Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2023**

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- There are **forty** questions on this paper. Answer **all** questions.
- For each question there are four possible answers **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in soft pencil on the multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid.
- Do **not** write on any bar codes.
- You may use a calculator.

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.

This document has **16** pages.

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1 Which row shows substances removed by excretion?

	substances in excess of requirements	undigested food	waste products of metabolism
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

key
✓ = yes
✗ = no

2 Which two parts are included in the scientific name of an organism?

A genus and group

B genus and species

C group and kingdom

D kingdom and species

3 How many jointed legs does an insect have?

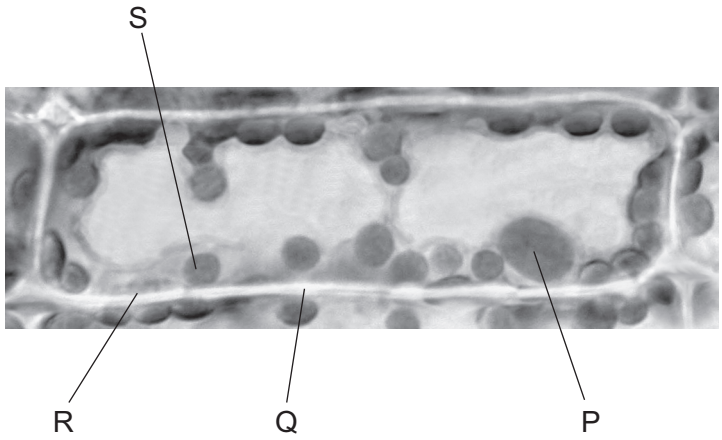
A two pairs

B three pairs

C four pairs

D more than six pairs

4 The photomicrograph shows a cell from a type of aquatic plant.

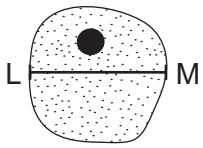


Which labelled parts indicate that this is a plant cell?

A P and R **B** P and S **C** Q and R **D** Q and S

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5 The diagram shows a magnified image of a cell. The magnification is ×360. Line LM represents the width of the image of the cell. Line LM is 18 mm long in this diagram.



What is the actual width of the cell?

A 0.005 mm **B** 0.05 mm **C** 0.5 mm **D** 5.0 mm

6 Which factor would **decrease** the rate of diffusion of oxygen into cells?

A increasing concentration gradient

B increasing surface area

C increasing temperature

D increasing thickness of cell membrane

7 Which molecule crosses a partially permeable membrane during osmosis?

A carbon dioxide

B oxygen

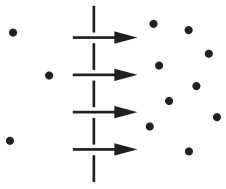
C urea

D water

8 The diagrams show the movement of particles across a membrane. The arrows show the direction of movement.

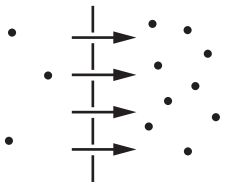
Which diagram shows active transport?

A



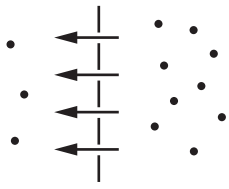
using energy from respiration

B



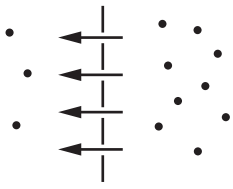
not using energy from respiration

C



using energy from respiration

D



not using energy from respiration

9 Which substance is used to test a food for vitamin C?

A Benedict's solution

B DCPIP

C ethanol

D iodine solution

10 What are enzymes made of?

A fatty acids

B glycogen

C protein

D starch

11 What remains at the end of an enzyme-controlled reaction?

A enzymes and products

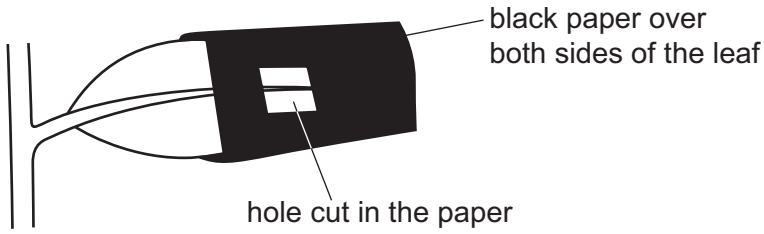
B enzymes and substrates

C enzymes only

D products only

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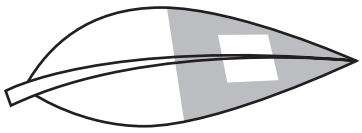
12 A plant is placed in the dark until all its stored starch is used up. The plant is placed in light with black paper over part of one green leaf.



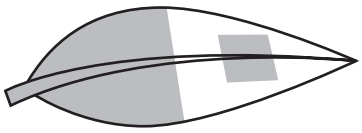
After eight hours, the leaf is tested for starch.

Which diagram shows the appearance of the leaf after this test?

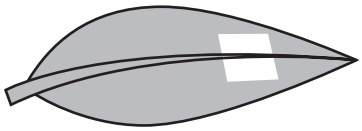
A



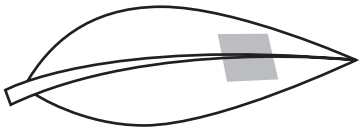
B



C



D

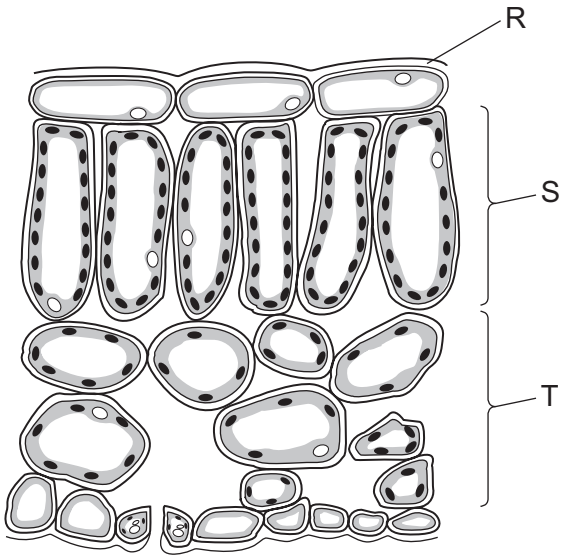


key

= starch present

= starch **not** present

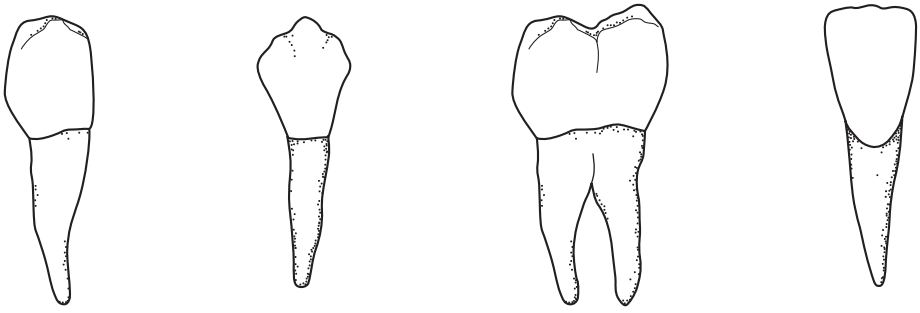
13 The diagram shows part of a cross-section of a leaf.



Which row shows the correct labels?

	R	S	T
A	cuticle	palisade mesophyll	spongy mesophyll
B	cuticle	spongy mesophyll	palisade mesophyll
C	epidermis	palisade mesophyll	spongy mesophyll
D	epidermis	spongy mesophyll	palisade mesophyll

14 The diagrams show the different types of human teeth.



1 2 3 4

Which teeth are used for grinding food?

	1	2	3	4
A	✓	✗	✓	✗
B	✓	✓	✗	✗
C	✗	✗	✓	✓
D	✗	✓	✗	✓

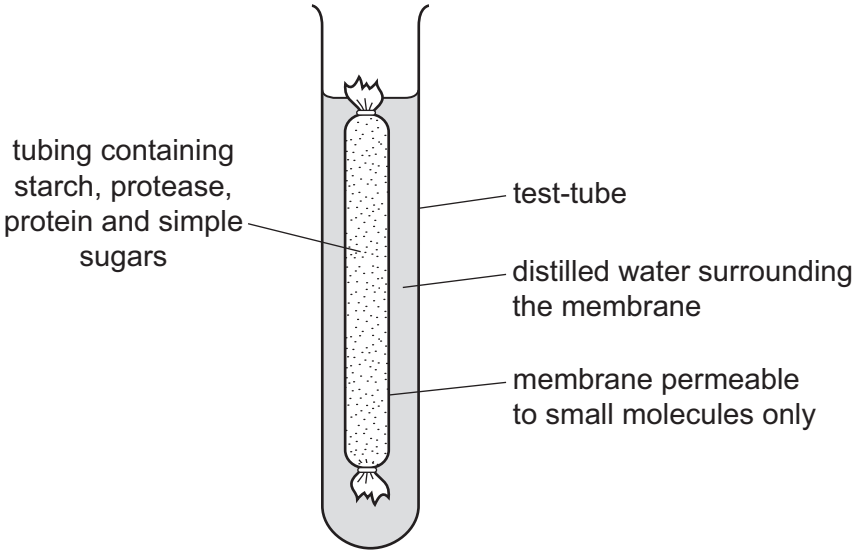
key
✓ = yes
✗ = no

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15 Which row shows the correct names of parts of the large and small intestines?

	large intestine		small intestine	
A	colon	duodenum	ileum	rectum
B	rectum	colon	duodenum	ileum
C	ileum	rectum	colon	duodenum
D	duodenum	ileum	rectum	colon

16 The diagram shows the apparatus used in an experiment. The apparatus was kept at 35 °C.



What is likely to be present in the water surrounding the membrane after 45 minutes?

A amino acids and simple sugars

B protein and amino acids

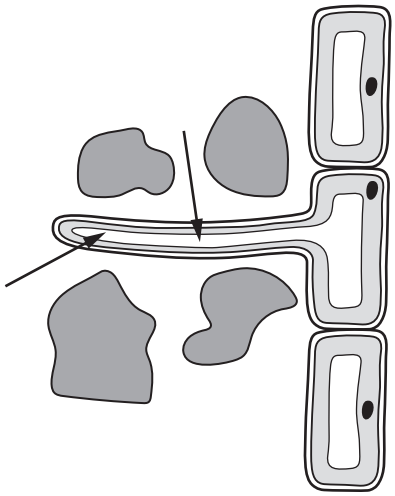
C protein and simple sugars

D starch and simple sugars

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[Turn over

17 The arrows show the movement of substances from the soil into a root hair cell.



Which substances move from the soil into the root hair cell?

A carbon dioxide and oxygen

B glucose and water

C mineral ions and glucose

D water and mineral ions

18 By which process does water escape from stomata in the leaves?

A active transport

B diffusion

C evaporation

D osmosis

19 Which row about the circulatory system is correct?

	part that pumps blood	part with valves
A	heart	heart and veins
B	heart and blood vessels	all blood vessels
C	capillaries	heart
D	heart	capillaries and arteries

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20 Which structures may become blocked in coronary heart disease?

A arteries

B atria

C veins

D ventricles

21 What is defined as a disease-causing organism?

A bacterium

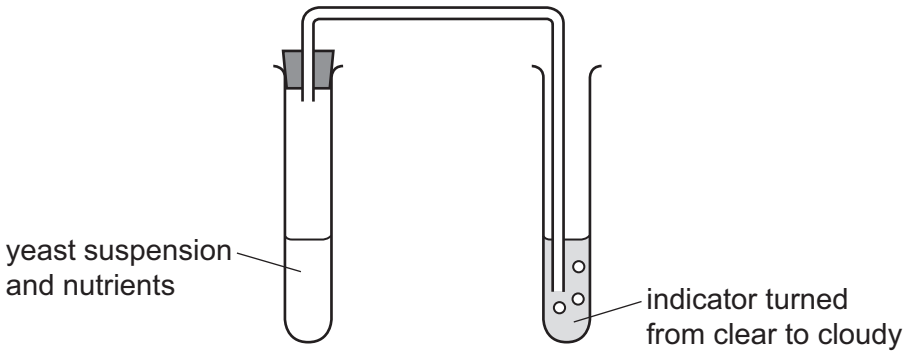
B pathogen

C phagocyte

D virus

22 A student investigated the effect of temperature on respiration in yeast.

The diagram shows the apparatus they used.



Which substance turned the indicator from clear to cloudy?

A carbon dioxide

B glucose

C oxygen

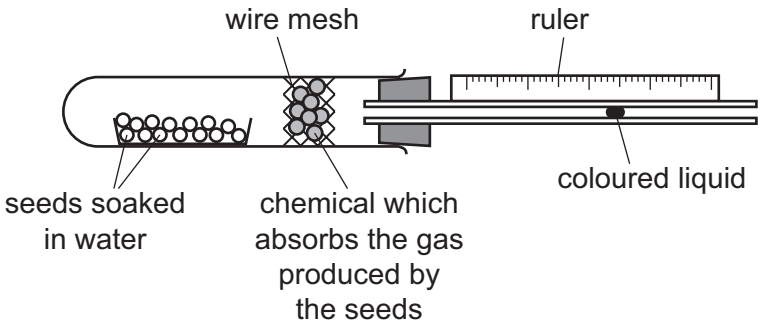
D water

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[Turn over

23 The apparatus shown was used to investigate aerobic respiration in seeds.

The apparatus was placed in a dark room.



All environmental conditions were kept constant.

What will happen in the apparatus?

	gas taken in by the seeds	gas absorbed by the chemical in the wire mesh	direction of movement of the coloured liquid
A	carbon dioxide	oxygen	towards the seeds
B	carbon dioxide	oxygen	away from the seeds
C	oxygen	carbon dioxide	towards the seeds
D	oxygen	carbon dioxide	away from the seeds

24 Why is yeast used in bread-making?

A Aerobic respiration produces alcohol.

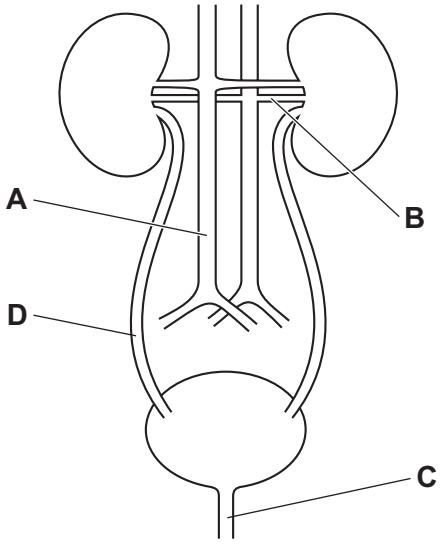
B Aerobic respiration produces lactic acid.

C Anaerobic respiration produces alcohol.

D Anaerobic respiration produces carbon dioxide.

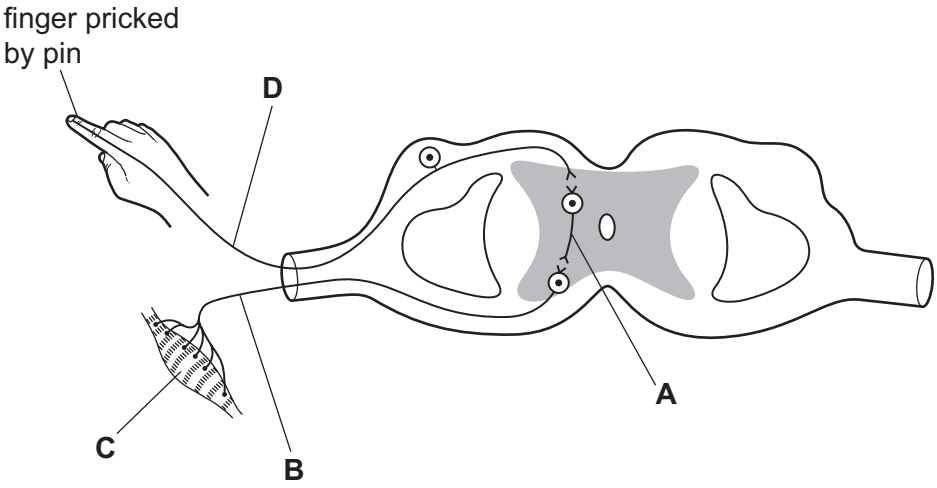
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25 In the diagram, which label identifies the urethra?



26 The diagram shows a reflex arc.

Which label identifies the motor neurone?



27 What is the role of insulin?

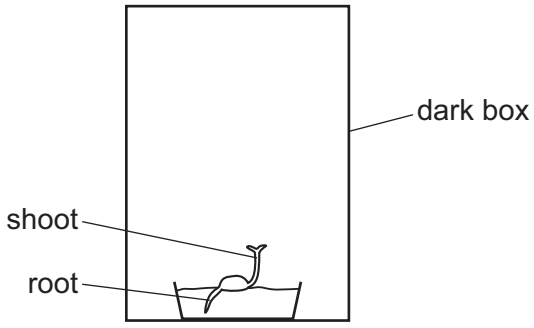
A It decreases blood glucose concentration.

B It increases blood glucose concentration.

C It decreases blood sucrose concentration.

D It increases blood glycogen concentration.

28 The diagram shows a seedling growing inside a dark box.



Which type of responses affect the direction of growth of the root and the shoot inside the box?

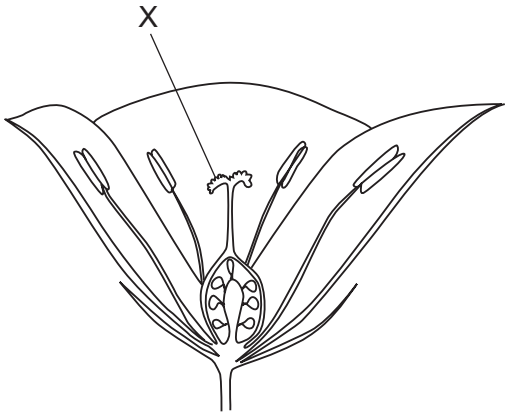
	response by the root	response by the shoot
A	gravitropism	gravitropism
B	gravitropism	phototropism
C	phototropism	gravitropism
D	phototropism	phototropism

29 Which row shows why only some infections can be successfully treated with antibiotics?

	antibiotics kill		
	bacteria	resistant bacteria	viruses
A	yes	yes	no
B	no	no	yes
C	yes	no	no
D	no	yes	yes

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30 The diagram shows part of a flower.



What is the part labelled X?

A anther

B ovary

C sepal

D stigma

31 Which statement about the hormones involved in human puberty is correct?

A Oestrogen causes body hair and facial hair to grow in males.

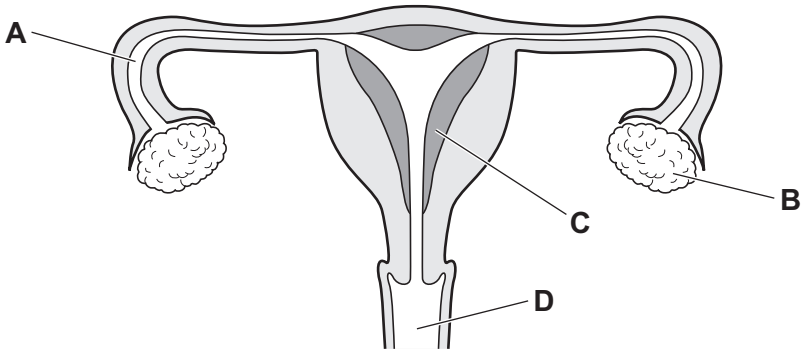
B Oestrogen causes breasts to develop in females.

C Testosterone causes the menstrual cycle to begin in females.

D Testosterone causes the hips to get wider in males.

32 The diagram shows the human female reproductive system.

In which structure does fertilisation usually occur?



33 In mice, the allele for black hair is dominant to the allele for brown hair.

Which proportion of offspring will have brown hair if a cross is made between a homozygous black mouse and a heterozygous black mouse?

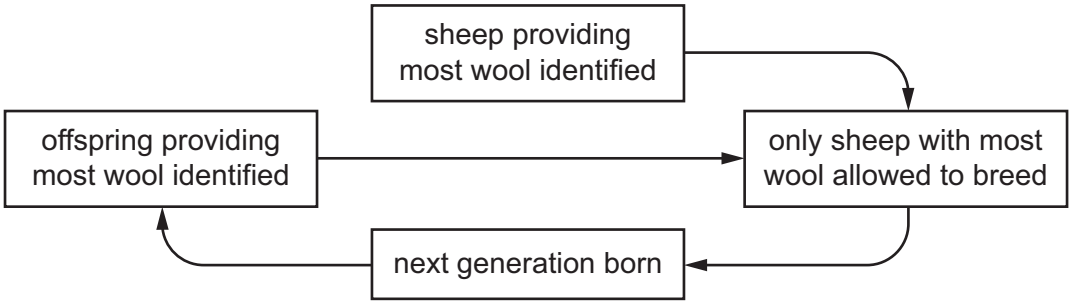
A 0% **B** 25% **C** 50% **D** 100%

34 Which row about variation is correct?

	variation type	caused by	example
A	discontinuous	environment only	ABO blood groups
B	discontinuous	genes and environment	body mass
C	continuous	genes only	ABO blood groups
D	continuous	genes and environment	body mass

35 Humans have kept sheep for many centuries because they supply us with wool.

The flow chart shows how a farmer would breed his sheep to provide more wool.



Which process is described by this flow chart?

A natural selection

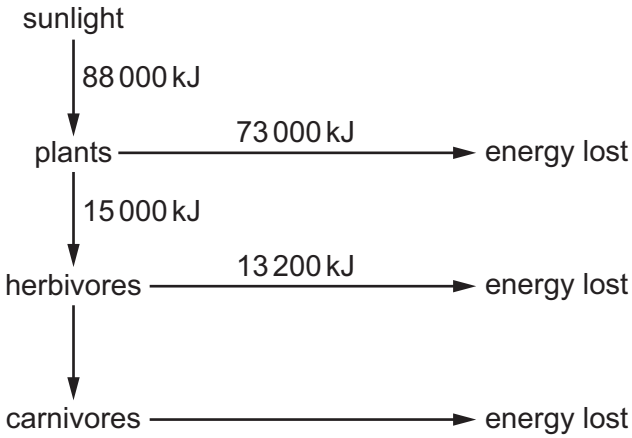
B selective breeding

C struggle for survival

D genetic modification

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36 The numbers in the diagram show the amount of energy transferred through part of an ecosystem.



How much energy is transferred from herbivores to carnivores?

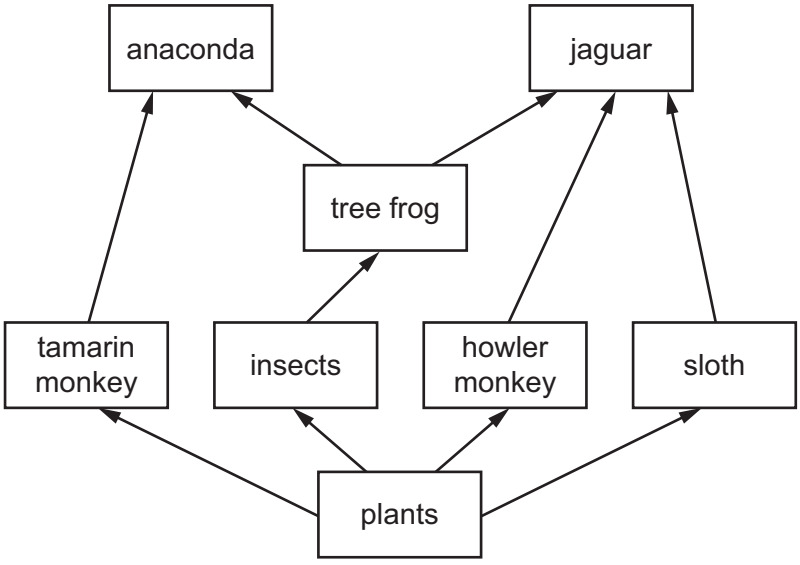
A 15 000 kJ + 13 200 kJ

B 15 000 kJ – 13 200 kJ

C 88 000 kJ + 15 000 kJ

D 88 000 kJ – 15 000 kJ

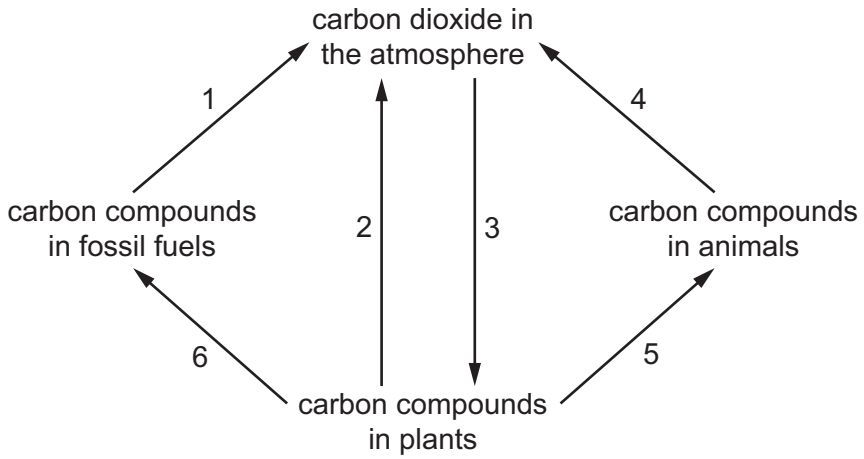
37 The diagram shows a food web in a rainforest.



How many trophic levels are shown in this food web?

A 1 **B** 3 **C** 4 **D** 8

38 The diagram shows the carbon cycle.



Which labelled processes represent respiration?

A 1 and 4 **B** 1 and 5 **C** 2 and 4 **D** 3 and 6

39 Vitamin A deficiency is a big health problem in some parts of the world and can cause problems such as blindness. Rice can be genetically modified to enable people to make vitamin A when they eat it.

150 g of this rice provides 60% of the adult recommended daily intake of vitamin A.

How much rice does an adult need to get 100% of the recommended daily intake of vitamin A?

A 190 g **B** 210 g **C** 250 g **D** 375 g

40 Which feature of bacteria makes them useful in genetic modification?

A They can only make simple molecules.

B They can reproduce rapidly.

C They can cause decomposition.

D They can cause disease.

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