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Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **October/November 2022**

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. Any blank pages are indicated.

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1 Which process provides an organism with the raw materials needed for tissue repair?

A excretion

B growth

C nutrition

D respiration

2 Which name is given to a group of individuals that can reproduce to produce fertile offspring?

A a genus

B a kingdom

C a species

D an organ system

3 An animal has four legs, hair and a tail.

To which group of vertebrates does it belong?

A amphibians

B birds

C mammals

D reptiles

4 Root hair cells are found on plant roots.

Which feature is present in a root hair cell but **not** in a sperm cell?

A cell membrane

B cell wall

C chloroplasts

D cytoplasm

5 The cells listed have specialised structures that allow them to carry out their functions.

1 ciliated cell

2 nerve cell

3 root cortex cell

4 sperm cell

Which cells have structures that can move?

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

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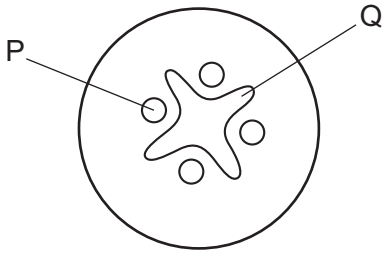
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6 A cell was viewed under a microscope. The actual length of the cell is 0.025 mm. The magnification of the image is ×400.

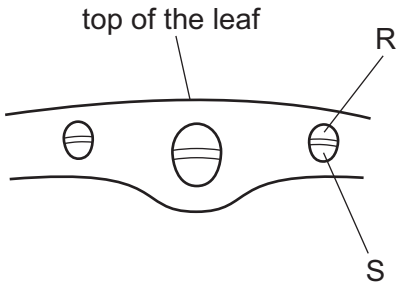
What is the length of the cell in the image?

A 10 mm **B** 100 mm **C** 1600 mm **D** 16 000 mm

7 The roots of a plant were placed in a solution of red dye. After 24 hours, a section of root and a section of leaf were cut from the plant.



root



leaf

In which tissues will the red dye be visible?

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

8 Which row shows features of osmosis in cells?

	requires a cell membrane	requires a cell wall	water can move into the cell	water can move out of the cell
A	✓	✓	✓	✓
B	✓	✗	✓	✓
C	✓	✓	✗	✓
D	✗	✓	✓	✗

key
✓ = yes
✗ = no

9 Which chemical is used to test for the presence of protein in a food sample?

A Benedict's solution

B biuret solution

C DCPIP

D iodine solution

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10 Which statement about enzymes is correct?

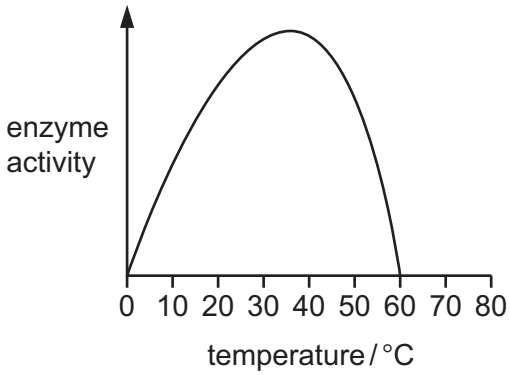
A They are made of carbohydrates.

B Their activity is unaffected by pH.

C They are used up during the reaction.

D They have a complementary shape to their substrate.

11 The graph shows the effect of temperature on the activity of an enzyme.



At which temperature is the enzyme most active?

A 15 °C **B** 25 °C **C** 35 °C **D** 60 °C

12 The substances listed are found in the leaf of a plant.

Which substance is obtained from the soil?

A carbon dioxide

B chlorophyll

C glucose

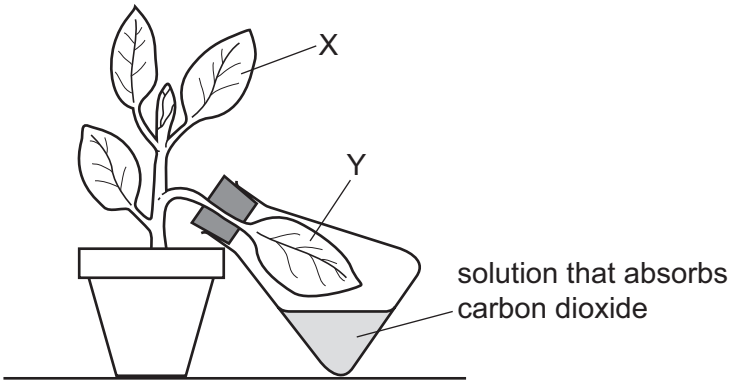
D mineral ions

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13 The diagram shows an experiment to find out if carbon dioxide is necessary for photosynthesis.

The plant is kept in the dark for 48 hours to remove any starch. Then it is set up in the light, as shown.



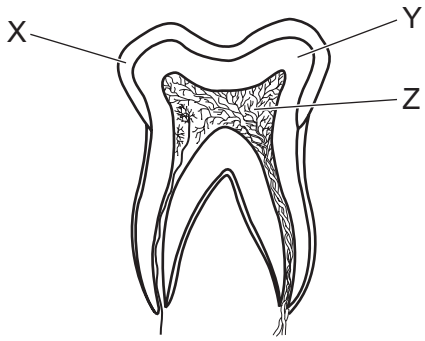
After 10 hours, leaves X and Y were tested for starch.

What is the expected result?

	presence of starch	
	in leaf X	in leaf Y
A	✓	✓
B	✗	✗
C	✓	✗
D	✗	✓

key
✓ = present
✗ = absent

14 The diagram shows a cross-section of a human tooth.



Which row identifies the labels in the diagram?

	X	Y	Z
A	dentine	enamel	pulp cavity
B	dentine	pulp cavity	enamel
C	enamel	pulp cavity	dentine
D	enamel	dentine	pulp cavity

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15 Which statement is correct?

A Amylase breaks down glucose to starch.

B Amylase is secreted into the mouth and small intestine.

C Lipase breaks down glycerol to fatty acids.

D Protease is secreted into the oesophagus and stomach.

16 Where is most water absorbed in the alimentary canal?

A large intestine

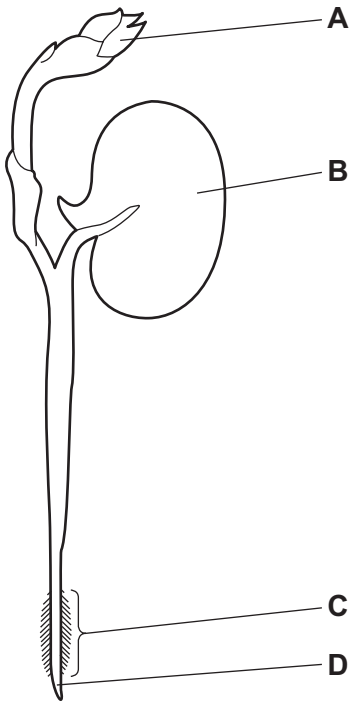
B oesophagus

C small intestine

D stomach

17 The diagram shows a bean seedling soon after it has germinated.

Where is most water absorbed?



18 Which process occurs during transpiration?

A evaporation of water from the xylem

B loss of water by osmosis from the guard cells

C movement of water vapour through the spongy mesophyll by active transport

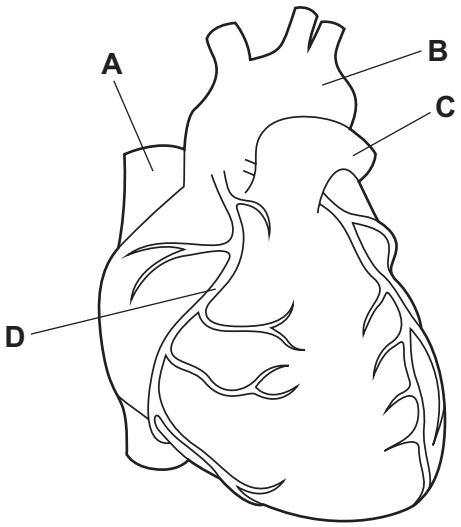
D movement of water vapour through the stomata by diffusion

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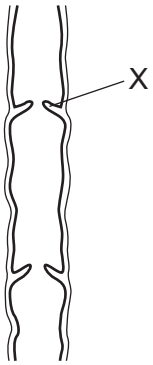
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19 The diagram shows the outside of a human heart.

Which structure is a coronary artery?



20 The diagram shows a section of a human vein.



What is the function of the part labelled X?

A to make sure the blood flows to the heart

B to make sure the blood flows to the kidneys

C to make sure the blood flows to the brain

D to make sure the blood flows to the lungs

21 *Campylobacter* is a bacterium that can cause food poisoning.

Which word describes *Campylobacter*?

A antibody

B disease

C pathogen

D symptom

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22 What is the approximate percentage of oxygen in expired air?

A 0.04% **B** 4% **C** 16% **D** 21%

23 Which process could continue without energy from respiration?

A active transport

B growth

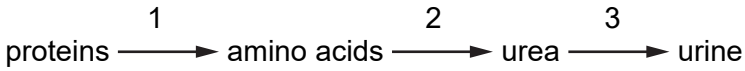
C osmosis

D protein synthesis

24 Which row shows the products of anaerobic respiration in humans and yeast?

	products in humans	products in yeast
A	lactic acid only	alcohol only
B	lactic acid only	alcohol and carbon dioxide
C	lactic acid and carbon dioxide	alcohol only
D	lactic acid and carbon dioxide	alcohol and carbon dioxide

25 A person eats foods containing proteins. Some of the amino acids in the proteins are converted to urea and excreted from the body.



Which row identifies the sites of processes 1, 2 and 3?

	site of process 1	site of process 2	site of process 3
A	stomach	liver	kidney
B	liver	kidney	bladder
C	stomach	kidney	liver
D	liver	stomach	kidney

26 Which part of the eye refracts light?

A cornea

B iris

C pupil

D retina

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27 Which hormone causes an increase in breathing rate, an increase in heart rate and the widening of pupils?

A insulin

B adrenaline

C oestrogen

D testosterone

28 Which row about tropic responses is correct?

	gravitropism	phototropism
A	root grows away from gravity	shoot grows away from light source
B	root grows away from gravity	shoot grows towards light source
C	root grows towards gravity	shoot grows away from light source
D	root grows towards gravity	shoot grows towards light source

29 What is the definition of a drug?

A a substance produced by a gland that is carried in the blood and alters the activity of target organs

B a substance produced by white blood cells that is carried in the blood and destroys bacteria and viruses

C a substance taken into the body that modifies or affects chemical reactions carried out in the body

D a substance that increases the rate of chemical reactions in the body and is not changed by the reaction

30 What occurs during fertilisation?

A fusion of two gamete nuclei

B fusion of two zygote nuclei

C splitting of a gamete nucleus

D splitting of a zygote nucleus

31 Which hormone causes the development of secondary sexual characteristics in human males?

A adrenaline

B insulin

C progesterone

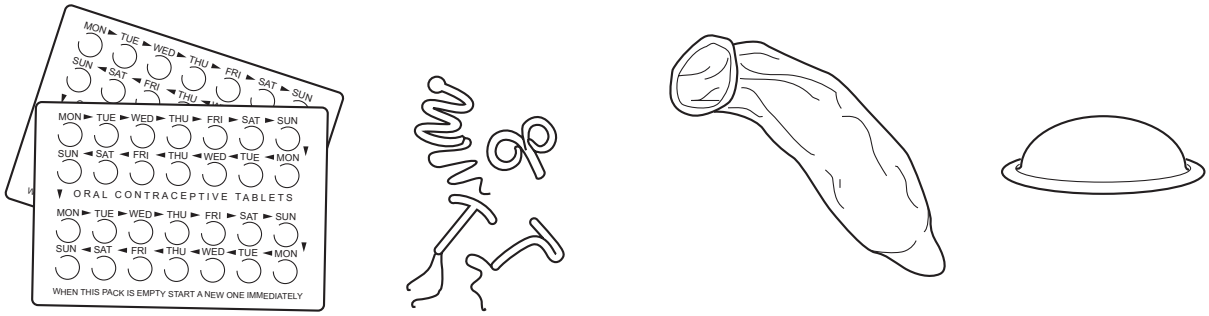
D testosterone

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32 The diagrams show four methods of birth control.

1 2 3 4



not to scale

What are barrier methods of birth control?

	1	2	3	4	
A	✓	✓	✗	✗	key
B	✗	✓	✓	✗	✓ = yes
C	✗	✗	✓	✓	✗ = no
D	✗	✓	✗	✓	

33 In one species of plant, the allele for red-coloured fruit is dominant and is represented by the letter R. The allele for white-coloured fruit is recessive and is represented by the letter r.

Two plants that are heterozygous for fruit colour are crossed.

What are the possible genotypes of the offspring plants from this cross?

A RR, Rr and rr

B all Rr

C all rr

D Rr and rr only

34 Which phenotype shows discontinuous variation in humans?

A foot length

B height

C sex

D weight

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35 What can increase the genetic variation in a species?

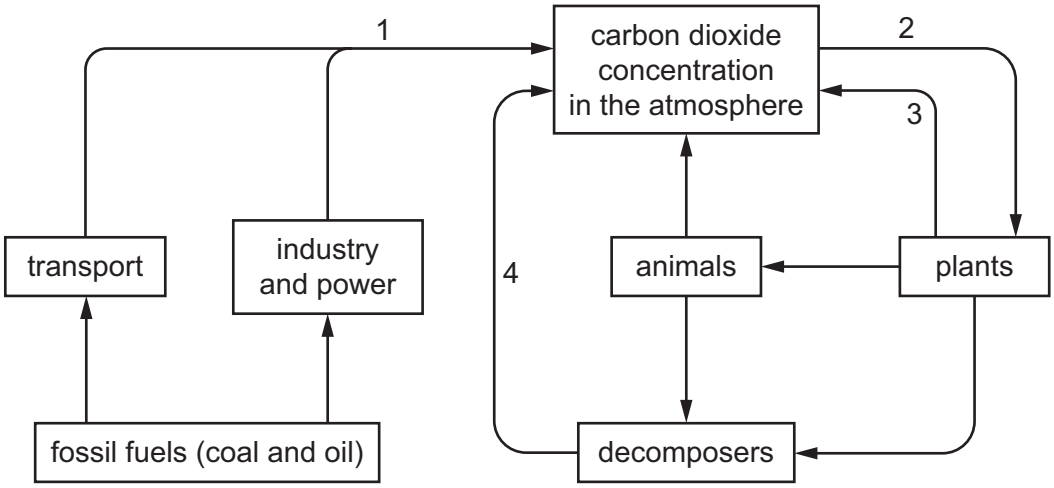
A growth

B malnutrition

C mitosis

D mutation

36 The diagram shows part of the carbon cycle.



Which processes reduce or increase carbon dioxide concentration in the atmosphere?

	reduces	increases
A	1	4
B	2	3
C	3	2
D	4	1

37 The diagram shows a food chain.

rose bush → aphids → ladybirds → spiders

A disease reduced the number of ladybirds.

What would be the likely effect of this on the numbers of aphids and spiders?

	aphids	spiders
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

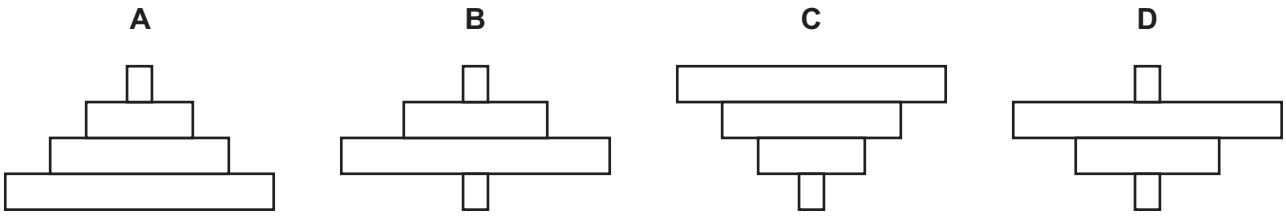
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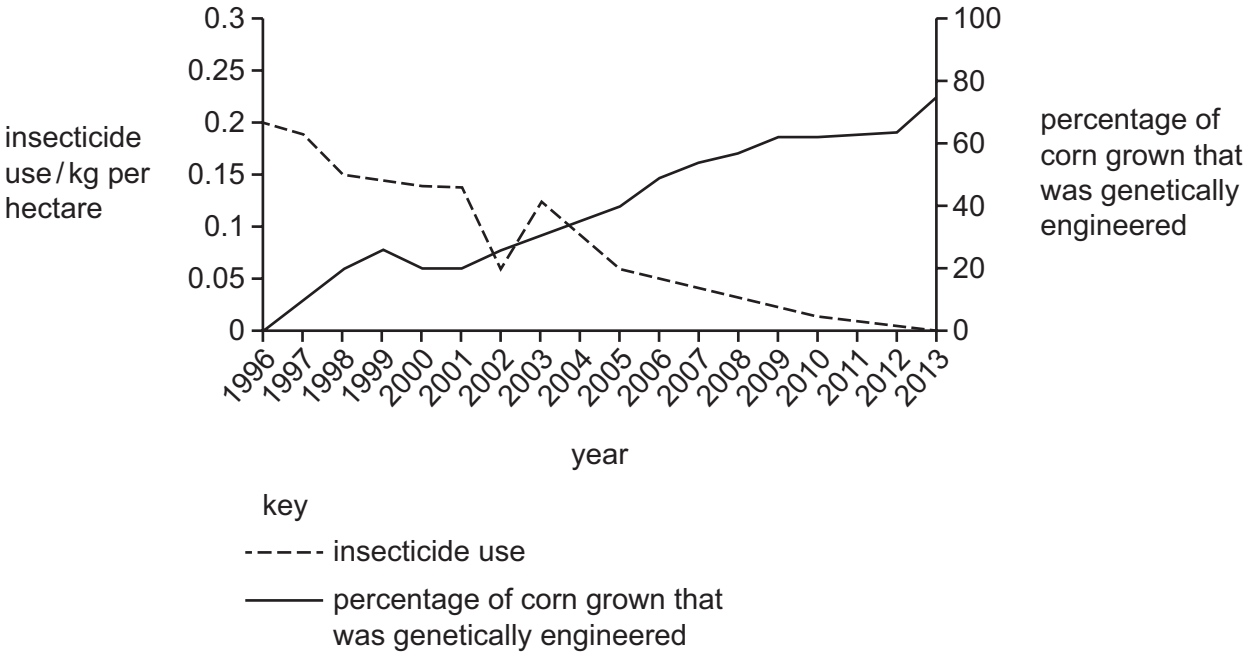
38 The block at the base of each pyramid represents the number of producers.

Which pyramid of numbers has more tertiary consumers than secondary consumers?



39 Corn that has been genetically engineered to be resistant to pests was developed in the 1990s.

The graph shows the change in the percentage of corn grown that was genetically engineered and the change in the mass of chemical insecticides used.



Which statement describes the data shown in the graph between 1996 and 2013?

A The percentage of corn grown that was genetically engineered increased and the use of insecticides decreased.

B The percentage of corn grown that was genetically engineered increased and the use of insecticides increased.

C The percentage of corn grown that was genetically engineered decreased and the use of insecticides decreased.

D The percentage of corn grown that was genetically engineered decreased and the use of insecticides increased.

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40 What could be undesirable effects of deforestation?

1 extinction of species

2 increased flooding

3 reduction of atmospheric carbon dioxide

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

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