Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/12**

Paper 1 Multiple Choice (Core) **May/June 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 **20** pages. Any blank pages are indicated.

© UCLES 2022

1 All living organisms release energy from nutrient molecules within their cells.

What is the name of this characteristic?

A growth

B nutrition

C respiration

D sensitivity

2 Which levels of classification are shown in the scientific name of an organism, using the binominal system?

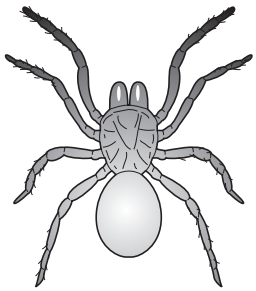
	genus	kingdom	species
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

key

✓ = yes

✗ = no

3 The diagram shows an arthropod that lives on land.



To which group of arthropods does this animal belong?

A arachnids

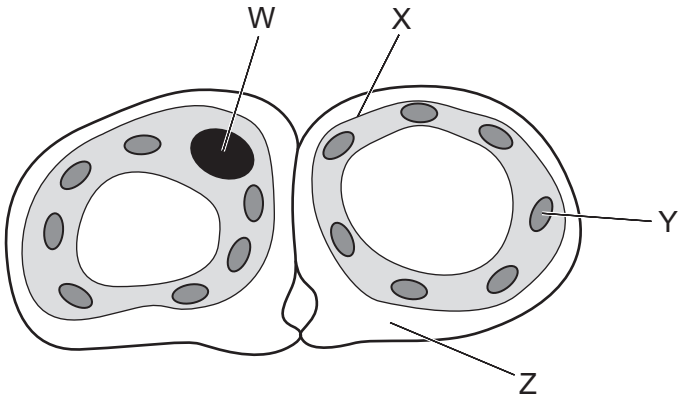
B crustaceans

C insects

D myriapods

© UCLES 2022

4 The diagram shows a cross-section through two guard cells of a leaf.



Which labelled structures would also be found in an animal cell?

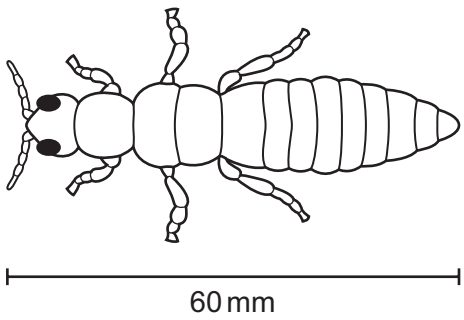
A W and X **B** X and Y **C** Y and Z **D** Z and W

5 The table shows some structures found in the human body.

Which row shows the correct level of organisation, from the simplest structure to the most complex?

	simple →			complex
A	red blood cell	heart	heart muscle	circulatory system
B	heart muscle	circulatory system	red blood cell	heart
C	red blood cell	heart muscle	heart	circulatory system
D	heart muscle	red blood cell	circulatory system	heart

6 The diagram shows an animal. The actual length of this animal is 0.6 mm.



What is the magnification of the diagram?

A ×10 **B** ×100 **C** ×1000 **D** ×10 000

7 By which process does oxygen move from a region of higher concentration in the alveoli to a region of lower concentration in the blood?

A osmosis

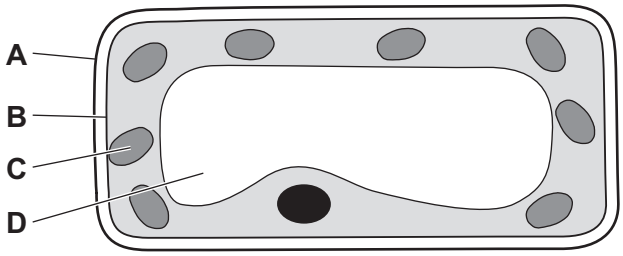
B breathing

C diffusion

D active transport

8 The diagram shows a section through a mesophyll cell of a leaf.

Which part is partially permeable?



9 What are the smaller basic units of starch and glycogen molecules?

	starch	glycogen
A	amino acids	fatty acids and glycerol
B	amino acids	glucose
C	glucose	fatty acids and glycerol
D	glucose	glucose

10 Which type of molecule are enzymes made of?

A carbohydrates

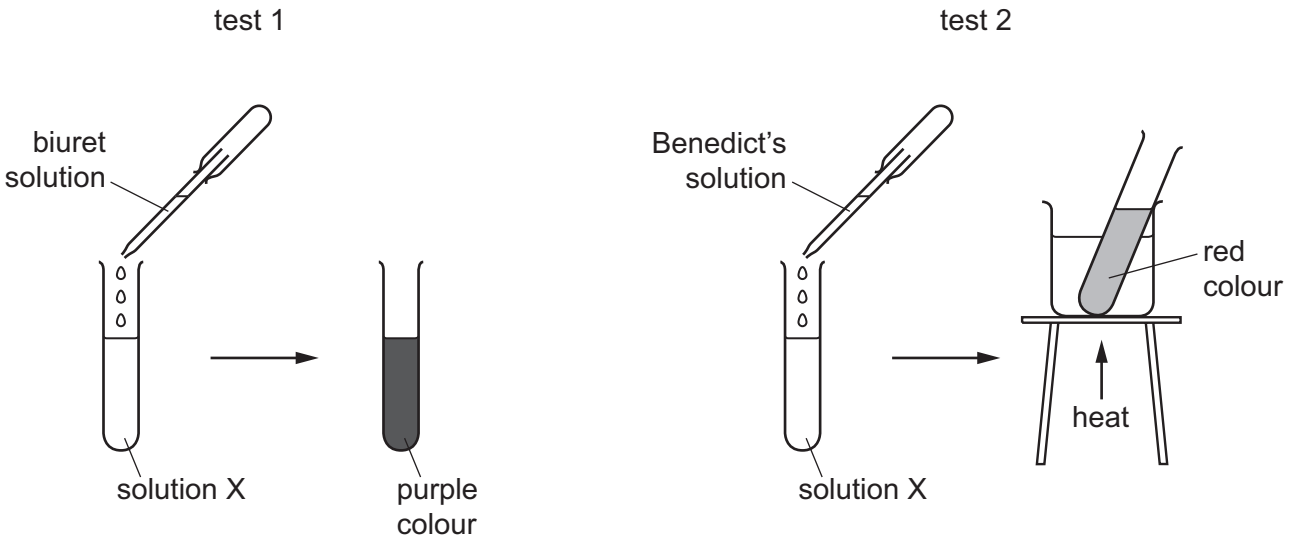
B fats

C proteins

D vitamins

© UCLES 2022

11 The diagram shows two food tests being carried out on solution X.



Which nutrients are present in solution X?

A protein and starch

B protein and sugar

C starch and fat

D starch and sugar

12 Which chemical is a product of photosynthesis that moves out of a green leaf through its stomata?

A carbon dioxide

B glucose

C oxygen

D water

13 In a leaf, water moves from the surface of a mesophyll cell and then out of the leaf into the atmosphere.

What is the correct order of the processes involved?

A active transport → osmosis

B diffusion → evaporation

C evaporation → diffusion

D osmosis → active transport

© UCLES 2022

14 The table shows some different components in a balanced diet.

Which row correctly matches the components to the reasons why they are needed?

	vitamin D	water	fats
A	insulation	bone growth	to make haemoglobin
B	bone growth	transport	insulation
C	transport	to make haemoglobin	bone growth
D	to make haemoglobin	insulation	transport

15 Which process involves the removal of material from the rectum?

A egestion

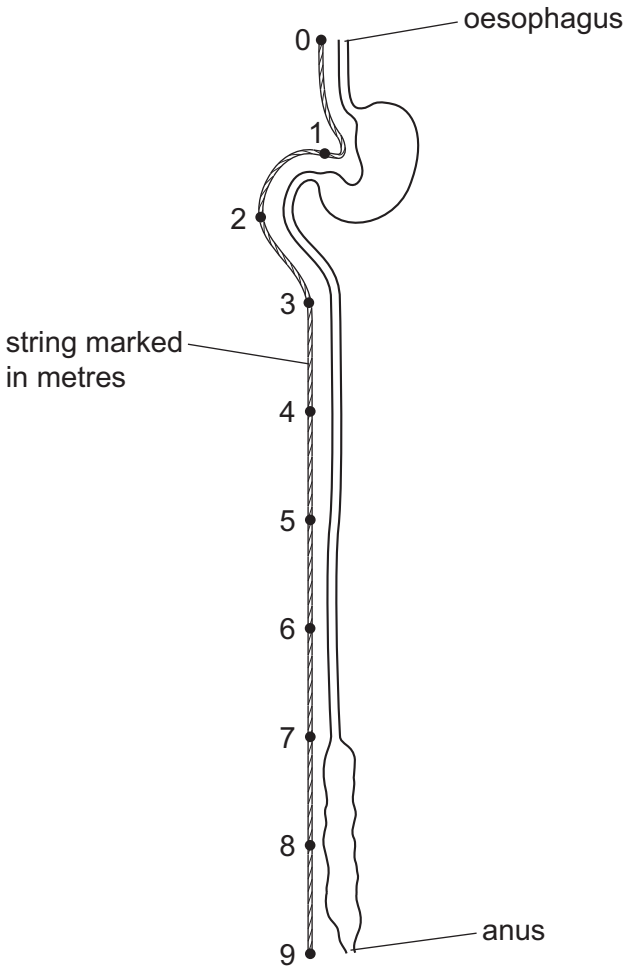
B ingestion

C chemical digestion

D mechanical digestion

© UCLES 2022

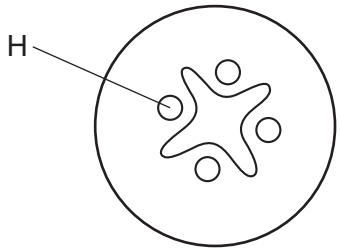
16 The diagram shows the human alimentary canal, with a string marked in metres beside it.



How long is the small intestine?

A 2 m **B** 6 m **C** 8 m **D** 9 m

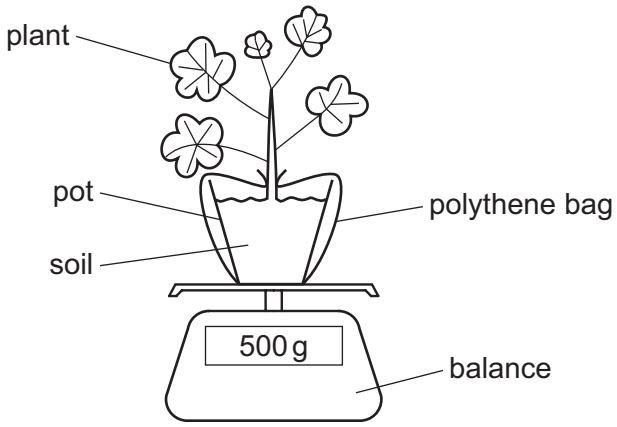
17 The diagram shows a cross-section of part of a plant.



Which part of the plant is shown and what is the tissue labelled H?

	plant part	tissue H
A	root	phloem
B	root	xylem
C	stem	phloem
D	stem	xylem

18 The apparatus shown can be used to investigate the effect of temperature and humidity on the rate of transpiration.



Which set of conditions would give the highest rate of transpiration and the greatest decrease in mass?

	temperature	humidity
A	cool	high
B	cool	low
C	warm	high
D	warm	low

© UCLES 2022

19 Which row correctly links the blood vessels with their functions?

	carries blood to the right atrium from the body	carries blood from the right ventricle to the lungs	carries blood from the lungs to the left atrium	carries blood from the left ventricle to the body
A	vena cava	pulmonary artery	pulmonary vein	aorta
B	aorta	pulmonary vein	pulmonary artery	vena cava
C	aorta	pulmonary artery	pulmonary vein	vena cava
D	vena cava	pulmonary vein	pulmonary artery	aorta

20 Which process is slower than normal in a person with very few platelets?

A antibody formation

B blood clotting

C oxygen transport

D phagocytosis

21 Which disease is caused by a pathogen?

A cholera

B coronary heart disease

C lung cancer

D scurvy

© UCLES 2022

[Turn over

22 The photographs show a positive test for the presence of carbon dioxide gas.

test-tube at the start

test-tube at the end

Which reagent is being used in the test-tube?

A Benedict's

B biuret

C DCPIP

D limewater

23 What is the word equation for anaerobic respiration in yeast?

A glucose → alcohol

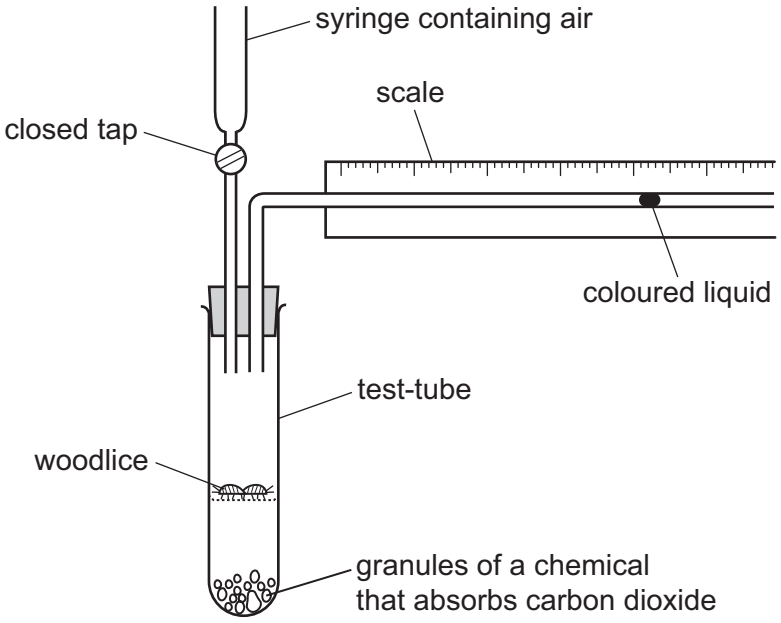
B glucose → alcohol + carbon dioxide

C glucose → lactic acid

D glucose → lactic acid + carbon dioxide

© UCLES 2022

24 A student used this apparatus to investigate the rate of aerobic respiration in woodlice.



Which statement describes and explains the movement of the coloured liquid when the woodlice are respiring?

A The coloured liquid moves towards the test-tube because the woodlice are using carbon dioxide.

B The coloured liquid moves towards the test-tube because the woodlice are using oxygen.

C The coloured liquid moves away from the test-tube because the woodlice are using carbon dioxide.

D The coloured liquid moves away from the test-tube because the woodlice are using oxygen.

25 Which organ excretes urea?

A kidney

B liver

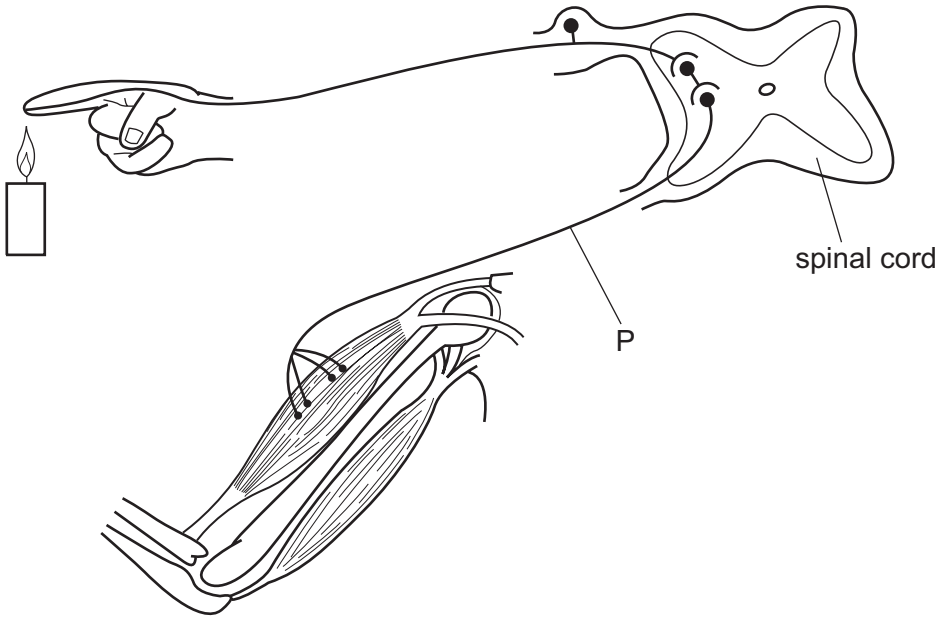
C lungs

D pancreas

© UCLES 2022

[Turn over

26 The diagram shows a simple reflex arc.



What is the function of the part labelled P?

A passing impulses to the central nervous system

B passing impulses to the effector

C passing impulses to the receptor

D passing impulses to the sensory neurone

27 Which endocrine gland produces insulin?

A adrenal gland

B ovary

C pancreas

D testes

28 Where in the body are the blood temperature receptors?

A brain

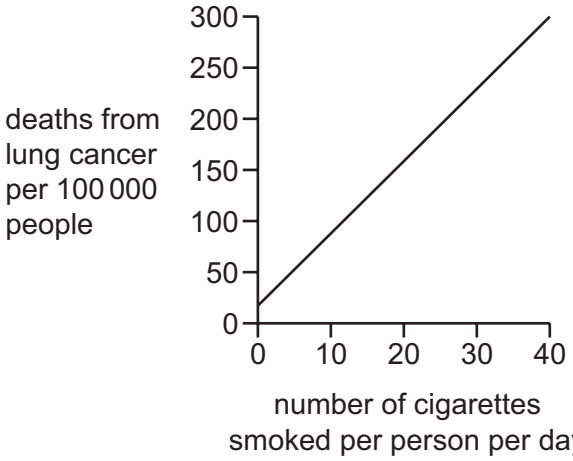
B liver

C muscles

D skin

© UCLES 2022

29 The graph shows the relationship between deaths from lung cancer and the number of cigarettes smoked per day. Cigarettes contain tobacco.



Which statement is a possible conclusion for the data shown in the graph?

A A person will die of lung cancer only if they smoke.

B A person's health is only affected if they smoke more than 10 cigarettes per day.

C A person will have less chance of dying of lung cancer if they smoke fewer cigarettes.

D If a person smokes more than 40 cigarettes per day, their risk of dying from lung cancer is the same as a person who smokes 40 cigarettes per day.

30 The statements refer to reproduction.

1 A zygote is formed.

2 Offspring are genetically identical to the parent.

3 Two gamete nuclei fuse together.

Which statements refer to sexual reproduction?

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

31 What is the name of the ball of cells that forms soon after fertilisation in humans?

A embryo

B ovum

C placenta

D fetus

32 The diagram shows the inheritance of sex in humans.

		male gametes	
		X	Y
female gametes	X	XX	XY
	X	XX	XY

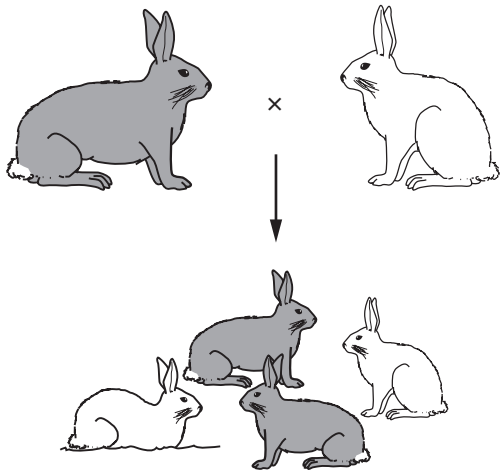
A man and a woman have one female child.

What is the chance of the couple's next child being female?

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

33 In rabbits, the allele for dark fur, R, is dominant to the allele for white fur, r.

The diagram shows a cross between a rabbit with dark fur and a rabbit with white fur.



What are the genotypes of the parents?

A Rr and rr **B** RR and rr **C** RR and Rr **D** R and r

© UCLES 2022

34 The graph shows the different heights of people in a human population.

Which row describes the variation shown by the graph?

	type of variation	has intermediate phenotypes
A	continuous	no
B	continuous	yes
C	discontinuous	no
D	discontinuous	yes

35 Which statement about selective breeding is correct?

A It does not involve humans.

B It involves a struggle for survival.

C It always involves only one parent.

D It involves parents that possess desirable features.

36 Which process uses the principal source of energy input to biological systems?

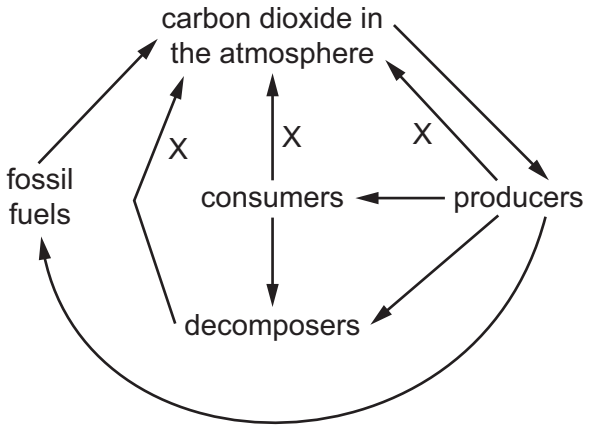
A ingestion

B decomposition

C photosynthesis

D respiration

37 The diagram shows part of the carbon cycle.



Which process is shown by the arrows labelled X?

A combustion

B fossilisation

C photosynthesis

D respiration

38 A herd of red deer live in a forest that contains snakes and a large variety of birds.

Which group of organisms is an example of a population?

A all the animals in the forest

B all the red deer in the forest

C all the organisms in the forest

D all the plants in the forest

39 Which process makes use of a genetically engineered organism?

A using bacteria to produce insulin

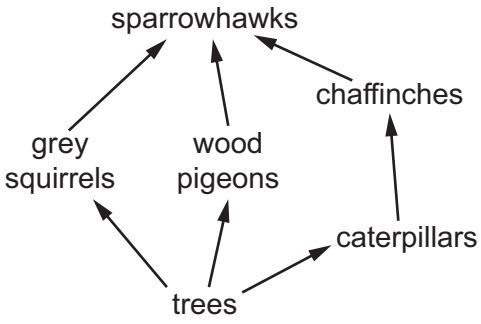
B using enzymes in biological washing powders

C using pectinase in fruit juice production

D using yeast to produce ethanol

© UCLES 2022

40 The food web shows the feeding relationships in a woodland.



If all the chaffinches in the food web die, which effect would this have?

A The amount of damage to trees will increase.

B The food supply for grey squirrels will increase.

C The number of wood pigeons will increase.

D The population of caterpillars will decrease.

© UCLES 2022

BLANK PAGE

BLANK PAGE

© UCLES 2022

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

© UCLES 2022