OCR GCSE 21ST CENTURY BIOLOGY B · J257

BIOLOGY



EXAM QUESTION PACK

B5.6 WHAT CAN HAPPEN WHEN ORGANS AND CONTROL SYSTEMS STOP WORKING? (FOUNDATION)

SCORE	PERCENTAGE
/32	%

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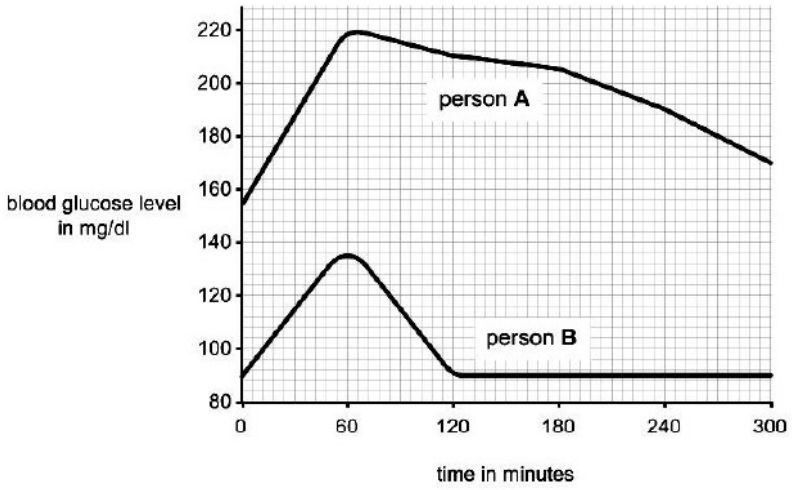
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1.

(i) Insulin is a hormone produced by the pancreas.

The graph below shows data from two people who were given a sugary drink.

Their blood sugar level was recorded every 60 minutes from when they had the drink.



There are two types of diabetes – type 1 and type 2.

Person A has type 2 diabetes. Person B does not have diabetes.

Describe how the graph shows this and explain why there is a difference in the blood sugar level.

---

[2]

(ii) The statements below are all to do with type 1 and type 2 diabetes.

Draw two lines to identify the sentences which are to do with **type 1 diabetes.**

[2]

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Type 1 diabetes	body no longer responds to the insulin produced
	should eat a diet high in complex carbohydrates and exercise
	will need to inject insulin
	pancreas stops producing insulin

2(a). Dementia is caused by damage to the brain.

People with dementia often have difficulty remembering things they have just done. However, they can clearly remember things from many years ago.

Which part of their memory is still functioning well and which part is not?

---

[2]

(b). Name a technique that could be used to find the area of the brain that is damaged.

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[1]

(c). Emma is trying to remember a phone number but is finding it difficult.

Suggest a method that she could use to help her remember it.

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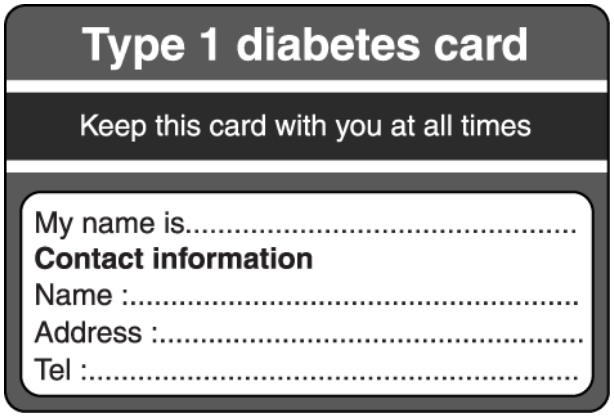
[1]

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3. It is very important to control the level of sugar in the blood.
A person can become unconscious if there is too much or too little sugar in the blood.

Steve has a card that says he has type 1 diabetes.



Steve is found unconscious.

Suggest how diabetes could cause Steve to become unconscious.
Explain how he should be treated.

The quality of written communication will be assessed in your answer.

[6]

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4(a). The eye is a sense organ.

Each part of the eye is adapted to its specific function.

The table describes the functions of different parts of the eye.

Complete the table by writing the **part of the eye** that matches each **description**.
Choose from the words below:

ciliary muscle **cornea** **iris** **lens**

Part of the eye	Description
	A ring of tissue that changes size to alter the diameter of the pupil, to control the amount of light entering the eye.
	A thin layer of transparent tissue in front of the pupil which bends light as it enters the eye.
	A thick layer of transparent tissue behind the pupil which bends light so it focusses on the retina.
	Changes the thickness of the lens to focus light from far and near objects.

[3]

(b). Amir is investigating what happens to pupil size when a person moves from an area of bright light to an area of darkness.

He measures the size of his friend's pupil in bright light.

His results are shown in the table below.

Experiment number	Pupil size (mm)
1	4.0
2	3.8
3	6.0

(i) Calculate the mean pupil size.

Mean pupil size = ---------- mm **[2]**

(ii) Amir reads an article that suggests the average pupil size in bright light should be in the range of 2 – 4 mm.

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Amir thinks one of his results is an anomalous result.

Which result is most likely to be the anomalous result?

Give a reason for your choice.

---

[2]

(iii) What can Amir do to make his results more precise?

---

[1]

(iv) To create dark conditions Amir asks his friend to put on sunglasses.

Amir draws two diagrams (**Fig. 1.1** and **Fig. 1.2**) to show how the pupil changes when the light conditions change.
Fig. 1.2 is incomplete.

Complete **Fig. 1.2** to show the pupil in dark conditions.

Pupil in bright light

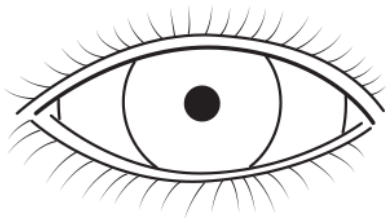


Fig. 1.1

Pupil in the dark

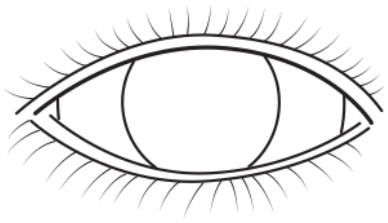


Fig. 1.2

[1]

(v) The change in pupil size is an example of a reflex.

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Which statement best describes a reflex?

Tick (✓) **one** box.

A rapid and involuntary response. ☐

A rapid and voluntary response. ☐

A slow and involuntary response. ☐

A slow and voluntary response. ☐

[1]

(vi) What name is given to the structure that transmits electrical impulses from the eye to the central nervous system?

Put a (ring) around the correct answer.

effector **receptor** **relay neuron** **sensory neuron**

[1]

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(c). Amir is reading a newspaper but the words look blurry.

When he looks out the window he can see everything outside clearly.

Explain to Amir why the words in the newspaper look blurry and explain how this defect could be corrected.

Explanation ----------

Correction ----------

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[3]

5. Diabetes and cardiovascular disease are common diseases in the UK.

There are two different types of diabetes.

Put one tick (✓) in each row of the table to show whether the statement applies to **both types of diabetes, only type 1 diabetes, or only type 2 diabetes**.

Statement	Both types of diabetes	Only type 1 diabetes	Only type 2 diabetes
The person cannot control their blood sugar level.			
The body stops responding to the insulin it makes.			
The disease can be treated using injections of insulin.			
In the future, the disease could be treated using stem cells to replace insulin-secreting cells in the pancreas.			

[4]

END OF QUESTION PAPER

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