Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **February/March 2025**

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

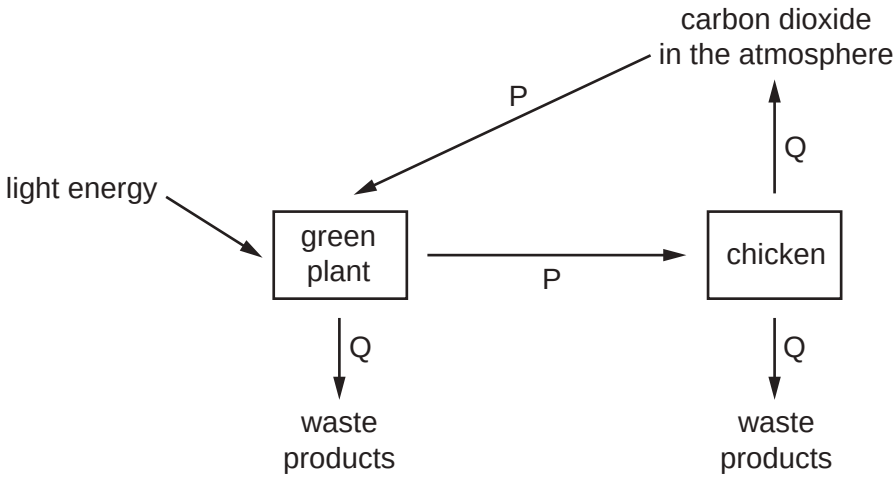
- There are **forty** questions on this paper. Answer **all** questions.
- For each question there are four possible answers **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in soft pencil on the multiple choice answer sheet.
- Follow the instructions on the 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.

1 The diagram shows some of the processes carried out by living organisms.



Which two characteristics of living organisms are represented by arrows P and Q?

A excretion and sensitivity

B nutrition and excretion

C respiration and growth

D sensitivity and reproduction

2 The scientific name for a domesticated llama is *Lama glama*.

The scientific name for a domesticated sheep is *Ovis aries*.

What is the genus name for the llama and the species name for the sheep?

	genus name for the llama	species name for the sheep
A	*glama*	*aries*
B	*glama*	*Ovis*
C	*Lama*	*aries*
D	*Lama*	*Ovis*

3 The photograph shows an arthropod, *Formica fusca*.

What is the reason for placing *Formica fusca* into the correct group?

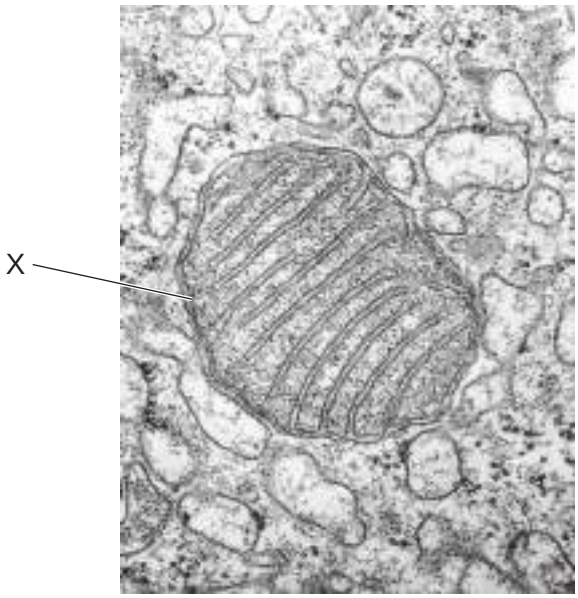
A It is an arachnid, because the body is in segments.

B It is a crustacean, because the legs have joints.

C It is an insect, because there are three pairs of legs.

D It is a myriapod, because there are two antennae.

4 The photomicrograph shows part of an animal cell.



What is the structure labelled X?

A chloroplast

B mitochondrion

C ribosome

D vacuole

5 Where are carbohydrates made in a green leaf?

A cell vacuoles

B chloroplasts

C phloem

D xylem

6 What is the formula for calculating the magnification of specimens?

A actual size ÷ image size

B actual size × image size

C image size – actual size

D image size ÷ actual size

7 What increases the rate of diffusion of oxygen into a cell?

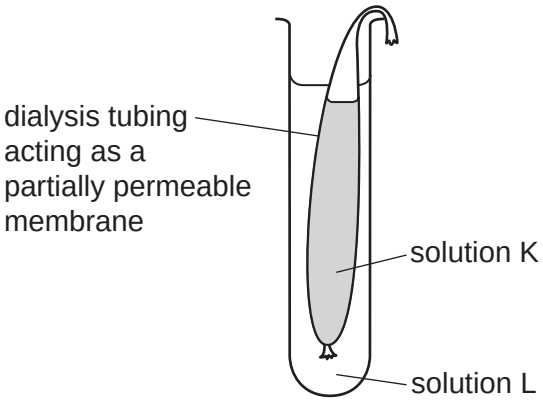
A decreasing the concentration gradient

B decreasing the surface area

C increasing the diffusion distance

D increasing the temperature

8 The apparatus shown is used to demonstrate osmosis.



The mass of the dialysis tubing and contents was 11.2 g at the start of the demonstration and 9.4 g at the end.

Which solutions would cause this change in mass?

	solution K	solution L
A	10% salt solution	5% salt solution
B	5% salt solution	10% salt solution
C	5% salt solution	water
D	10% salt solution	water

9 A student placed amylase and starch solution in a test-tube.

After some minutes, the student tested samples of the liquid in the test-tube. They recorded the colour of the samples after testing for starch and reducing sugar.

Which row shows the test used and the expected results?

	test used		test result	
	to test for starch	to test for reducing sugar	test for starch	test for reducing sugar
A	DCPIP	Benedict's solution	blue-black	red
B	DCPIP	biuret	yellow-brown	blue
C	iodine solution	Benedict's solution	yellow-brown	red
D	iodine solution	biuret	blue-black	blue

[Turn over

10 Enzyme R digests protein in the stomach.

Four test-tubes are set up. Each contains the same amounts of protein and enzyme R. The test-tubes are kept at different levels of pH and temperature, as shown in the table.

In which test-tube will protein digestion be quickest?

	pH	temperature / °C
A	2	20
B	2	35
C	7	20
D	7	35

11 A student investigated the rate of photosynthesis in four species of plants at 20 °C and at 30 °C.

All other conditions were kept constant.

The results are shown.

species	rate of photosynthesis / arbitrary units	
	20 °C	30 °C
W	15.5	12.6
X	19.0	30.2
Y	34.5	36.4
Z	18.8	31.7

Which statement is a correct conclusion from these data?

A Species W photosynthesises at a lower rate at 20 °C than at 30 °C.

B Species X has the greatest change in rate of photosynthesis between 20 °C and 30 °C.

C Species Y photosynthesises at the highest rate at both 20 °C and at 30 °C.

D Species Z photosynthesises at the highest rate at 20 °C and at the lowest rate at 30 °C.

12 Which stage of nutrition takes place when food molecules become part of a body cell?

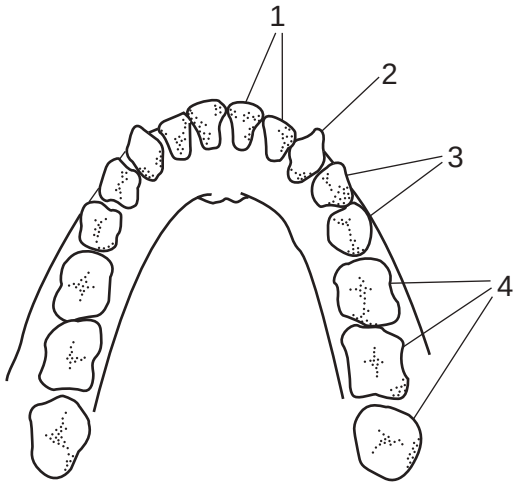
A absorption

B assimilation

C digestion

D ingestion

13 The diagram shows human teeth in the mouth.



Which types of teeth can be used to grind food?

A 1, 2, 3 and 4

B 2, 3 and 4 only

C 3 and 4 only

D 4 only

14 What are functions of the hydrochloric acid in gastric juice?

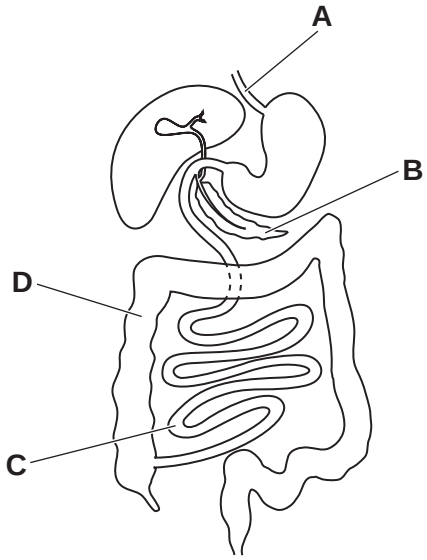
	giving the optimum pH for gastric enzymes	killing bacteria
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = yes

✗ = no

15 Where does **most** absorption of nutrients occur?



16 Which statement describes a function of xylem in a plant stem?

A transport of amino acids

B transport of carbon dioxide

C transport of mineral ions

D transport of sucrose

17 Which row shows the components of the human circulatory system?

	blood vessels	one-way valves	pump
A	✓	✓	✗
B	✗	✗	✓
C	✓	✗	✓
D	✓	✓	✓

key

✓ = yes

✗ = no

18 What is a function of white blood cells?

A antibody production

B blood clotting

C transport of oxygen

D transport of urea

19 Which substances act as body defences?

1 mucus

2 red blood cells

3 stomach acid

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

20 A student investigates the effect of physical activity on their breathing rate.

They record their breathing rate at different times.

Which row shows the change in the breathing rate of the student?

	breathing rate / breaths per minute			
	before physical activity	during physical activity	one minute after physical activity	five minutes after physical activity
A	15	16	28	34
B	16	18	34	28
C	15	34	28	16
D	16	28	34	16

21 Which substance is a gas needed for aerobic respiration?

A carbon dioxide

B glucose

C oxygen

D water

22 Which substance is produced during anaerobic respiration in yeast?

A alcohol

B glucose

C lactic acid

D water

23 Where in the human body is urea excreted?

A bladder

B kidneys

C liver

D lungs

24 What is the route taken by an electrical impulse in a simple reflex arc?

A effector → motor neurone → relay neurone → sensory neurone → receptor

B effector → sensory neurone → relay neurone → motor neurone → receptor

C receptor → motor neurone → relay neurone → sensory neurone → effector

D receptor → sensory neurone → relay neurone → motor neurone → effector

25 What is the function of the iris?

A It carries impulses from the eye to the brain.

B It controls the amount of light entering the pupil.

C It focuses the light onto the retina.

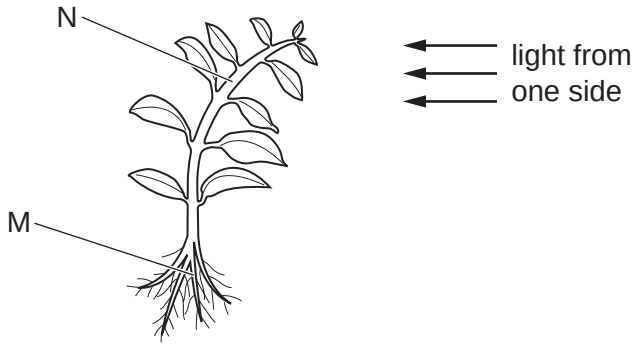
D It refracts light entering the eye.

26 Tropic responses can be positive or negative.

When a plant grows towards the stimulus, the response is positive (+).

When a plant grows away from the stimulus, the response is negative (–).

The diagram shows a plant exhibiting tropic responses.



Which row states the tropic responses occurring at position M and at position N?

	position M		position N	
	gravitropism	phototropism	gravitropism	phototropism
A	+	+	–	–
B	+	–	–	+
C	–	+	+	–
D	–	–	+	+

27 A number of plants are produced using asexual reproduction.

Which statement about these plants is correct?

A They are produced from one parent and are genetically different.

B They are produced from one parent and are genetically identical.

C They are produced from two parents and are genetically different.

D They are produced from two parents and are genetically identical.

28 Which structure is pollen transferred from and to during pollination?

A from anther to ovary

B from anther to stigma

C from stigma to ovary

D from stigma to ovule

[Turn over

29 In addition to a suitable temperature, what else is always necessary for seed germination?

A carbon dioxide and sunlight

B mineral ions

C sunlight and water

D water and oxygen

30 What happens to the lining of the human uterus in the days before the release of an egg cell?

A It breaks down.

B It is lost from the body.

C It thickens.

D It thins.

31 Which term is defined as a length of DNA that codes for a protein?

A a gene

B an amino acid

C an X chromosome

D a Y chromosome

32 Polydactyly is an inherited condition that can occur in cats. It results in the affected offspring having extra toes.

The allele for polydactyly is dominant and is represented by the letter T.

The allele for **not** having polydactyly is recessive and is represented by the letter t.

A cat with the genotype Tt is bred with a cat with the genotype tt.

What is the probability of the offspring having polydactyly?

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

33 A student measured the heights of her friends to see how they vary.

Which statements would apply to this type of variation?

1 A range of phenotypes between two extremes will be seen.

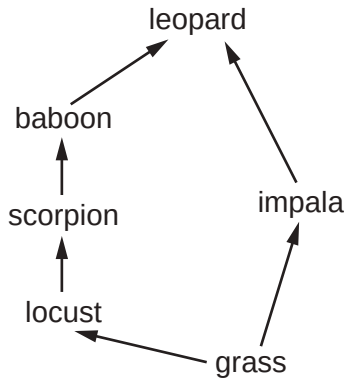
2 The variation will be caused by genes and the environment.

3 The variation will be caused by genes only.

4 There will be a limited number of phenotypes with no intermediates.

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

34 The diagram shows a food web.



At which trophic levels is the leopard feeding?

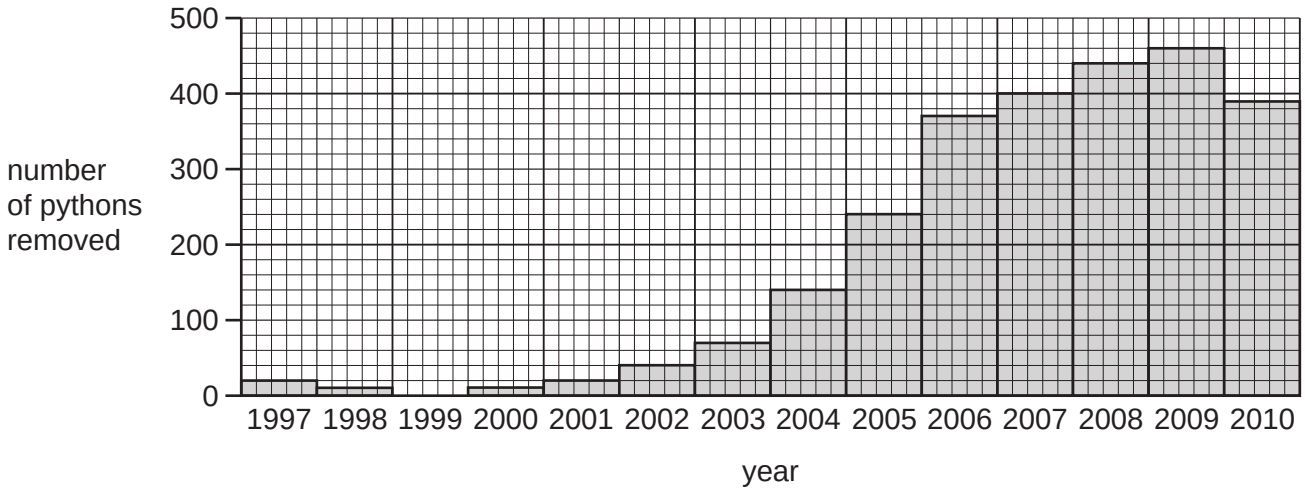
A first and second

B second and third

C second and fourth

D third and fifth

35 Pythons were accidentally introduced to a region in the 1990s. Since then, they have reproduced in the wild and become a pest. The number of pythons removed from the wild can give an indication of the population size, as shown.



Which phase of the population growth curve of pythons is shown in 2005?

A death

B exponential (log)

C lag

D stationary

36 Which statement describes a disadvantage of growing crop plants as a monoculture?

A There is a decrease in biodiversity.

B There is a decrease in the chance of a disease destroying the crop.

C There is a decrease in the use of herbicides.

D There is a decrease in the use of insecticides.

37 What are the effects of deforestation on the environment?

	decreased flooding	destruction of local food webs	increased carbon dioxide levels in atmosphere
A	✓	✗	✗
B	✗	✗	✓
C	✓	✓	✗
D	✗	✓	✓

key
✓ = yes
✗ = no

38 Which statement about non-biodegradable plastics in aquatic environments is correct?

A As non-biodegradable plastics decompose in aquatic environments, they release carbon dioxide.

B Extremely small fragments of non-biodegradable plastics can move up the food chain.

C Non-biodegradable plastics in aquatic environments cause an increase in the growth of producers.

D Non-biodegradable plastics in aquatic environments decompose quickly.

39 Which methods of conservation are used to protect endangered species?

1 captive breeding programmes

2 education

3 habitat destruction

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

40 Why are bacteria useful in biotechnology and genetic modification?

A They can cause decomposition.

B They can make complex molecules.

C They have a cell wall.

D They have a slow reproduction rate.

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