Using food and controlling growth – 2022 GCSE 21st Biology Combined Science B

1. June/2022/Paper_J260/05/No.2

Plants need to absorb nitrate ions to stay alive.

Complete the sentences to explain why a plant needs oxygen to absorb nitrate ions.

Use words from the list.

active transport	**aerobic**	**anaerobic**	**ATP**	**diffusion**
DNA	**light**	**osmosis**	**oxygen**	**photosynthesis**

The plant uses the process of ..... to absorb nitrate ions.

This process requires energy from molecules of ..... .

Oxygen is needed to make these molecules during ..... cellular respiration.

[3]

2. June/2022/Paper_J260/05/No.7

Cellular respiration provides ATP for cellular processes.

(a) Which processes need a supply of ATP?

Tick (✓) **two** boxes.

Absorption of water in the gut ☐

Breakdown and synthesis of molecules ☐

Muscle contraction ☐

Movement of oxygen into the blood from the lungs ☐

Movement of carbon dioxide into the air from the lungs ☐

[2]

(b) Substances involved in cellular respiration are transported by the blood.

Complete the sentences about the transport of these substances by the blood.

Use words and phrases from the list.

plasma	**platelets**	**red blood cells**	**white blood cells**

Carbon dioxide is transported by the ..... .

Glucose is transported by the ..... .

Lactic acid is transported by the ..... .

Oxygen is transported by the ..... .

[4]

(c) An athlete uses both aerobic and anaerobic respiration when they run a 400 m race.

The sketch shows changes in the athlete's body as their running speed increases during the race.

(i) What evidence from the sketch shows that anaerobic respiration increases as running speed increases?

.....

..... **[1]**

(ii) Give **one** disadvantage of increasing anaerobic respiration for the athlete.

.....

..... **[1]**

(iii) Explain the changes shown on the sketch when the athlete's running speed is higher than **X**.

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..... **[4]**

(d) Explain why the athlete's body temperature increases as they run.

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..... **[2]**

(e) Explain why it is important that responses such as sweating reduce the temperature of the body and its cells back to normal.

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.....

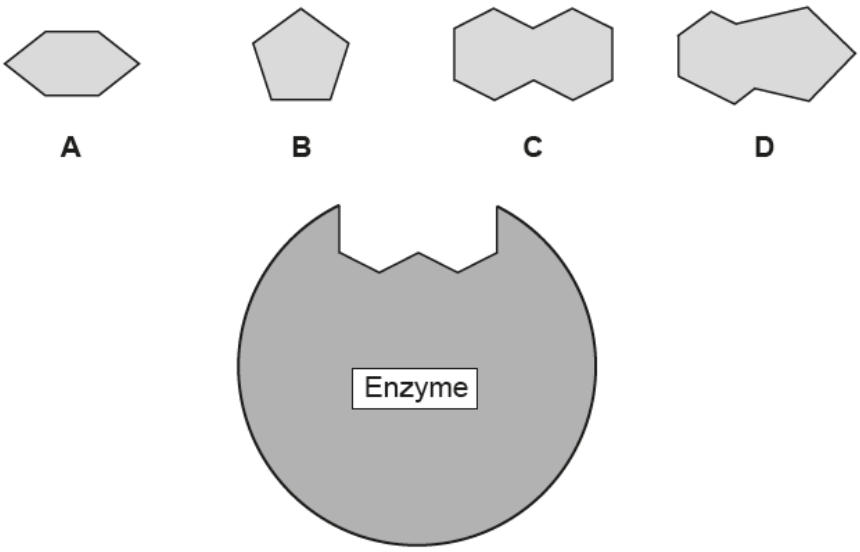
.....

..... **[2]**

3. June/2022/Paper_J260/01/No.2

Milk contains a carbohydrate called lactose. Humans have an enzyme that breaks down this carbohydrate into sugars such as glucose.

The diagram shows a model of the enzyme and four carbohydrates, **A**, **B**, **C** and **D**.



(a) Which carbohydrate, **A**, **B**, **C** or **D**, will be broken down by the enzyme?

Explain your answer.

Carbohydrate .....

Explanation .....

.....

.....

.....

..... **[3]**

(b) Organ systems in the body have different roles in what happens to the sugar from the milk we drink.

Draw lines to connect the correct **three** organ system to their **roles**.

Organ system	Role
Circulatory system	Absorbs the sugar into the body.
Digestive system	Releases insulin to control blood sugar level.
Gaseous exchange system	Transports the sugar around the body in the blood.
Endocrine system	

[3]

(c) Describe how glucose and oxygen are used by body cells.

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.....

.....

..... **[2]**

4. June/2022/Paper_J260/01/No.11

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