Practice Question Set For GCSE
Subject : Biology
Paper-1 Topic: B4 Bioenergetics

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Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

The table shows the volume of blood flowing through different organs at three levels of exercise.

Organ(s)	**Volume of blood flowing through organ(s) in cm^3 per minute**		
	Light exercise	**Moderate exercise**	**Heavy exercise**
Gut	1 100	600	300
Kidneys	900	600	250
Brain	750	750	750
Heart muscles	350	750	1 000
Skeletal muscles	4 500	12 500	22 000
Skin	1 500	1 900	600
Other	400	500	100
Total	**9 500**	**17 600**	**25 000**

(a) (i) Which organ has a constant flow of blood through it?

_____

(1)

(ii) Which organ has the greatest reduction in the volume of blood supplied during heavy exercise compared with light exercise?

_____

(1)

(iii) What proportion of the blood flows through the heart muscle during heavy exercise?

_____

(1)

(b) The volume of blood flowing through the skeletal muscles increases greatly during exercise.

Give **two** ways in which the body brings about this increase.

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1. _____

_____

2. _____

_____

(2)

(c) During exercise, the concentration of carbon dioxide in the blood increases.

Explain what causes this increase.

_____

_____

_____

_____

_____

_____

(3)

(Total 8 marks)

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Q2.

This question is about photosynthesis.

(a) Plants make glucose during photosynthesis. Some of the glucose is changed into insoluble starch.

What happens to this starch?

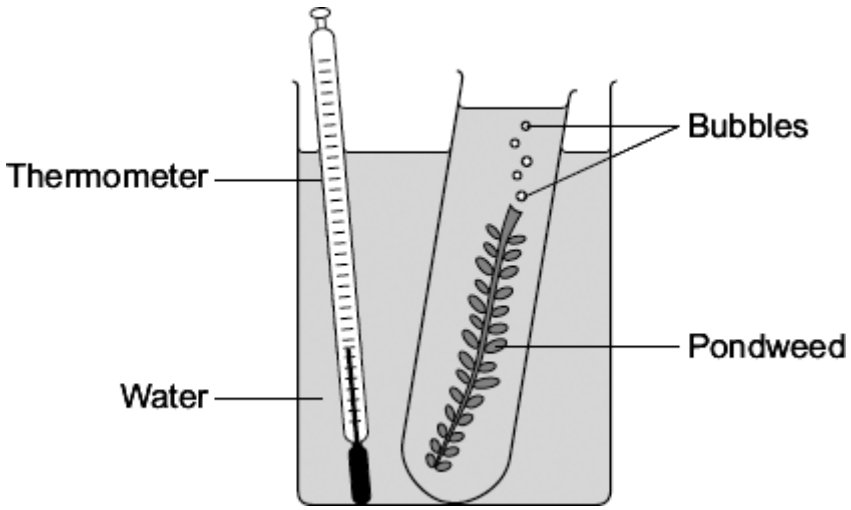
Tick (✓) **one** box.

The starch is converted into oxygen.	☐
The starch is stored for later use.	☐
The starch is used to make the leaf green.	☐

(1)

(b) A student investigated the effect of temperature on the rate of photosynthesis in pondweed.

The diagram shows the way the experiment was set up.



(i) The student needed to control some variables to make the investigation fair.

State **two** of these variables.

1. _____

2. _____

(2)

(ii) The bubbles of gas are produced only while photosynthesis is taking place.

What **two** measurements would the student make to calculate the rate of photosynthesis?

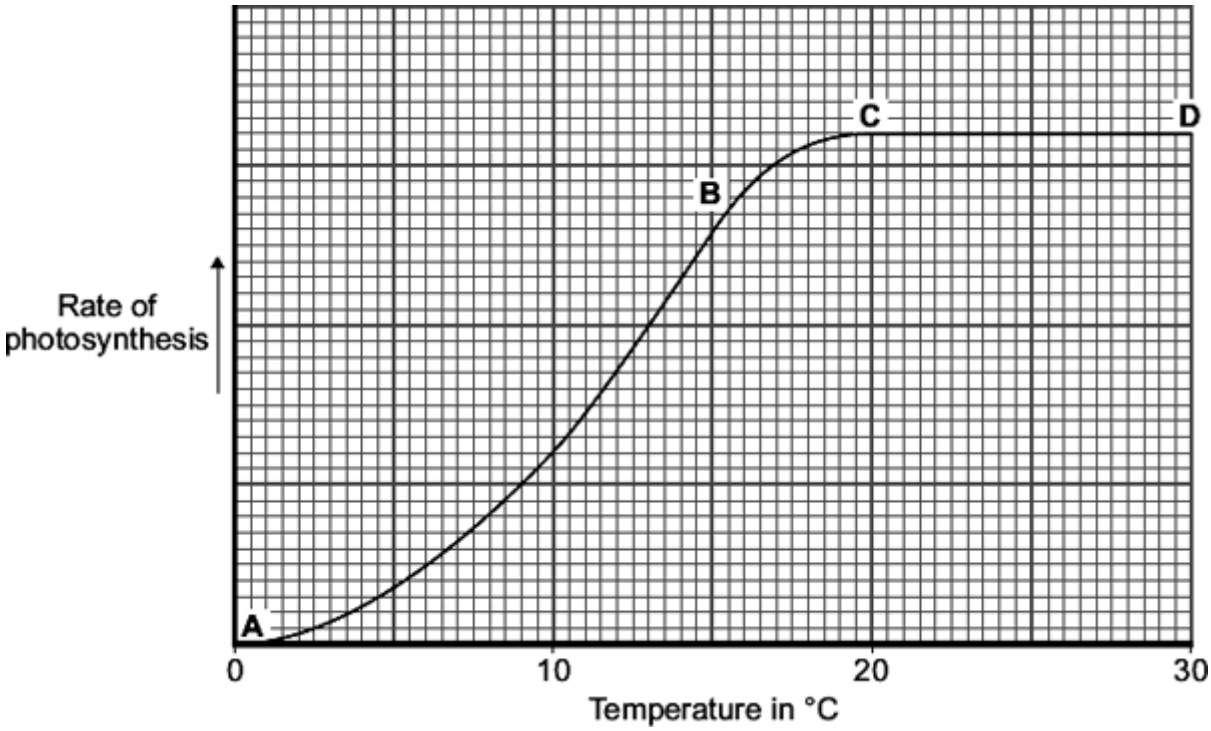
1. _____

2. _____

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(2)

(c) The graph shows the effect of temperature on the rate of photosynthesis.



(i) Name the factor that limits the rate of photosynthesis between the points labelled **A** and **B** on the graph.

_____

(1)

(ii) Suggest which factor, carbon dioxide, oxygen or water, might limit the rate of photosynthesis between the points labelled **C** and **D** on the graph.

_____

(1)

(Total 7 marks)

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Q3.

(a) (i) Complete the word equation for photosynthesis.

carbon dioxide + _____ (+ light energy) → glucose + _____

(2)

(ii) Most of the carbon dioxide that a plant uses during photosynthesis is absorbed from the air.

Give **one** other source of carbon dioxide for a plant.

Draw a ring around your answer.

the soil **respiration in the plant** **osmosis in the plant** **water**

(1)

A student investigated the conditions that plants need for photosynthesis.
The leaves of the plant he used had green and white parts.

Diagram 1 shows how part of one leaf was covered in black (opaque) card.
The plant was placed in a warm, sunny area and was watered well.
Eight hours later the leaf was removed from the plant and was tested for starch.

The results of the test are shown in **Diagram 2**, the shaded parts show where starch was present.

Diagram 1

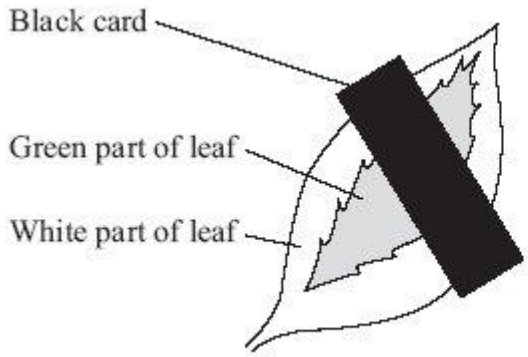
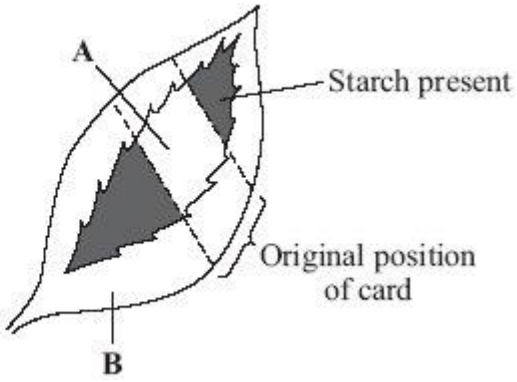


Diagram 2



(b) Name the **two** independent variables in this investigation.

1. _____

_____

2. _____

_____

(2)

(c) Why was no starch found in:

(i) the part of the leaf labelled **A**

_____

_____

(1)

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(ii) the part of the leaf labelled **B**?

_____

_____

(1)

(Total 7 marks)

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