Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/13**

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.

This document has **12** pages.

1 What are characteristics of all living organisms?

A breathing, growth and movement

B egestion, nutrition and reproduction

C digestion, excretion and respiration

D reproduction, respiration and sensitivity

2 Using the binomial system, the name of a lion is *Panthera leo*.

Which statement is correct?

A The lion belongs to the kingdom *Panthera*.

B The lion belongs to the genus *Panthera*.

C The lion belongs to the species *Panthera*.

D The lion belongs to the genus *leo*.

3 Which feature would place organisms into the crustacean group of arthropods?

A eight legs

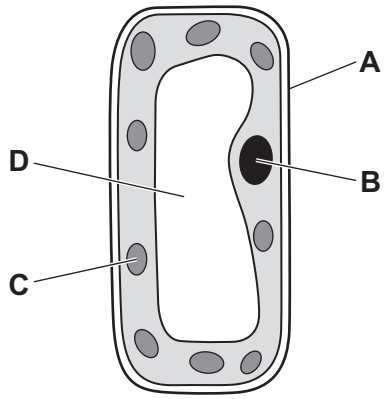
B six legs

C two pairs of antennae

D usually have two pairs of wings

4 The diagram shows the structure of a palisade cell from a leaf.

Which structure contains chlorophyll?



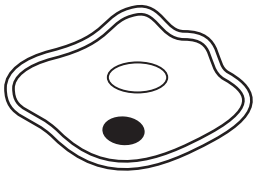
5 A bacterial cell has a length of 40 mm when it is magnified by ×20 000.

What is the actual length of the bacterial cell?

A 0.0002 mm **B** 0.002 mm **C** 0.02 mm **D** 0.2 mm

6 Which diagram shows the appearance of a plant cell after it is placed in pure water?

A



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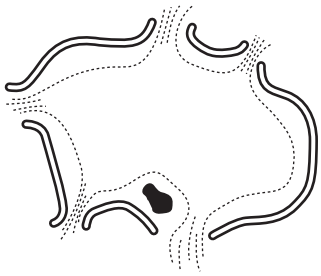

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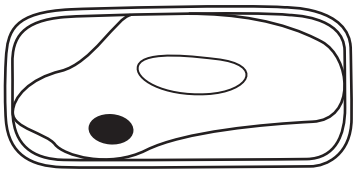

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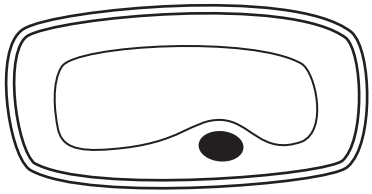


7 What would lead to a decrease in diffusion rate into a cell?

A greater concentration gradient

B higher temperature

C larger surface area of cell

D thicker cell wall

8 Which row shows the chemical elements contained in fats?

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

key

✓ = present

✗ = absent

9 Glycogen is a large molecule made from smaller molecules.

Which smaller molecules is glycogen made from?

A amino acids

B fatty acids

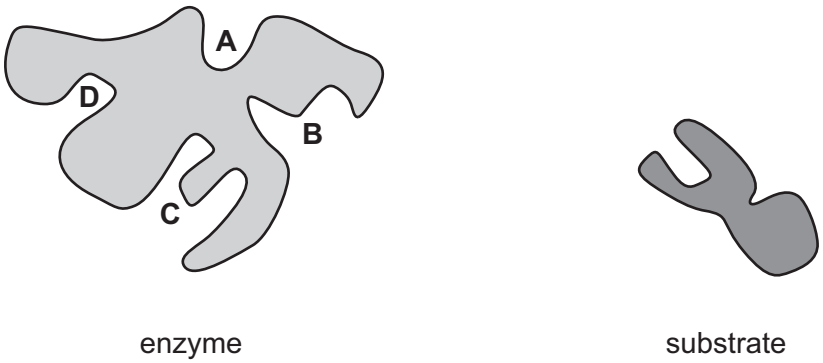
C glucose

D glycerol

[Turn over

10 The diagrams represent an enzyme and its substrate.

Which part of the enzyme molecule is the active site for this substrate?



11 What is a use of the carbohydrates made by photosynthesis?

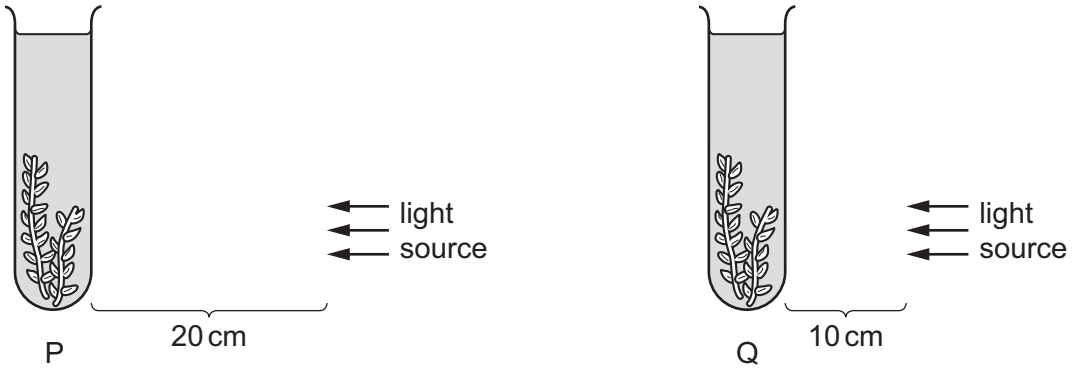
A to produce cellulose for energy stores

B to produce starch to build cell walls

C to produce starch for transport in the phloem

D to produce sucrose for transport in the phloem

12 The diagram shows an experiment investigating the effect of light intensity on an aquatic plant.



Photosynthesis occurred in both test-tube P and test-tube Q. Both test-tubes were kept at the same temperature. The number of bubbles produced in test-tube P was 12 bubbles per minute.

What is the most likely number of bubbles produced in one minute in test-tube Q?

A 0 **B** 3 **C** 12 **D** 48

13 Which human teeth are used for biting and cutting food?

A canines and molars

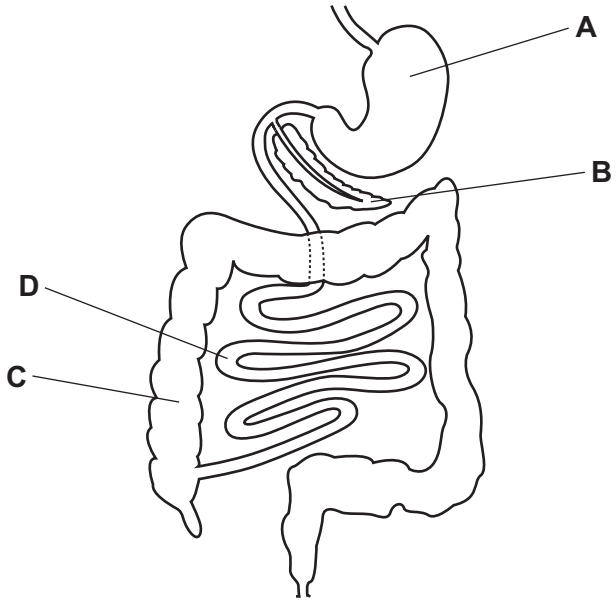
B incisors and canines

C molars and premolars

D premolars and incisors

14 The diagram shows part of the human digestive system.

Which organ produces hydrochloric acid?



15 Which part of a balanced diet is missing if a person develops rickets?

A carbohydrates

B iron

C vitamin C

D vitamin D

16 By which process is water vapour lost from a leaf?

A active transport

B diffusion

C osmosis

D photosynthesis

17 The pathway taken by water through a plant is shown.

root hair cells → root cortex cells → Z → mesophyll cells

Which part of the pathway is Z?

A palisade cells

B phloem

C stomata

D xylem

18 Which statement about the human circulatory system is correct?

A a system of blood vessels with the arteries returning blood to the heart

B a system of blood vessels with a pump and valves to ensure one-way flow of blood

C blood flows away from the heart into the vena cava

D blood flows into the lungs from the pulmonary vein

19 What are features of arteries?

1 narrow lumen

2 thick muscular wall

3 walls made of a single layer of cells

4 wide lumen

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

20 What are disease-causing organisms?

A antibodies

B pathogens

C phagocytes

D vaccines

21 Which row shows the composition of expired air from a healthy person?

	carbon dioxide %	oxygen %	water vapour
A	0.04	21	saturated
B	0.04	16	variable
C	4	21	variable
D	4	16	saturated

22 What is the path of carbon dioxide as it leaves the lungs?

A alveolus → bronchiole → bronchus → trachea

B alveolus → bronchus → bronchiole → trachea

C trachea → bronchiole → bronchus → alveolus

D trachea → bronchus → bronchiole → alveolus

23 Which statement about anaerobic respiration is correct?

A Anaerobic respiration requires oxygen and releases less energy per glucose molecule than aerobic respiration.

B Anaerobic respiration requires oxygen and releases more energy per glucose molecule than aerobic respiration.

C Anaerobic respiration does **not** require oxygen and releases less energy per glucose molecule than aerobic respiration.

D Anaerobic respiration does **not** require oxygen and releases more energy per glucose molecule than aerobic respiration.

24 What is described as a ball of cells that implants into the lining of the uterus?

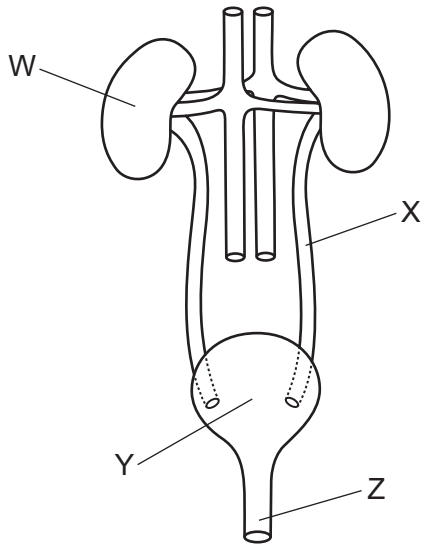
A acrosome

B embryo

C fetus

D zygote

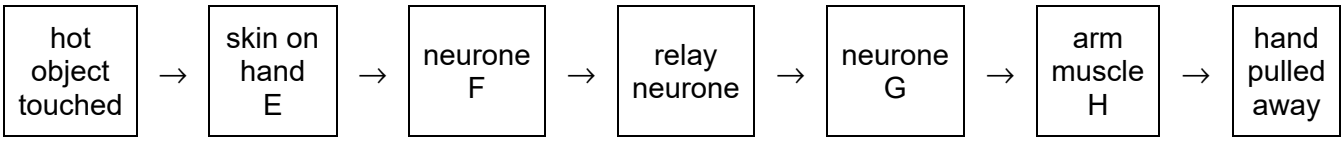
25 The diagram shows parts of the body involved in excretion in humans.



What are the labelled parts?

	W	X	Y	Z
A	bladder	ureter	kidney	urethra
B	kidney	ureter	bladder	urethra
C	bladder	urethra	kidney	ureter
D	kidney	urethra	bladder	ureter

26 The diagram shows a reflex action when a person touches a hot object and pulls their hand away.



Which letter correctly identifies a structure?

A E is called the effector.

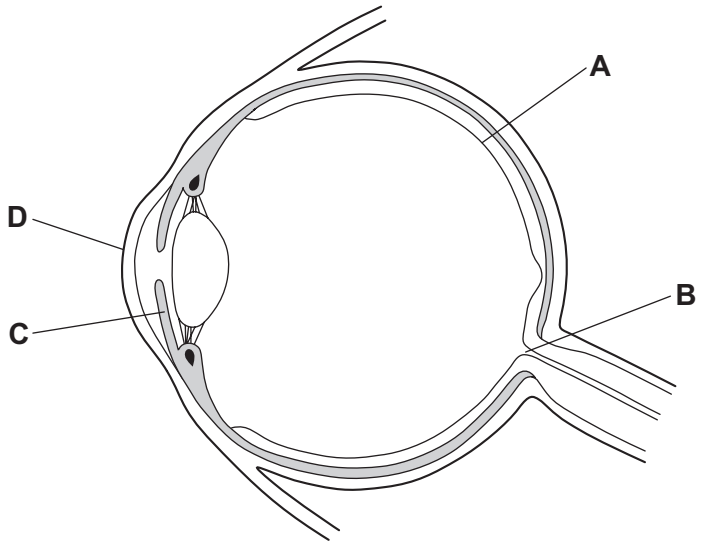
B F is called the motor neurone.

C G is called the motor neurone.

D H is called the receptor.

27 The diagram shows a section through a human eye.

Which structure changes shape in response to adrenaline?



28 What is an example of a population?

A all the animals and plants living in a lake

B all the different herbivores in a forest

C all the mahogany trees growing in a forest

D all the species of animals in Africa

29 Which statement about antibiotics is correct?

A Antibiotics are drugs.

B Antibiotics are produced by white blood cells.

C Antibiotics can become resistant to bacteria.

D Antibiotics kill viruses.

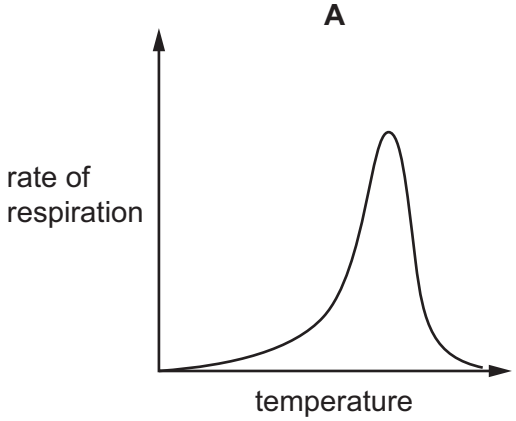
30 A pea plant with the genotype YY is crossed with a pea plant with the genotype yy.

What are the possible genotypes of the offspring?

A YY and yy **B** all Yy **C** Yy and yy **D** all YY

31 Which graph shows the effect of temperature on the rate of respiration in yeast?

A



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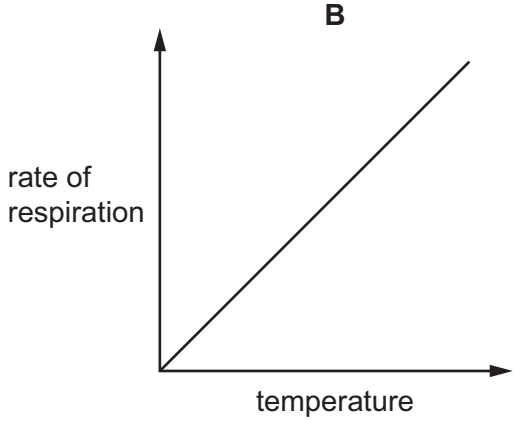

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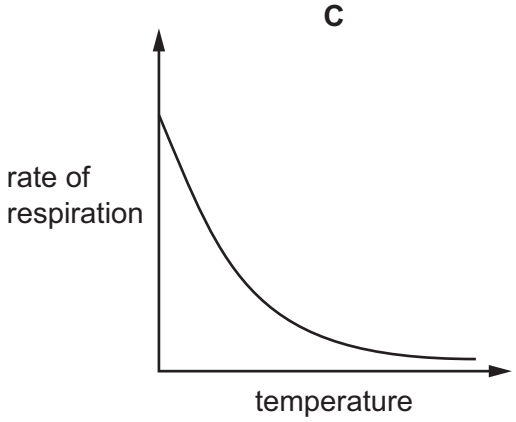

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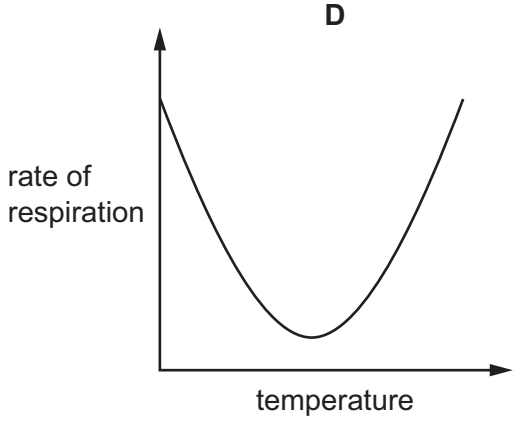


32 What is the correct description of asexual reproduction?

A Genetically different offspring are produced from one parent.

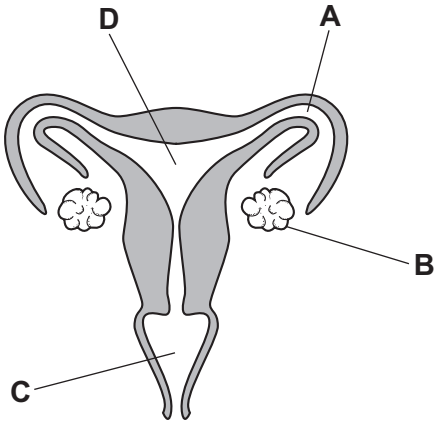
B Genetically different offspring are produced from two parents.

C Genetically identical offspring are produced from one parent.

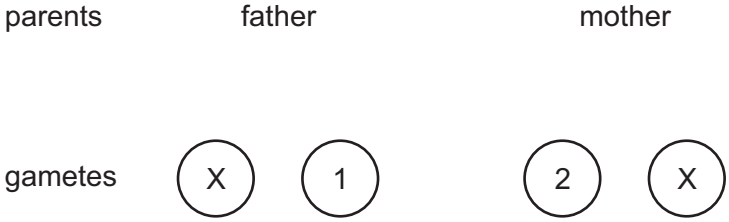
D Genetically identical offspring are produced from two parents.

33 The diagram shows a human female's reproductive organs.

Where does fertilisation usually occur?



34 The diagram shows part of a genetic diagram for the inheritance of sex in humans. The sex chromosomes in two gametes are shown.

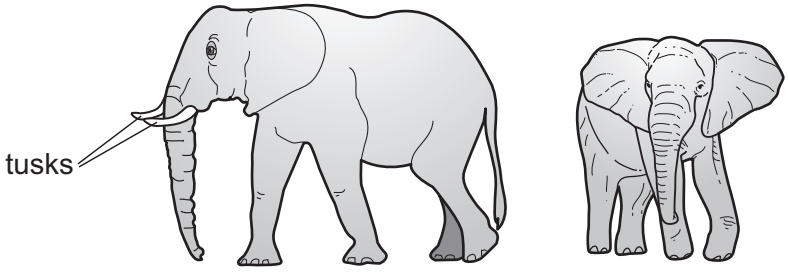


What are the sex chromosomes in gametes 1 and 2?

	gamete 1	gamete 2
A	X	Y
B	X	X
C	Y	Y
D	Y	X

35 Tusks are modified teeth.

In one part of the world, most elephants used to be born with tusks. Over the last 50 years, more female elephants have been born without tusks. These elephants are giving birth to offspring that also do **not** have tusks.

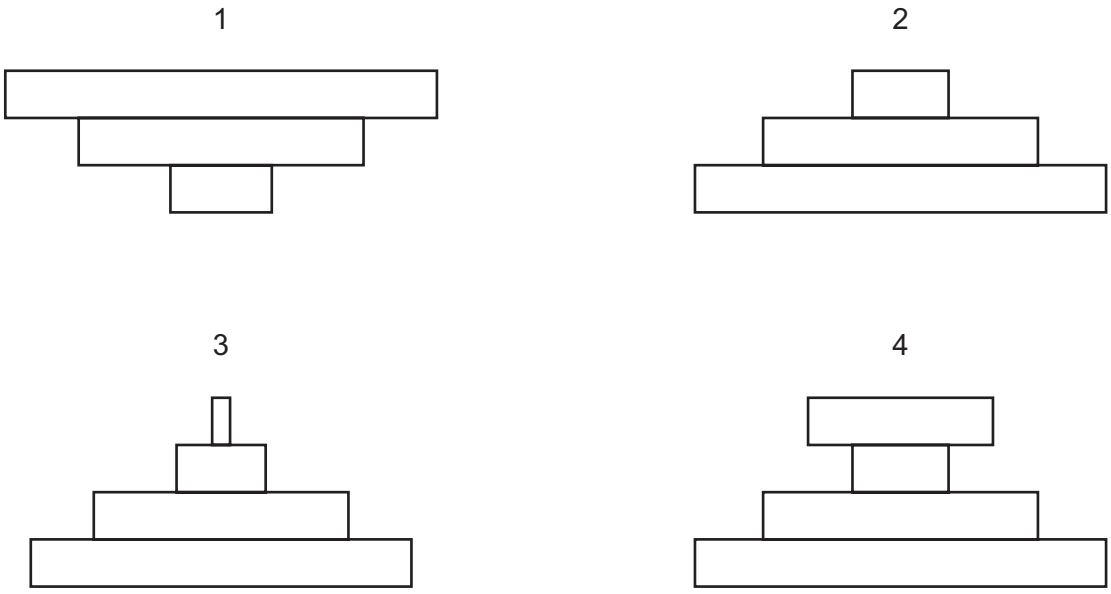


Which types of variation can be illustrated by this example?

	continuous	discontinuous	genetic
A	✓	✗	✗
B	✗	✓	✓
C	✓	✗	✓
D	✗	✓	✗

key
✓ = yes
✗ = no

36 The diagrams show pyramids of numbers and biomass.



Which pyramids could be pyramids of biomass?

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

37 Which process transfers energy between the first and second trophic levels of a food chain?

A egestion

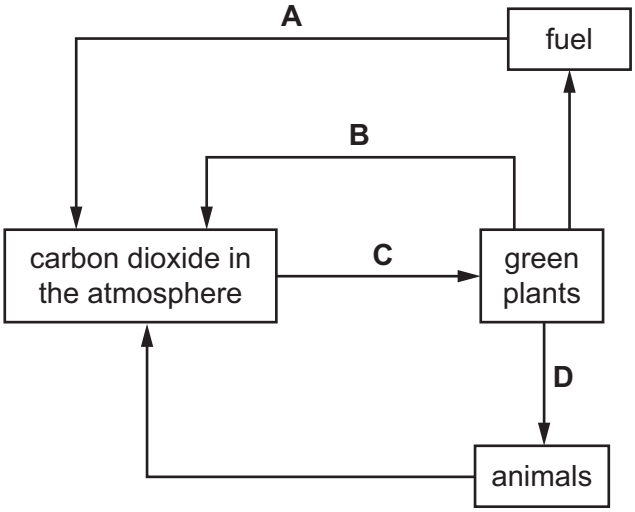
B ingestion

C photosynthesis

D respiration

38 The diagram shows part of the carbon cycle.

Which arrow represents respiration?



39 Why are bacteria useful in biotechnology and genetic modification?

A They can manufacture complex molecules.

B They reproduce slowly.

C They have a nucleus.

D They are the same as plant cells.

40 What is a reason for inserting genes into bacterial cells?

A to confer resistance to herbicides

B to confer resistance to insect pests

C to improve their nutritional qualities

D to produce human proteins