

12. Respiration

12.1 Respiration

Paper 3 and 4

Question Paper

Paper 3

Questions are applicable for both core and extended candidates

1 (c) Explain why muscle cells have a high rate of respiration.

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.....

..... [2]

2 (b) The box on the left contains the term ‘Respiration’.

The boxes on the right contain sentence endings.

Draw **two** lines to join the term ‘Respiration’ to two boxes on the right to make **two** correct sentences.

Respiration

always produces carbon dioxide.

is necessary for diffusion.

occurs only in animals.

releases energy.

uses glucose.

[2]

3 (c) State **three** uses of the energy released in respiration in the body.

1

2

3

[3]

4 (b) Place ticks (✓) in the boxes to show **two** uses of the energy released by respiration in humans.

active transport	
diffusion	
osmosis	
protein synthesis	
transpiration	

[2]

Paper 4

Questions are applicable for both core and extended candidates unless indicated in the question

- 5 (b)** Yeast is a fungus that can respire to produce ethanol.

State the balanced chemical equation for this type of respiration in yeast. (extended only)

..... [2]

- (c)** A scientist investigated the effect of sugar on respiration in yeast cells.

One flask contained 100 cm³ of a sugar solution and another flask contained 100 cm³ of water. Both flasks contained the same mass of yeast. The temperature was maintained at 25 °C.

The scientist used the apparatus shown in Fig. 1.1.

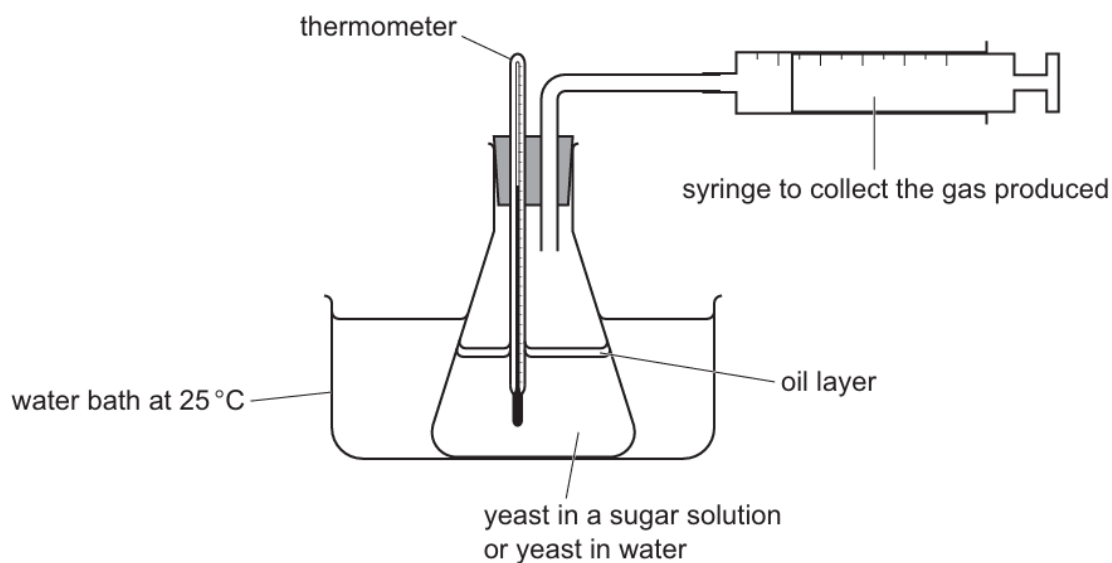


Fig. 1.1

Fig. 1.2 is a graph of the results of the investigation.

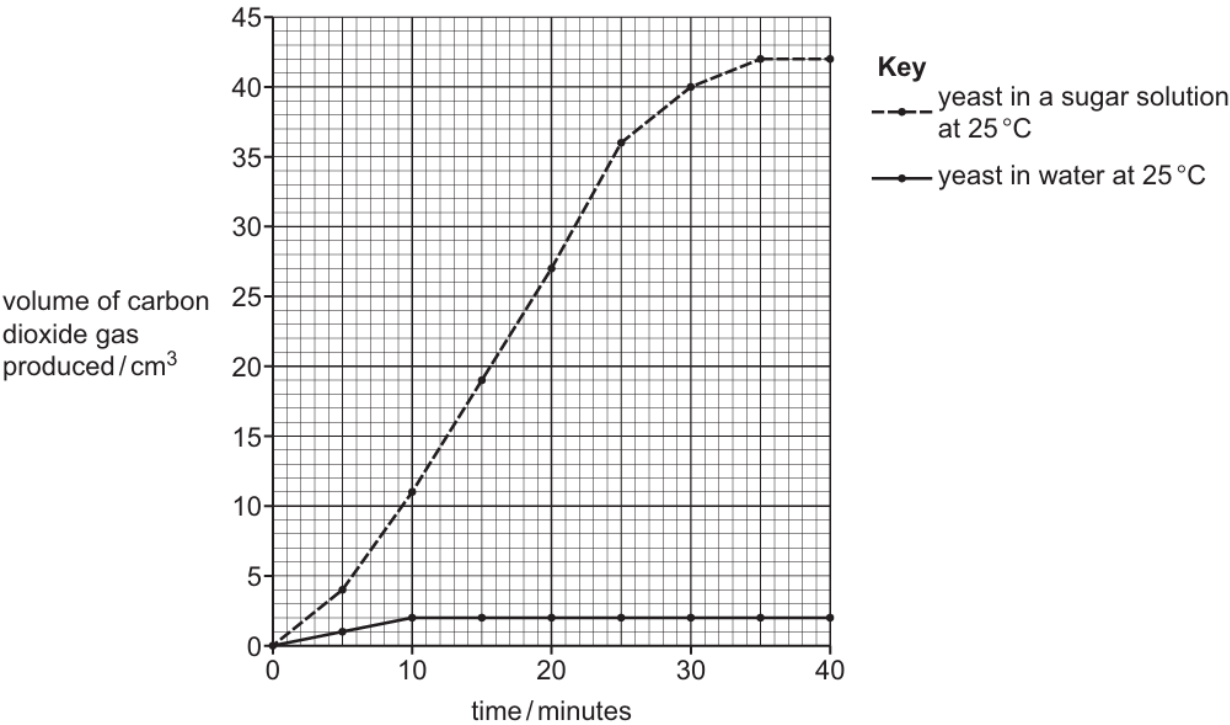


Fig. 1.2

- (i) Using the gradient shown in Fig. 1.2, calculate the rate of carbon dioxide gas produced by the yeast in a sugar solution between 10 minutes and 15 minutes.

Include the unit.

Space for working.

..... [3]

- (ii) Suggest the reason for the oil layer in the apparatus shown in Fig. 1.1.

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..... [1]

(iii) State **one** reason why no more carbon dioxide gas was produced after 35 minutes by the yeast in a sugar solution, shown in Fig. 1.2.

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..... [1]

(iv) The scientist repeated the investigation using yeast and the sugar solution at a temperature of 95 °C.

Explain why no carbon dioxide was produced at a temperature of 95 °C.

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..... [3]

(d) State **one** way in which humans use the carbon dioxide gas produced by yeast cells.

..... [1]

(e) State the name of **one** gas, other than carbon dioxide, that contributes to the enhanced greenhouse effect.

..... [1]

- 6 Fig. 6.1 shows some cells from the shoot tip of an onion, *Allium cepa*.

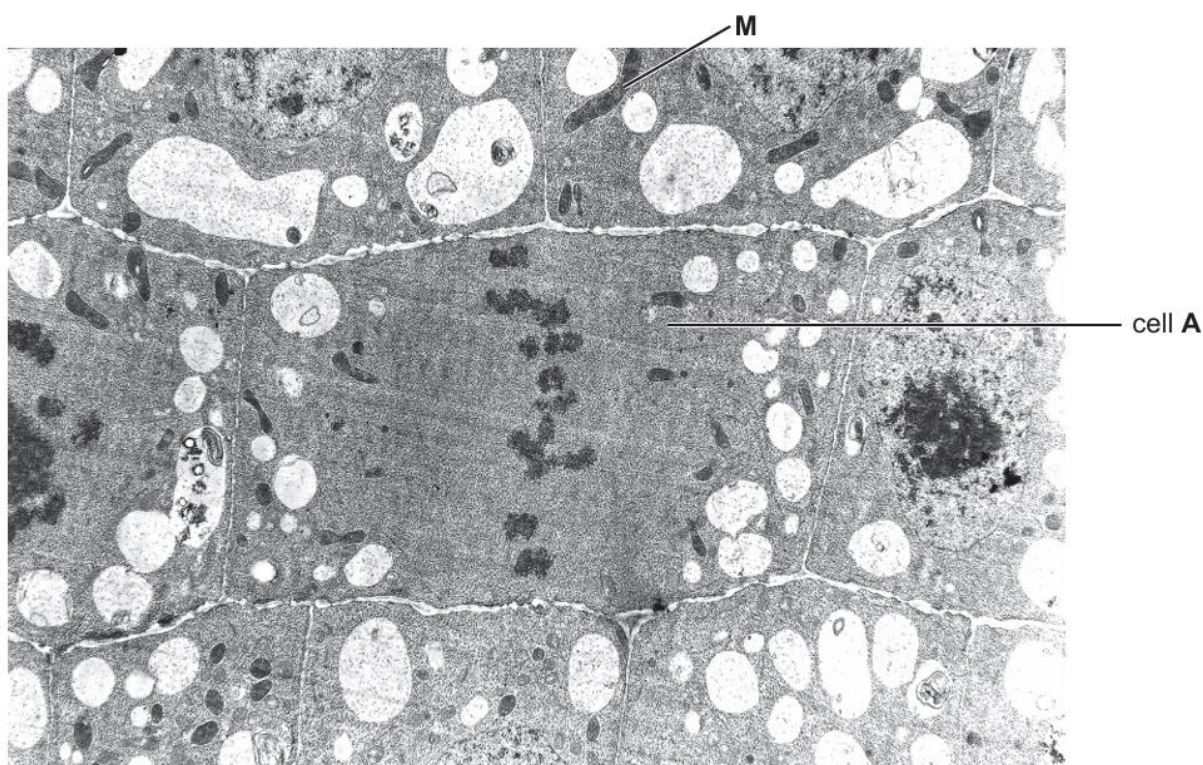


Fig. 6.1

- (b) The area labelled **M** is a mitochondrion.

Explain why mitochondria have an important role in dividing cells.

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..... [3]