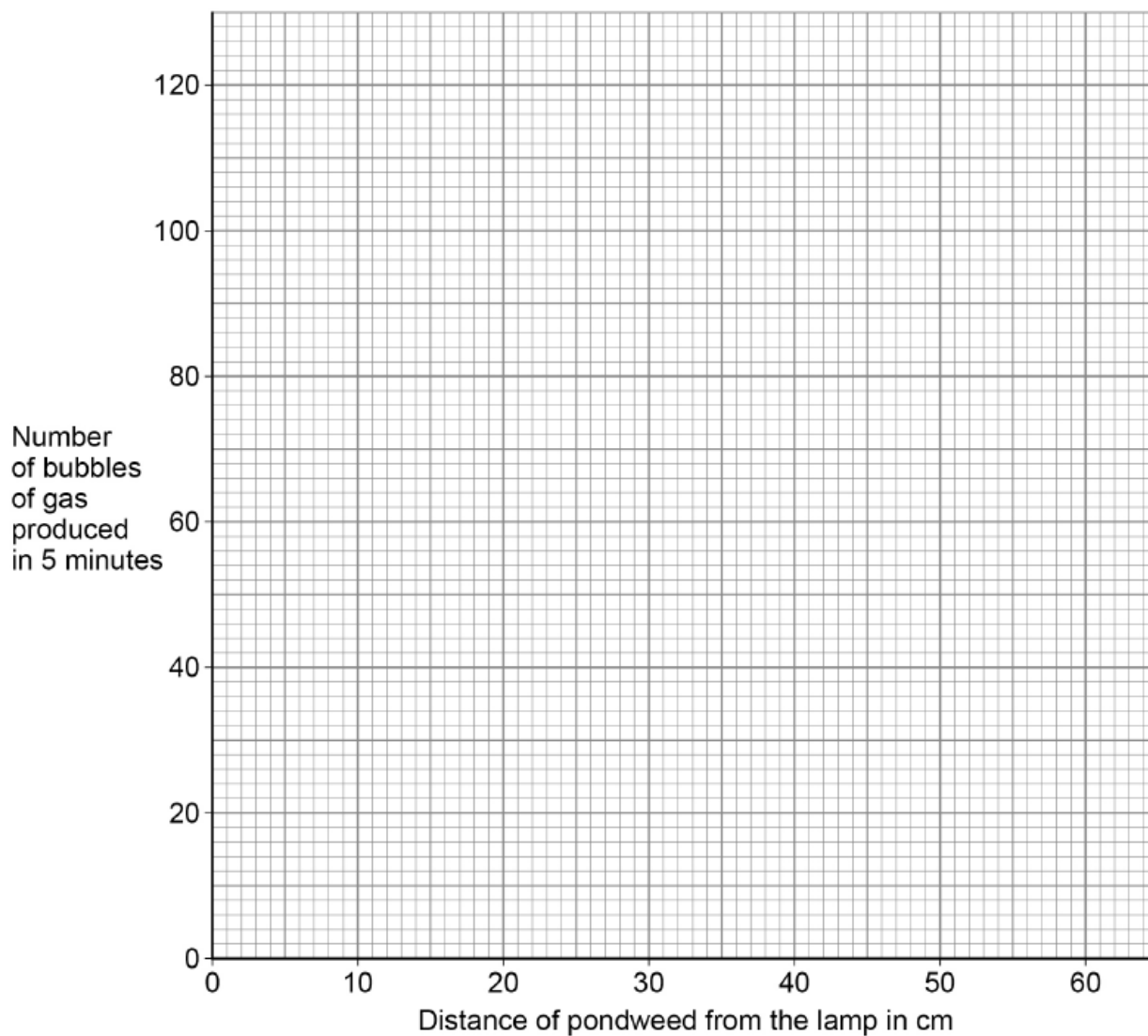
[1 mark]

0 1 . 8 Plot the data from **Table 1** on **Figure 2**.

Draw a line of best fit.

[3 marks]

Figure 2



0 1 . 9 Predict the number of bubbles that would be produced in 5 minutes if the pondweed was 60 cm from the lamp.

Use **Figure 2**.

[1 mark]

Number of bubbles produced in 5 minutes = _____

3. June/2021/Paper_1H/No.2

0	2
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Describe how to test a sample of food for protein, starch and sugar.

Give the colours that would be seen if the food sample contained protein, starch and sugar.

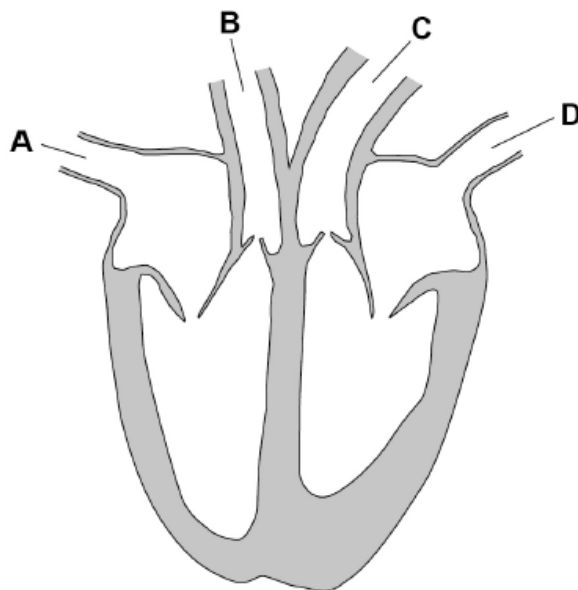
[6 marks]

4. June/2021/Paper_1H/No.5

0 5

Figure 5 shows the human heart.

Figure 5



0 5 . 1

Which blood vessel transports blood with the highest oxygen concentration into the heart?

[1 mark]

Tick (✓) one box.

A B C D

0 5 . 2

Blood pressure is a measure of the force of the blood against the walls of the blood vessels.

Which blood vessel transports blood at the highest pressure?

[1 mark]

Tick (✓) one box.

A B C D

0 5 . 3 What is the correct order for blood flowing through the heart to the lungs?

[1 mark]

Tick (✓) **one** box.

left atrium → left ventricle → pulmonary artery

left atrium → left ventricle → pulmonary vein

right atrium → right ventricle → pulmonary artery

right atrium → right ventricle → pulmonary vein

Every year thousands of people in the UK have heart attacks.

A heart attack is caused when the heart muscle cells do not get enough oxygen, causing the cells to die.

0 5 . 4

Statins and stents are two treatments used to reduce the risk of someone having a heart attack.

Evaluate the use of statins compared with the use of a stent to reduce the risk of a heart attack.

[6 marks]

0 5 . 5

Many people who survive a heart attack get out of breath easily when they exercise gently.

Explain why heart attack survivors get out of breath easily.

[4 marks]

Scientists have developed patches of beating heart cells to repair damaged heart tissue.

The patches are placed onto areas of the heart where cells have died. New cells grow to replace the dead cells.

The patches are made using a person's own cells that are converted into stem cells.

0 5 . 6 Explain why stem cells are used to make the patches.

[2 marks]

0 5 . 7 The scientists could have used human embryonic stem cells to make the patches.

Give **two** advantages of using stem cells made from the person's own cells, rather than using embryonic stem cells.

[2 marks]

1 _____

2 _____
