Cambridge Assessment International Education

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BIOLOGY **0610/32**

Paper 3 Theory (Core) **May/June 2022**

1 hour 15 minutes

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.
- You should show all your working and use appropriate units.

INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **16** pages. Any blank pages are indicated.

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1 Fig. 1.1 is a photograph of a plant.



Fig. 1.1

View solution

(a) (i) Draw **two** arrows on Fig. 1.1 to show the direction of movement of water into and out of the plant. [2]

(ii) State the name of the type of tissue that transports water in a plant. View solution

..... [1]

(b) (i) Complete the definition of the term transpiration. View solution

Transpiration is the loss of water vapour from plant leaves by

..... of water at the surfaces of .....

cells, followed by diffusion of water vapour through the ..... .

[3]

(ii) Fig. 1.2 is a graph showing the effect of temperature on the rate of transpiration from the upper and lower surfaces of leaves. View solution

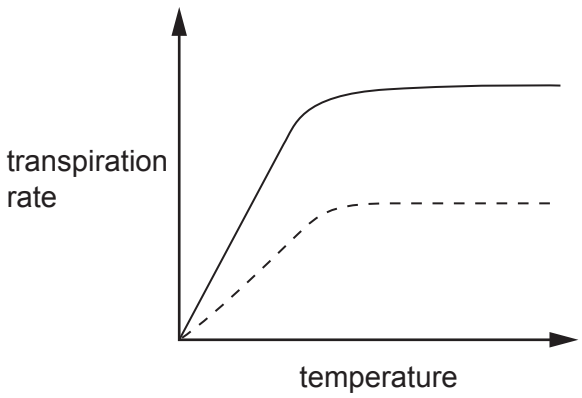

Fig. 1.2

State **two** conclusions for the data shown in Fig. 1.2.

1 .....

.....

.....

2 .....

.....

.....

[2]

(c) State the effect of increasing humidity on the rate of transpiration.

View solution

.....

.....

..... [1]

(d) Fig. 1.3 is a diagram of the water cycle.

View solution

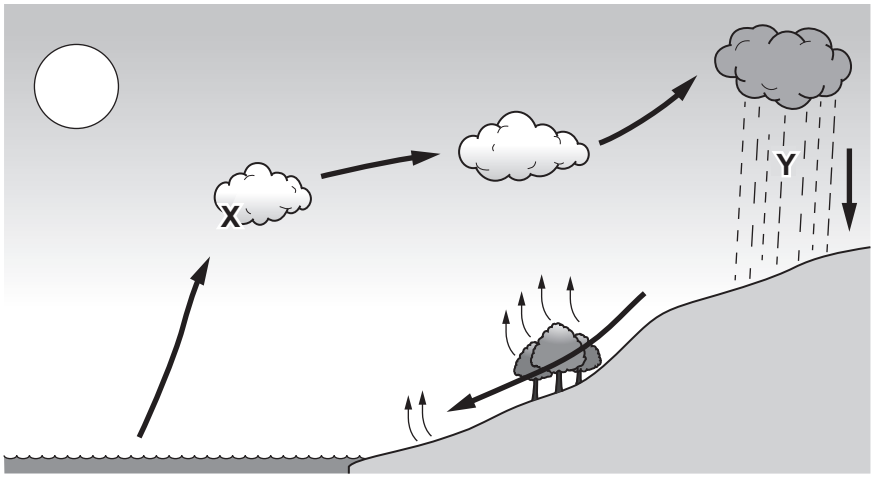

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Fig. 1.3

Identify processes **X** and **Y** in Fig. 1.3.

X .....

Y .....

[2]

[Total: 11]

2 **(a)** Define the term homeostasis.

View solution

.....

.....

.....

.....

..... [2]

(b) The box on the left shows the beginning of a sentence.

View solution

The boxes on the right show some sentence endings.

Draw **three** straight lines to make three correct sentences about the brain.

	and spinal cord are part of the peripheral nervous system.
	coordinates body functions.
	contains receptors that detect the temperature of the blood.
The brain	
	produces insulin.
	receives impulses from motor neurones.
	receives impulses from the optic nerve.

[3]

(c) Fig. 2.1 shows part of a cross-section of mammalian skin.

View solution

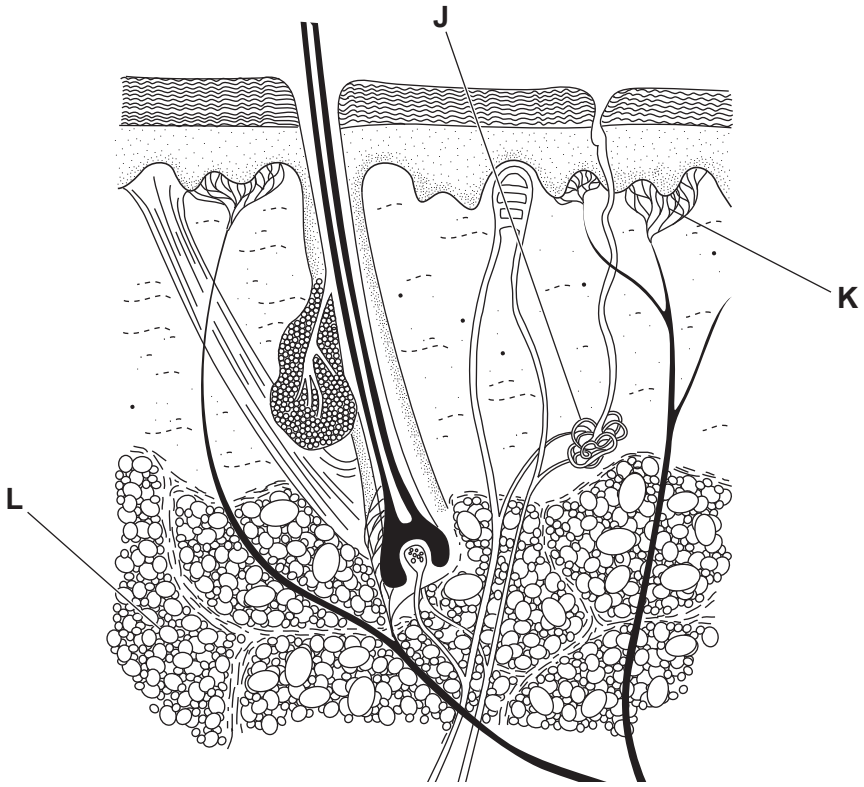

Fig. 2.1

State the names of **J**, **K** and **L** in Fig. 2.1.

J .....

K .....

L .....

[3]

(d) Describe how structures in the body help to keep the body warm in a cool environment.

View solution

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 11]

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3 **(a)** Fig. 3.1 is a diagram showing part of the human alimentary canal and associated organs.

View solution

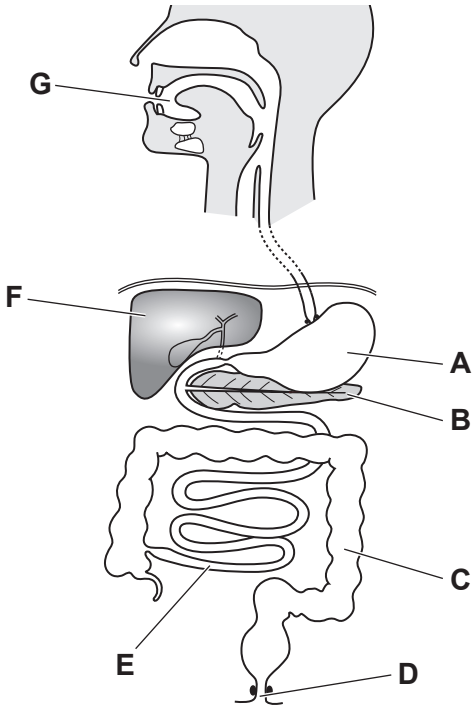

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Fig. 3.1

(i) The boxes on the left show three letters from Fig. 3.1 that identify three different organs.

The boxes in the middle show the names of some of the organs in Fig. 3.1.

The boxes on the right show some functions of organs.

Draw **three** lines to link each letter to the name of the organ the letter identifies in Fig. 3.1.

Draw **three** more lines to link these organs to a correct function.

Draw a total of **six** lines.

letter from Fig. 3.1	**name of the organ**	**function**
	anus	absorption
D		
	ileum	assimilation
E		
	mouth	egestion
G		
	pancreas	ingestion

[6]

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(ii) State the letter in Fig. 3.1 that identifies the liver **and** outline **one** function of the liver.

View solution

letter in Fig. 3.1 .....

function .....

.....

.....

[2]

(b) Describe the effects of excessive alcohol consumption.

View solution

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(c) Protein is a large molecule.

Table 3.1 shows the names of some large molecules, the enzymes that catalyse the breakdown of these large molecules and the smaller molecules they are made from.

Complete Table 3.1 by writing the correct large molecule, enzymes and small molecule in the boxes.

View solution

Table 3.1

large molecules	enzymes	small molecules
protein	.....	amino acids
.....	amylase	glucose
fats and oils	.....	fatty acids and .....

[4]

[Total: 16]

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4 Fig. 4.1 is a drawing of a rainforest food web.

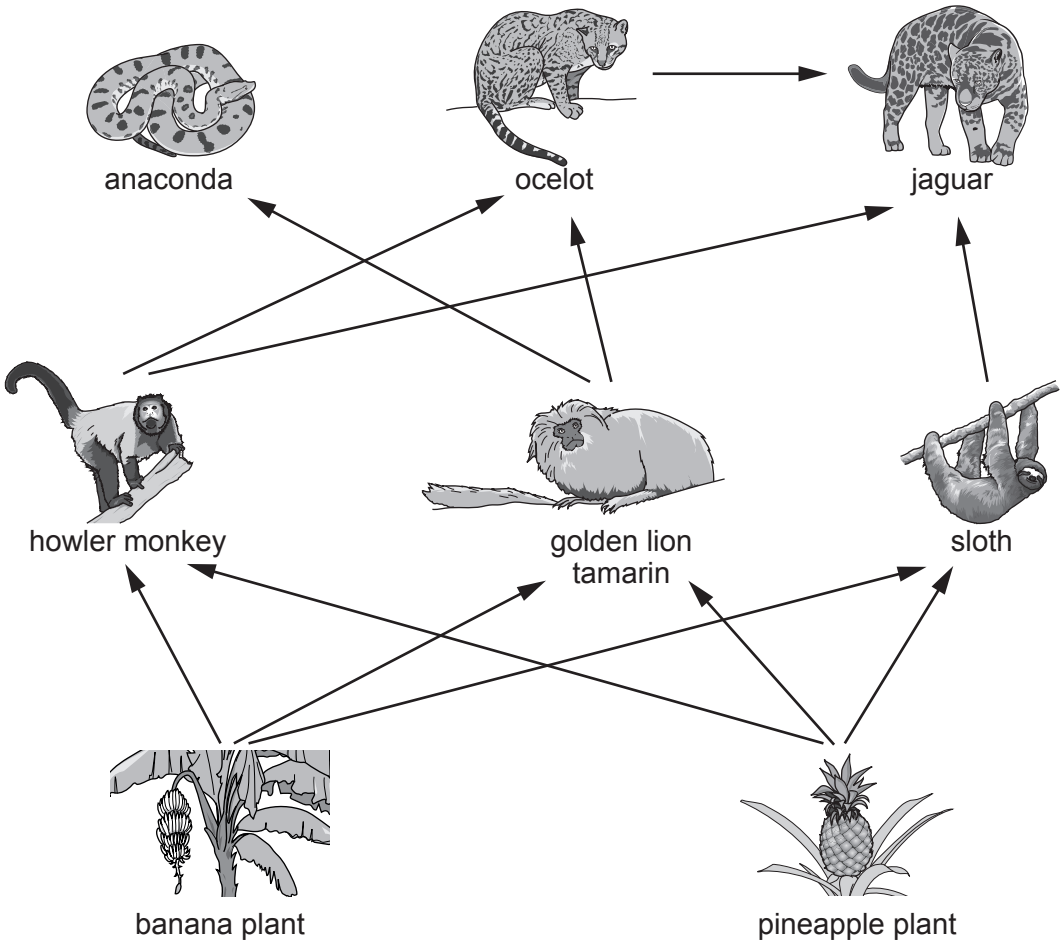

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Fig. 4.1

View solution

(a) (i) State the name of **one** producer shown in Fig. 4.1.

..... [1]

(ii) State the name of **one** herbivore shown in Fig. 4.1.

..... [1]

(iii) State the number of carnivore species shown in Fig. 4.1.

..... [1]

(iv) Use the information in Fig. 4.1 to complete the food chain that contains the howler monkey and three other organisms.

.....	→	howler monkey	→	.....	→	.....

[2]

(v) Overhunting of golden lion tamarins caused the population of anacondas and sloths to change.

Explain why the populations of:
- anacondas decrease
- sloths increase.

anacondas .....

.....

.....

sloths .....

.....

.....
[2]

(vi) State the principal source of energy for food webs.

..... [1]

(b) Conservationists counted the number of organisms in each feeding level for one of the food chains in a rainforest.

View solution

The data were used to draw a pyramid of numbers. Table 4.1 shows the data.

Table 4.1

feeding level	number of organisms	width of the bar in the pyramid of numbers / cm
producer	4	0.4
primary consumer	100	10.0
secondary consumer	26	
tertiary consumer	8	0.8

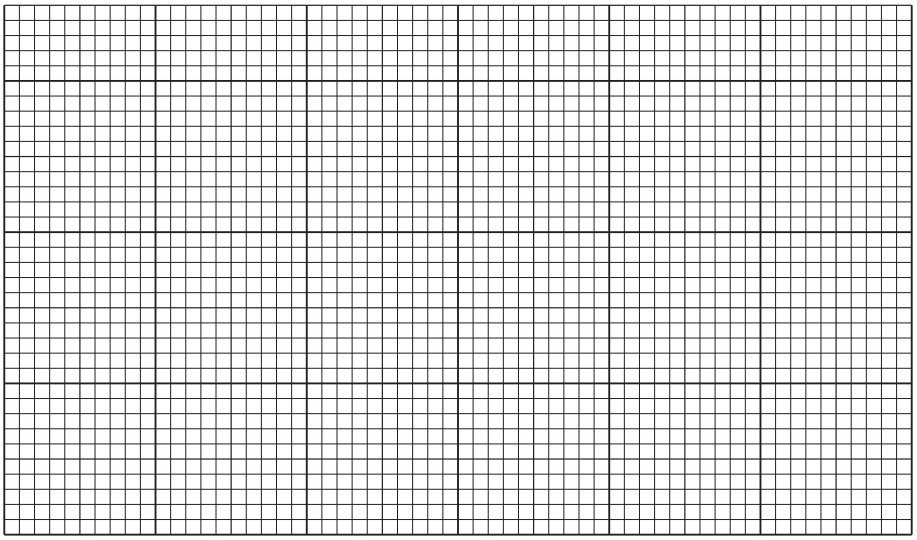
(i) Complete Table 4.1 by calculating the width of the bar for the secondary consumer feeding level.

..... cm [1]

(ii) Using the information in Table 4.1 and your answer to **4(b)(i)**, draw a pyramid of numbers on the grid. Each small square on the grid is 0.2 cm wide.

View solution

Label each bar with the feeding level.



[4]

(c) Deforestation is a cause of habitat loss for many organisms.

View solution

List **three** other undesirable effects of deforestation.

1 .....

2 .....

3 .....

[3]

[Total: 16]

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5 **(a)** Blood group is inherited. There are four human blood groups: A, B, AB and O.

Surveys were carried out in two different countries to find out the percentage of the population in each blood group.

View solution

The results are shown in Fig. 5.1.

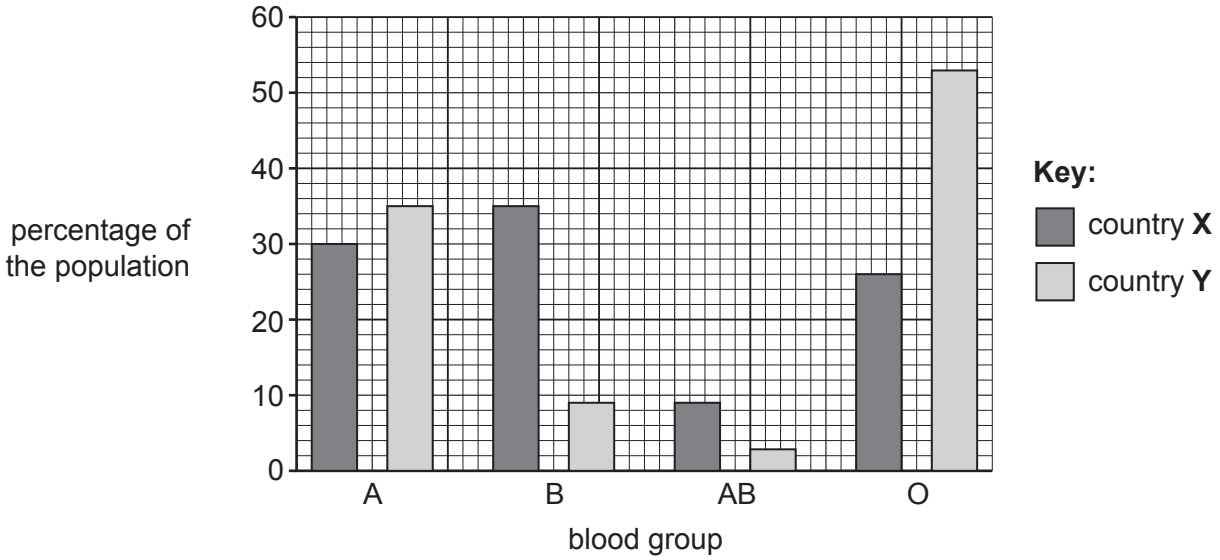


Fig. 5.1

(i) Complete the sentences that describe the data shown in Fig. 5.1.

The rarest blood group in both countries is ..... .

In country **X** blood group ..... is the most common but in country **Y** it is blood group ..... .

The percentage of the population of country **X** that has blood group **A** is .....%.

[4]

(ii) Suggest the type of variation shown in Fig. 5.1 and give a reason for your choice.

View solution

type of variation .....

reason .....

.....

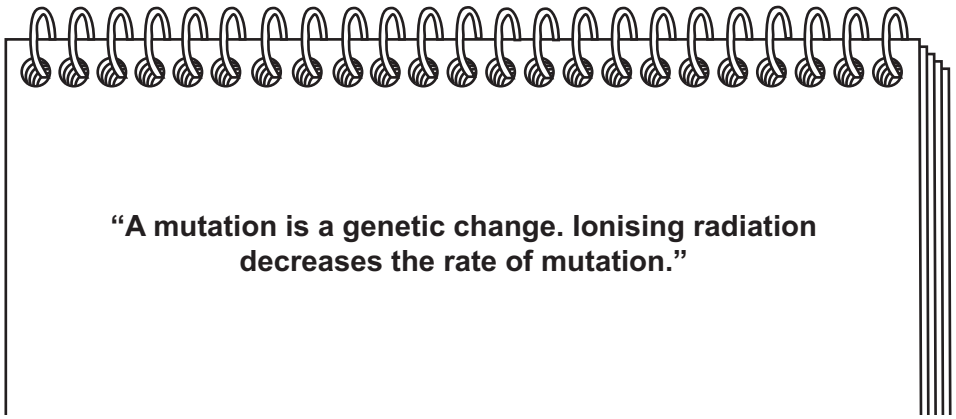
.....

[2]

(b) Mutations can create variation.

View solution

A student made some statements about mutations in their notebook.



Identify **one** incorrect word in the sentences.

..... [1]

[Total: 7]

6 Pathogens in food can cause diarrhoea.

(a) Describe diarrhoea and state how diarrhoea can be treated.

View solution

.....

.....

.....

.....

..... [2]

(b) Describe ways of preventing the spread of diseases that are caused by pathogens in food.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 6]

View solution

7 **(a)** A student investigated plant growth responses.

View solution

A seedling was attached to a support stand and placed under a lamp.

(i) Complete Fig. 7.1 by drawing the expected position of the root **and** shoot after seven days of growth.

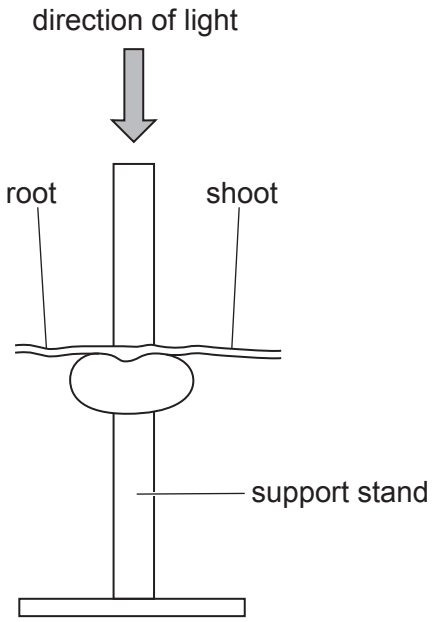


Fig. 7.1

[2]

(ii) State the type of growth response plants show in response to the direction of light.

..... [1]

(iii) State the type of nuclear division that is used for growth.

..... [1]

(b) Seeds need certain factors for germination.

View solution

Circle **three** factors that are needed for germination.

carbon dioxide **iron** **nitrogen** **oxygen**

suitable temperature **water** **vitamin C**

[3]

(c) Complete the sentences.

View solution

Seeds contain proteins for the ..... of developing shoots and roots. Proteins contain the elements ..... , oxygen, ... and nitrogen.

The new leaves of a seedling need the mineral ion ..... to make the green pigment ..... .

This green pigment is needed to carry out the process of ....., in the presence of light.

[6]

[Total: 13]

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