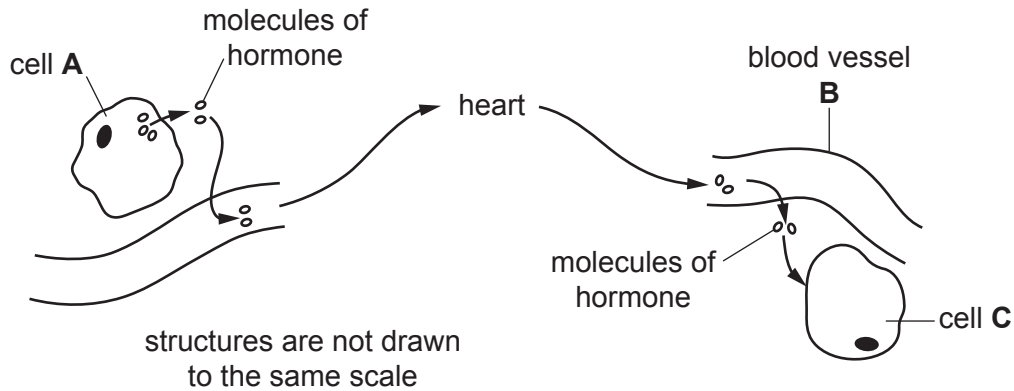


Section A

Answer **all** questions in this section.

Write your answers in the spaces provided.

- 1 The diagram shows the pathway taken by a hormone from cell **A** where it is produced to cell **C** that it affects.



- (a) (i) Identify the type of blood vessel **B**. [1]
- (ii) Explain the ways in which this type of blood vessel is adapted for the transport of hormone molecules.
-
-
-
-
- [4]
- (iii) State how molecules of the hormone are transported through blood vessel **B**.
-
- [2]

(b) For a **named** hormone, identify the gland containing cell **A**, an organ containing cell **C** and a function or effect of the hormone you have named.

- named hormone
- the gland containing cell **A**
- an organ containing cell **C**
- a function or effect of the named hormone

.....

.....

[4]

(c) Cell **C** is one of a number of similar cells making up an organ.

State the name given to organs affected by hormones.

..... [1]

[Total: 12]

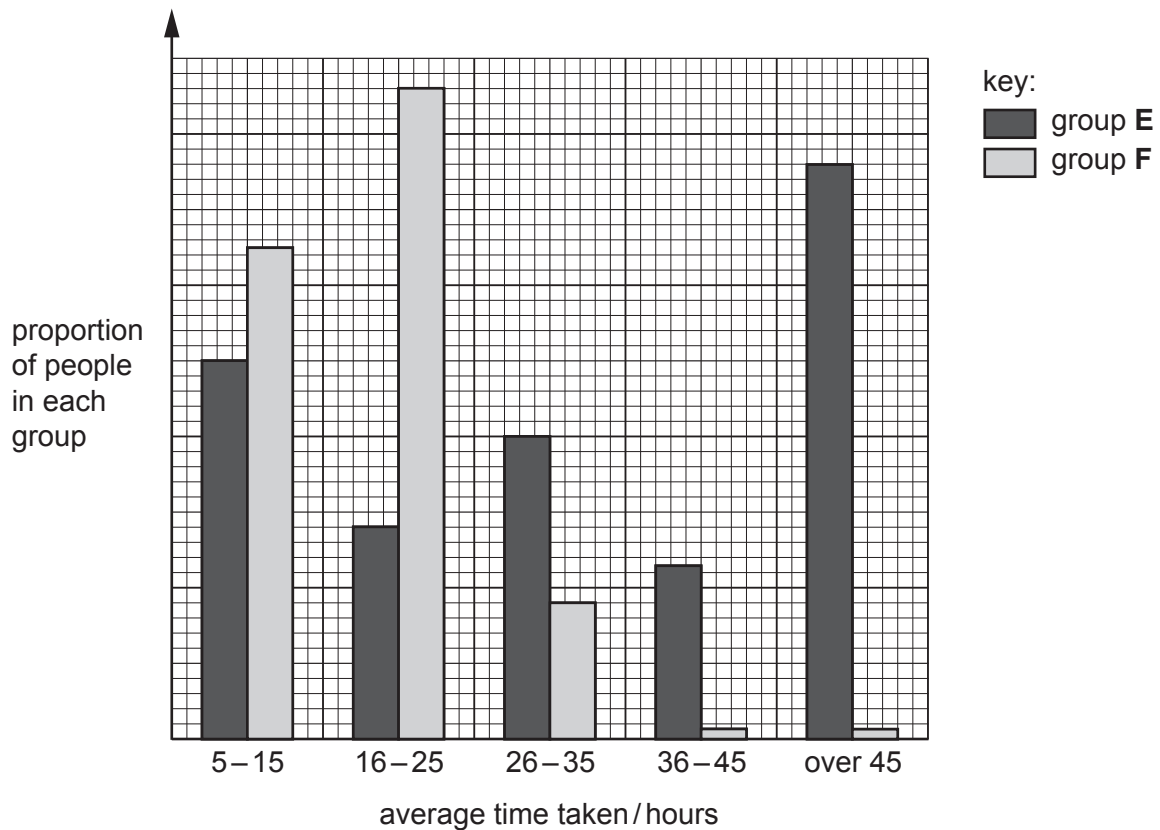
- 2 (a) (i) Name a substance in a healthy diet, a lack of which leads to soft bones in a child.

..... [1]

- (ii) Name a food that contains this substance.

..... [1]

- (b) Two groups of people (**E** and **F**) eat different types of diet. The graph shows the average time taken for food to pass through the alimentary canal for these two groups.



- (i) Name the process that causes food to pass through the alimentary canal.

..... [1]

- (ii) Suggest how the diets of the two groups of people may be different and give reasons for your answer.

.....

.....

.....

..... [3]

- (c) Suggest reasons why it may be a **disadvantage** for food to pass through the alimentary canal too quickly.

.....

.....

..... [2]

[Total: 8]

- 3 The photograph shows an insect called a leafhopper. When it feeds, its mouthparts penetrate the xylem of the plant on which it lives.



Leafhoppers carry disease-causing bacteria from plant to plant.

- (a) (i) State the term used for a disease-causing organism.

..... [1]

- (ii) State the term used for an animal, such as an insect, that carries disease-causing organisms.

..... [1]

- (b) The bacteria carried by the leafhopper reproduce inside the plant stem and block the xylem.

- (i) Suggest and explain why this can cause the leaves of the plant to wilt.

.....

 [4]

- (ii) The leaves of plants affected by these bacteria may also develop white patches. Suggest reasons for this.

.....

 [2]

- (iii) Suggest an explanation for the fact that the fruits of plants affected by these bacteria are small and poorly developed.

.....

.....

.....

.....

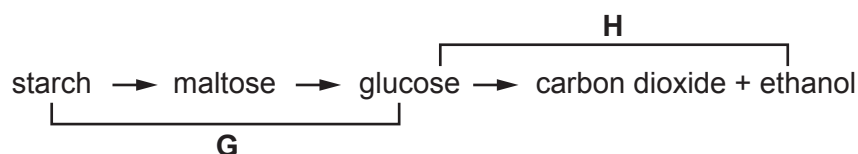
..... [4]

[Total: 12]

- 4 (a) Explain the importance of the production of carbon dioxide in bread-making.

.....
 [1]

- (b) The diagram shows a flow chart for some of the chemical reactions that occur during bread-making.



Name the processes occurring at **G** and **H**.

G

H

[3]

- (c) Explain what is causing the changes at **G**.

.....

 [3]

- (d) (i) State the name of the microorganism used in bread-making and the group of organisms to which it belongs.

name

group

[2]

- (ii) State **two** characteristics of organisms in this group.

1

2

[2]

[Total: 11]

- 5 (a) The passage describes the nucleus of a cell with missing words replaced by the letters **J**, **K**, **L** and **M**. Read the passage, then select words from the list below the passage to replace letters **J**, **K**, **L** and **M**.

In the nucleus of a body cell from a person with Down's syndrome, there are **J** thread-like structures called **K**. These are made up of many units called **L** that instruct the cell to produce a particular **M**.

carbohydrate

chromosomes

DNA

fat

forty-seven

genes

protein

twenty-four

twenty-three

J

K

L

M

[4]

- (b) When suddenly exposed to bright light, some people automatically sneeze. This is known as the photic sneeze reflex.

The photic sneeze reflex is the result of the possession of a dominant allele **A**. Use a genetic diagram to show how parents, both with the photic sneeze reflex, can have a child who is **not** affected by the photic sneeze reflex.

[3]

[Total: 7]

Section B

Answer **both** questions in this section.

Write your answers in the spaces provided.

- 6 (a) Suggest why a car driver who is driving under the influence of alcohol or heroin is more likely to have an accident than a driver who is free of these drugs.

.....

.....

.....

..... [3]

- (b) Describe other harmful effects of these drugs on people who use them for long periods of time.

alcohol

.....

.....

.....

.....

.....

heroin

.....

.....

.....

..... [7]

[Total: 10]

- 7 (a) Describe how changes in gene structure may be caused.

.....

.....

.....

..... [3]

- (b) Explain how changes in gene structure may eventually lead to the evolution of a species.

.....

.....

.....

.....

.....

.....

.....

..... [7]

[Total: 10]

Section C

Answer **either** Question 8 **or** Question 9.

Write your answers in the spaces provided.

- 8 (a)** List the structures within a plant leaf that **do not** possess chloroplasts.

.....

.....

.....

..... [4]

- (b)** Explain the importance to a plant of

- (i)** guard cells

.....

.....

.....

.....

..... [4]

- (ii)** root hair cells.

.....

.....

..... [2]

[Total: 10]

- 9 (a) Describe the similarities and differences in the **functions** of a motor and a sensory neurone.

similarities

.....

.....

differences

.....

.....

[5]

- (b) Describe the functions of the following parts of the brain.

- (i) the cerebrum

.....

.....

.....

.....

..... [3]

- (ii) the hypothalamus

.....

.....

.....

..... [2]

[Total: 10]

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