Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **October/November 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.

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1 Which processes are characteristics of **all** living organisms?

View solution

1 digestion

2 respiration

3 excretion

A 1, 2 and 3 **B** 1 only **C** 2 and 3 only **D** 2 only

2 Using the binomial system, the Arctic fox is called *Vulpes lagopus*.

View solution

Which row is correct?

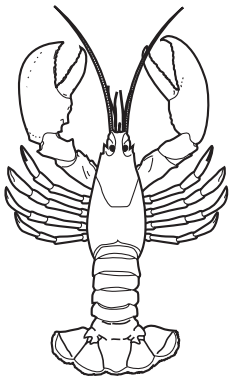
	Vulpes	*lagopus*
A	genus	kingdom
B	genus	species
C	species	genus
D	species	kingdom

3 The diagrams show four different types of arthropod.

View solution

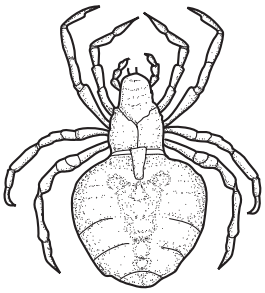
Which organism is labelled with its correct arthropod group?

A



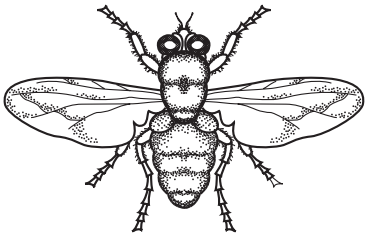
crustacean

B



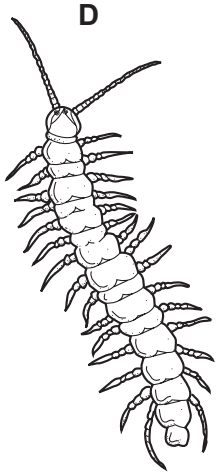
insect

C



myriapod

D



arachnid

4 Which features are possessed by **all** plant cells?

View solution

	a cell wall	chloroplasts
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = yes

✗ = no

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5 The diameter of an egg is 6.5 cm. A student draws the egg. The diameter of the egg in the drawing is 19.5 cm.

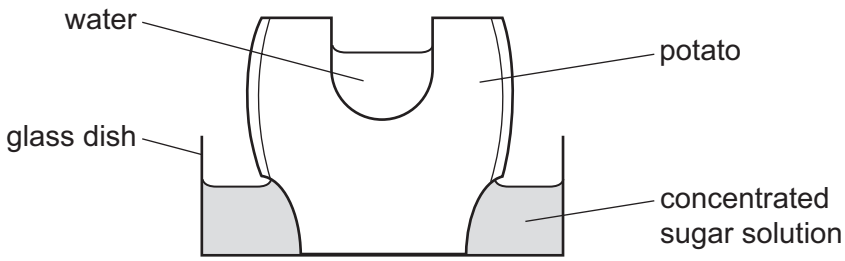
View solution

What is the magnification of the drawing?

A ×0.3 **B** ×3.0 **C** ×6.5 **D** ×300

View solution

6 The diagram shows an experiment to investigate osmosis in living cells.



What happens to the volumes of water and sugar solution after 12 hours?

	volume of water	volume of sugar solution
A	decreases	increases
B	increases	increases
C	increases	remains the same
D	remains the same	decreases

View solution

7 Which process causes oxygen to pass from an alveolus in the lung into a blood capillary?

A assimilation

B diffusion

C excretion

D osmosis

View solution

8 Which row identifies the chemical elements in proteins?

	carbon	hydrogen	oxygen	nitrogen
A	✓	✓	✓	✓
B	✓	✗	✓	✗
C	✗	✓	✓	✓
D	✓	✓	✗	✗

key

✓ = present

✗ = absent

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9 The table shows some large biological molecules and some small biological molecules.

View solution

	large biological molecules	small biological molecules
1	cellulose	glucose
2	oil	amino acids
3	glycogen	glucose
4	protein	ethanol

Which rows correctly pair large molecules with the smaller molecules used to make them?

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

10 Which changes could cause an enzyme to denature?

View solution

1 change in pH

2 change in temperature

3 change in substrate concentration

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

11 Which features of a leaf allow more diffusion of carbon dioxide into the palisade cells for photosynthesis?

View solution

	number of stomata	thickness of the leaf
A	few	thick
B	few	thin
C	many	thick
D	many	thin

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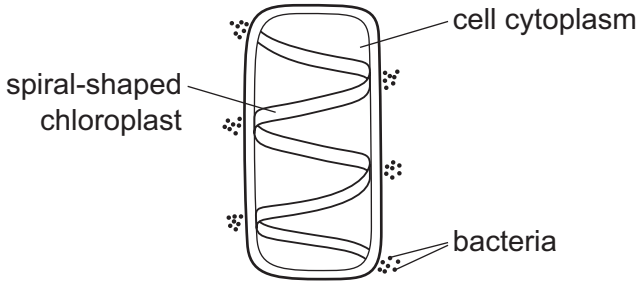
12 The diagram shows a cell with groups of bacteria around its edge.

View solution



The bacteria have moved to areas of high oxygen concentration.

Which process in the cell causes the bacteria to form these groups?

A digestion

B photosynthesis

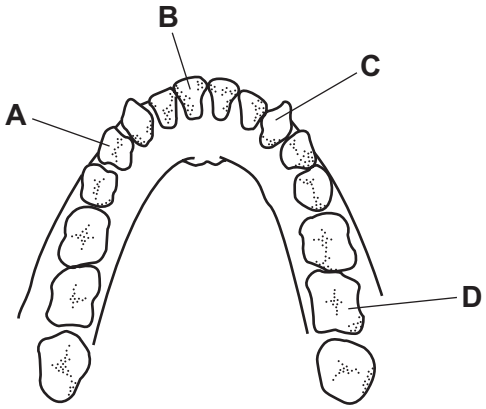
C reproduction

D respiration

13 The diagram shows the teeth in the lower jaw of a human.

View solution

Which tooth is a premolar?



14 Some medicines are made into tablets which are coated in a starch-like substance.

View solution

The coating protects the medicine from the effects of gastric juice.

Which enzyme digests the coating and what is produced by this action?

	enzyme	products
A	amylase	fatty acids and glycerol
B	amylase	simple reducing sugars
C	lipase	fatty acids and glycerol
D	lipase	simple reducing sugars

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15 In which part of the alimentary canal are **most** nutrients absorbed into the blood?

View solution

A colon

B oesophagus

C small intestine

D stomach

16 From which part of a leaf does **most** water evaporate during transpiration?

View solution

A the cuticle

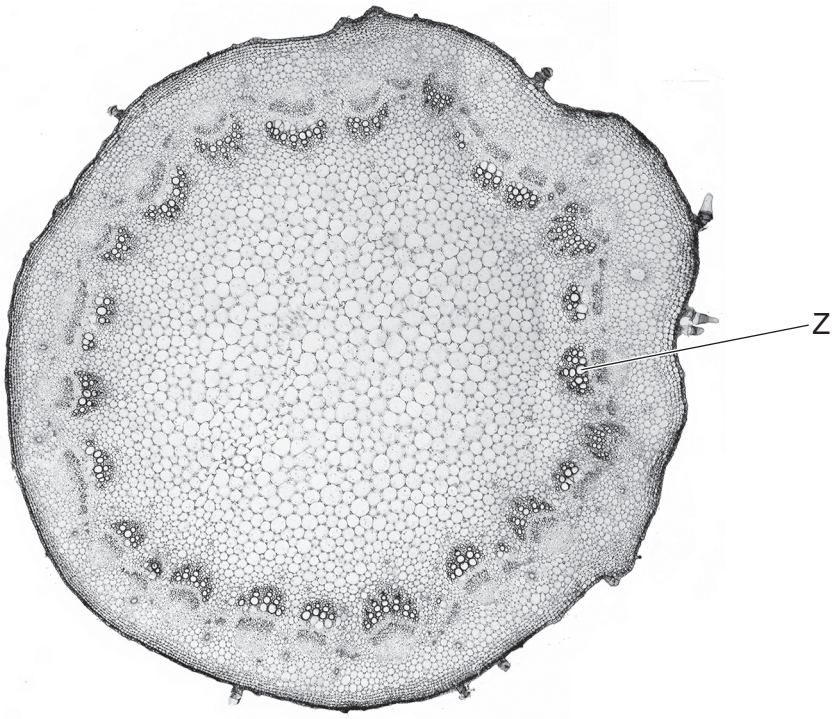
B the guard cells

C the spongy mesophyll cells

D the xylem vessels

17 The photograph shows a cross-section through a sunflower stem.

View solution



What is the name and function of the tissue labelled Z?

	name of tissue	function of tissue
A	phloem	transport of mineral ions
B	phloem	transport of sucrose
C	xylem	transport of mineral ions
D	xylem	transport of sucrose

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18 What ensures the one-way flow of blood in the human circulatory system?

View solution

A capillaries

B muscles

C valves

D ventricles

19 In which row is the component of blood correctly linked to its function?

View solution

	blood component	function
A	plasma	transport of carbon dioxide
B	platelets	phagocytosis
C	red blood cells	antibody production
D	white blood cells	blood clotting

20 Which statement describes a transmissible disease?

View solution

A a disease caused when a pathogen passes from one host to another

B a disease caused when a pathogen passes through a host's body

C a disease caused when a pathogen passes to the host's body only by direct contact

D a disease caused when a pathogen passes to the host's body only by indirect contact

21 What is the composition of expired air compared with inspired air?

View solution

	carbon dioxide	oxygen	water vapour
A	decreased	increased	increased
B	decreased	decreased	increased
C	increased	decreased	decreased
D	increased	decreased	increased

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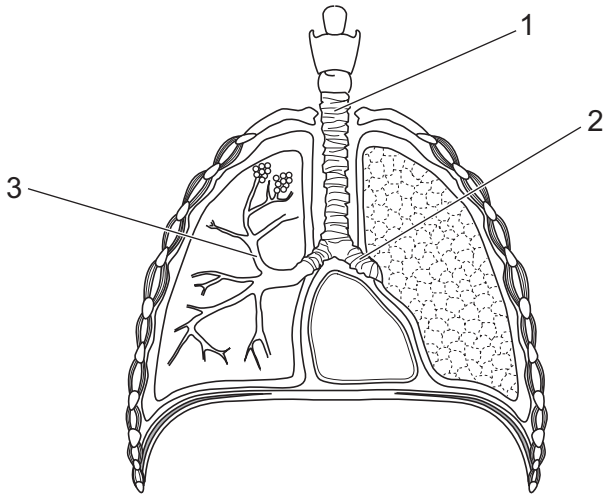
22 The diagram shows the human breathing system.

View solution



What are the labelled structures?

	1	2	3
A	bronchus	bronchiole	trachea
B	bronchiole	bronchus	trachea
C	trachea	bronchus	bronchiole
D	trachea	diaphragm	bronchus

23 Yeast cells can convert glucose into alcohol and carbon dioxide.

View solution

Which statement about this process is correct?

A The alcohol produced can be used to make bread rise.

B The carbon dioxide produced can be burnt as a biofuel.

C The yeast cells are using oxygen for this process.

D The yeast cells are carrying out anaerobic respiration.

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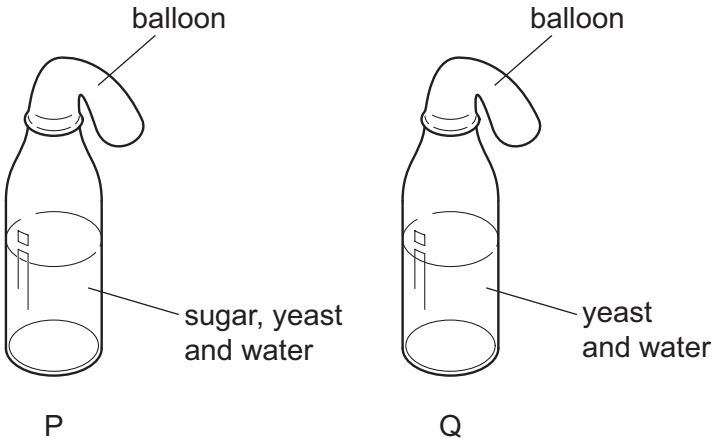
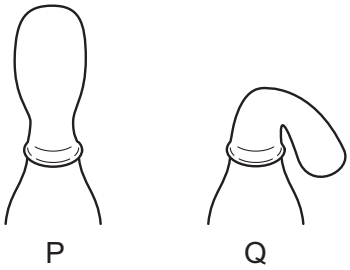
24 In an experiment to investigate anaerobic respiration, two bottles are set up in a warm room, as shown.

View solution

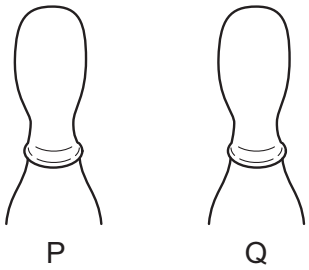


What would happen to each balloon after one day?

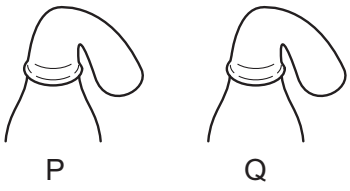
A



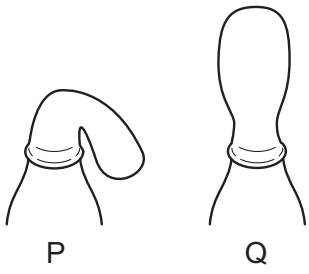
B



C



D



View solution

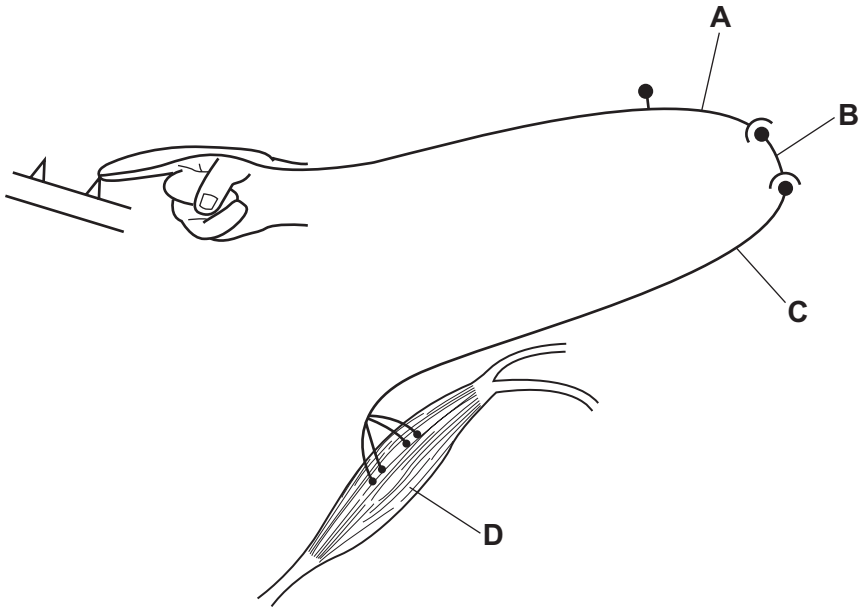
25 Which row shows an organ and the substance it excretes?

	organ	substance excreted
A	bladder	water
B	kidney	ions
C	lung	oxygen
D	urethra	urea

26 The diagram shows a reflex arc in a human nervous system. The person's finger has just made contact with a sharp object.

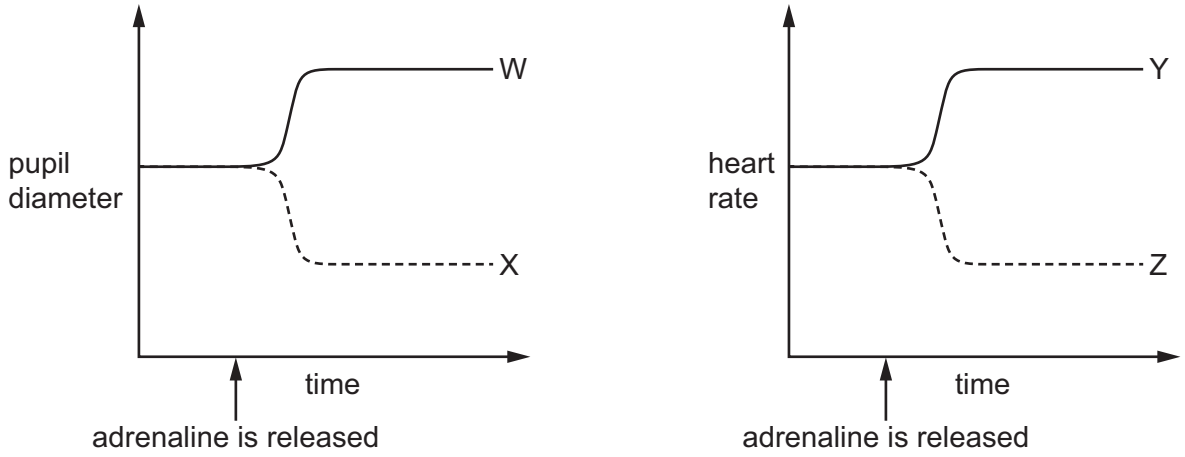
View solution

Which part is the motor neurone?



27 Which lines on the graphs show the effects of adrenaline on pupil diameter and heart rate?

View solution



A W and Y **B** W and Z **C** X and Y **D** X and Z

28 Which statements about tropisms in plants are correct?

View solution

1 Shoots grow towards light and away from gravity.

2 Shoots grow away from light and towards gravity.

3 Roots grow towards light and away from gravity.

4 Roots grow away from light and towards gravity.

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

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29 What is defined as a substance that is taken into the body and modifies or affects chemical reactions in the body?

View solution

A antibody

B drug

C hormone

D pathogen

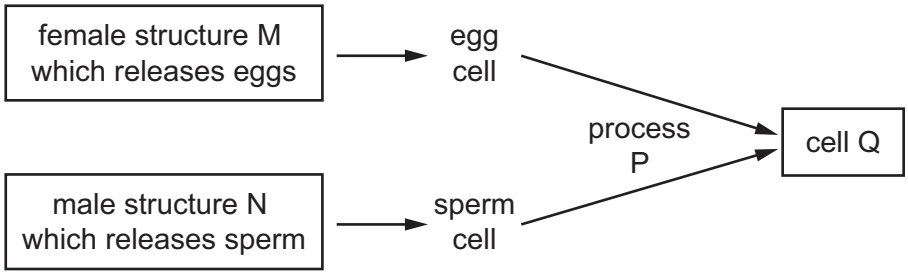
30 Which row is correct for asexual reproduction?

View solution

	number of parents	offspring compared with parent or parents
A	one	genetically different
B	one	genetically identical
C	two	genetically different
D	two	genetically identical

31 The diagram shows some stages in reproduction.

View solution



Which letter correctly identifies the structure or process?

A M is the oviduct.

B N is the sperm duct.

C P is fertilisation.

D Q is the gamete.

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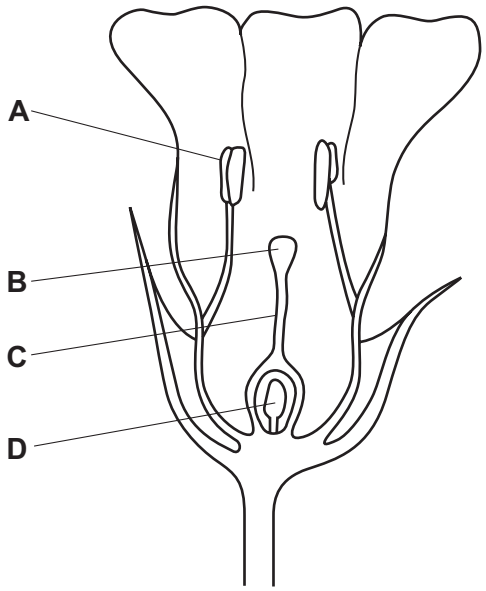
32 The diagram shows half a flower.

View solution

Which structure produces pollen?



33 Two parents have the genotypes Bb and bb for a particular feature.

View solution

What is the probability of these parents having offspring that are homozygous recessive for this feature?

A 100% **B** 75% **C** 50% **D** 25%

34 A genetic cross between two organisms may be shown as Tt × Tt.

View solution

What does T represent?

A a dominant allele

B a dominant chromosome

C a recessive allele

D a recessive chromosome

35 Some phenotypes are listed.

View solution

1 blood group

2 body mass

3 height

4 seed colour in peas

Which phenotypes are examples of continuous variation?

A 1, 2 and 3 **B** 2 and 3 only **C** 2 and 4 **D** 3 and 4

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36 A food chain is shown.

View solution

lettuce plant → slug → hedgehog

By which process is energy transferred from the lettuce plant to the slug?

A egestion

B excretion

C ingestion

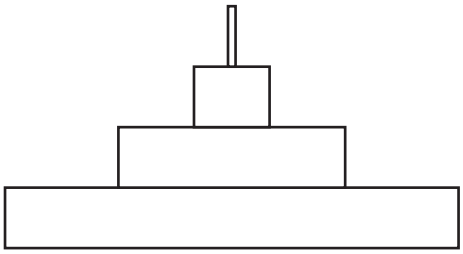
D respiration

37 A single bush is food for a large population of greenfly. Several ladybirds eat the greenfly. The ladybirds are eaten by a bird.

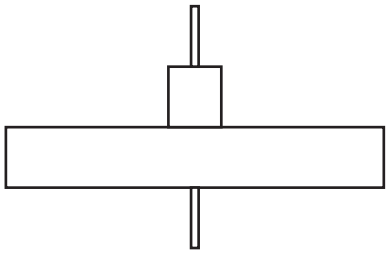
View solution

Which diagram shows the pyramid of numbers for this food chain?

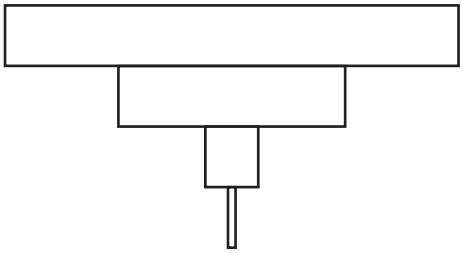
A



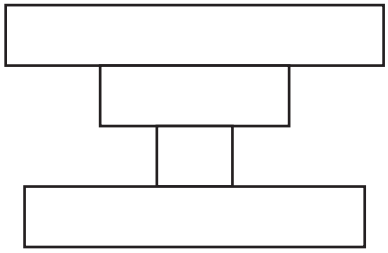
B



C



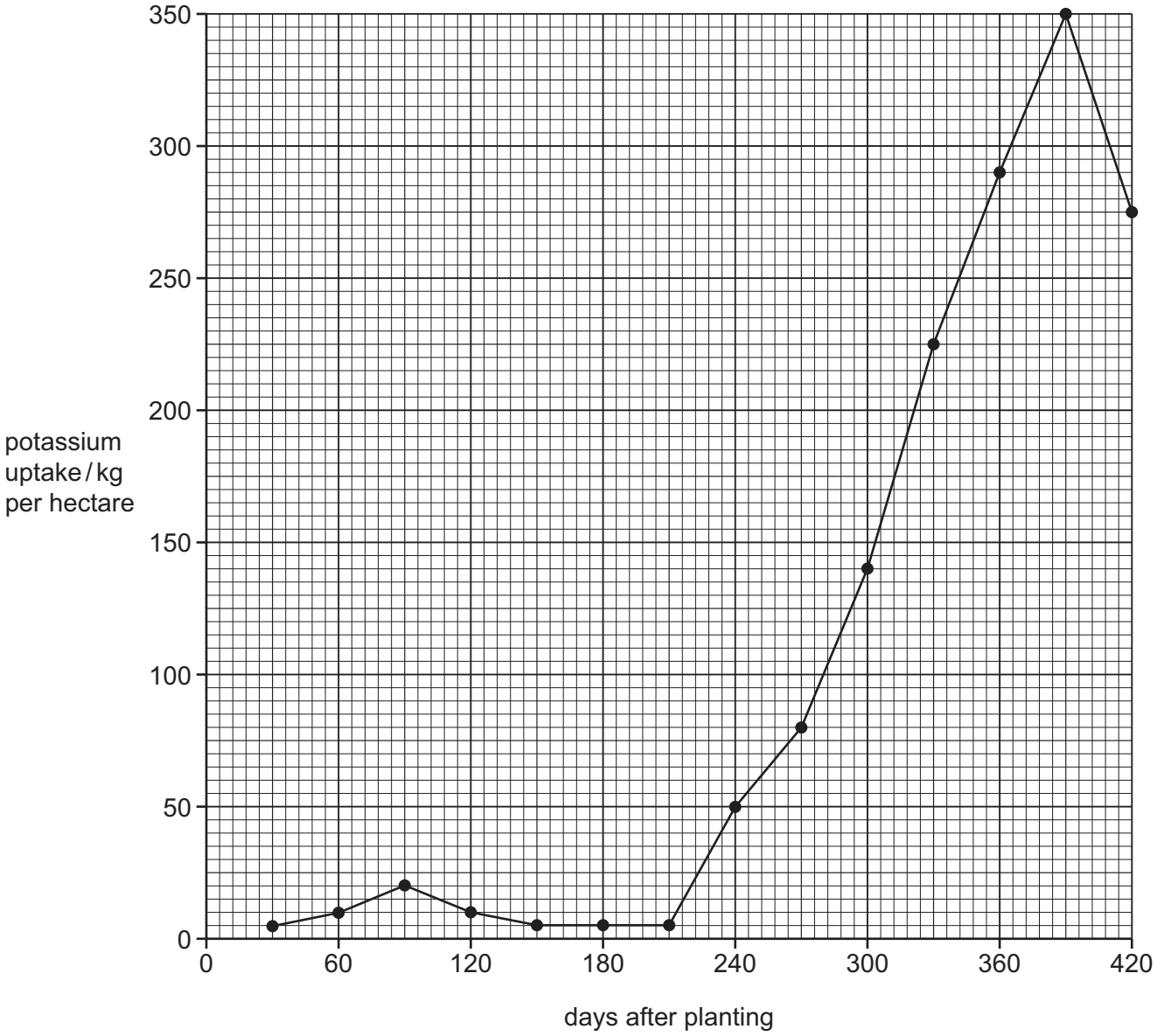
D



38 Scientists studied the uptake of potassium ions from chemical fertilisers by wheat plants.

View solution

The results are shown.



What is the difference in the uptake of potassium ions at 360 days after planting compared to 30 days after planting?

A 295 kg per hectare

B 290 kg per hectare

C 285 kg per hectare

D 280 kg per hectare

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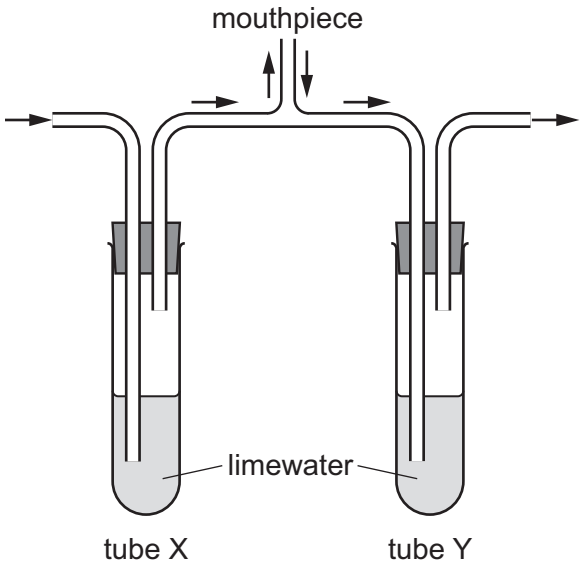
39 A student investigated gas exchange using the apparatus shown.

View solution



What would be the appearance of the limewater in tube X and tube Y after breathing in and out of the mouthpiece for one minute?

	tube X	tube Y
A	clear	clear
B	clear	cloudy
C	cloudy	clear
D	cloudy	cloudy

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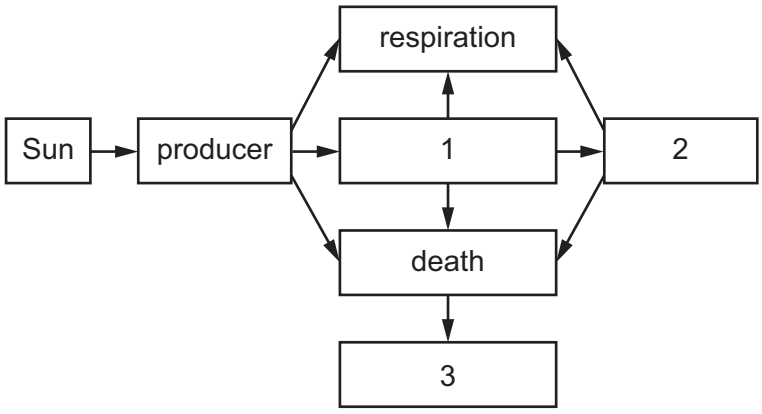
40 The diagram shows the flow of energy in an ecosystem.

View solution



Which row correctly completes boxes 1, 2 and 3?

	1	2	3
A	herbivore	carnivore	decomposer
B	carnivore	herbivore	decomposer
C	decomposer	carnivore	herbivore
D	carnivore	decomposer	herbivore

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