

Biology unit 4 homework – Bioenergetics

For each of the questions below: -

Highlight the command word if there is one & annotate what the command word means. - Answer the question!

Q1. Respiration can happen aerobically or anaerobically.

Respiration transfers energy from glucose.

(a) Draw **one** line from each type of respiration in human cells to the correct information.

Type of respiration in human cells	Information
	Produces ethanol
Aerobic respiration	Uses oxygen
Anaerobic respiration	Uses carbon dioxide
	Produces lactic acid

(2)

(b) The table below shows the amount of energy released by aerobic and anaerobic respiration.

	Energy in kJ transferred from 1 g of glucose
Aerobic respiration	16.1
Anaerobic respiration	1.2

Suggest why human cells might respire anaerobically, even though only a small amount of energy is transferred.

(1)

(c) Yeast is used in the brewing and baking industries.

Why is yeast used in these industries?

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For each of the questions below: -

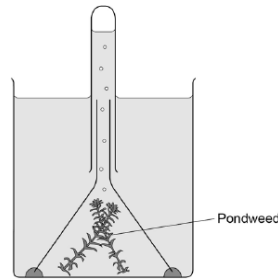
Highlight the command word if there is one & annotate what the command word means. - Answer the question!

(4)

Q2 Plants absorb light to photosynthesise.

(a) **Figure 1** shows some of the apparatus that can be used to measure the rate of photosynthesis.

Figure 1



The rate of photosynthesis in the pondweed is affected by different colours of light.

Describe a method you could use to investigate this.

You should include:

- what you would measure
- variables you would control.

(6)

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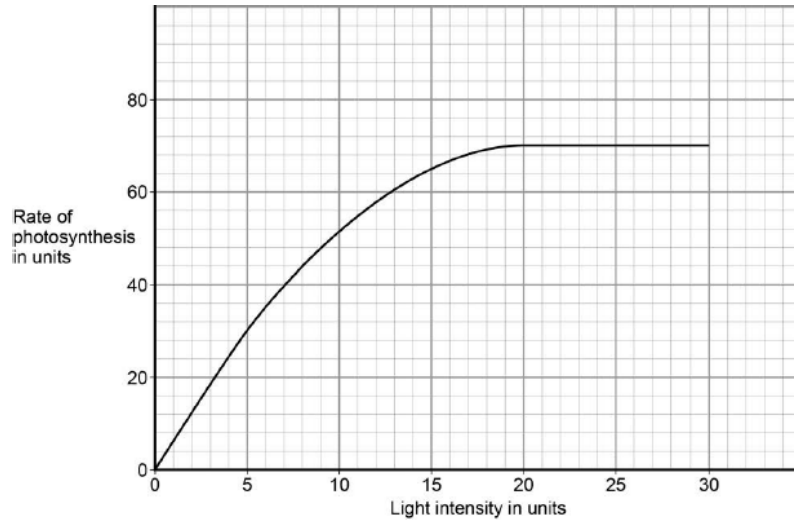
For each of the questions below: -

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- (b) A scientist carried out a similar investigation.

Her results are shown in **Figure 2**.

Figure 2



The scientist said:

'Light stops being a limiting factor at a light intensity of 20 units.'

Give evidence from **Figure 2** to support this statement.

(1)

- (c) What could be limiting the rate of photosynthesis at a light intensity of 25 units?

Give **one** factor.

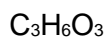
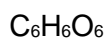
(1)

(Total 9 marks)

Q3 Glucose is broken down in respiration.

- (a) What is the chemical formula for glucose?

Tick **one** box.



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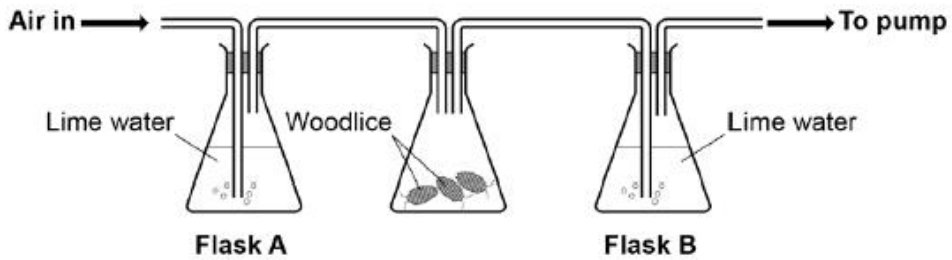
Highlight the command word if there is one & annotate what the command word means. - Answer the question!

$C_6H_{12}O_6$

$C_6H_{10}O_6$

(1)

The diagram shows the apparatus a student used to investigate aerobic respiration.



Limewater goes cloudy when carbon dioxide is added to it.

- (b) After 10 minutes the limewater in flask **B** was cloudy, but the limewater in flask **A** remained colourless.

Explain why.

(2)

- (c) Flask **A** acts as a control in this investigation.

What is the purpose of a control?

(1)

- (d) The student repeated the investigation with no woodlice.

Describe the appearance of the limewater in flask **A** and flask **B** after 10 minutes.

Flask **A** _____

Flask **B** _____

(2)

(Total 6 marks)