Cambridge Assessment International Education

Cambridge IGCSE™

BIOLOGY **0610/13**

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 **16** 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 The scientific names of some animals are listed.

1 *Arius felis*

2 *Felis concolor*

3 *Felis rufus*

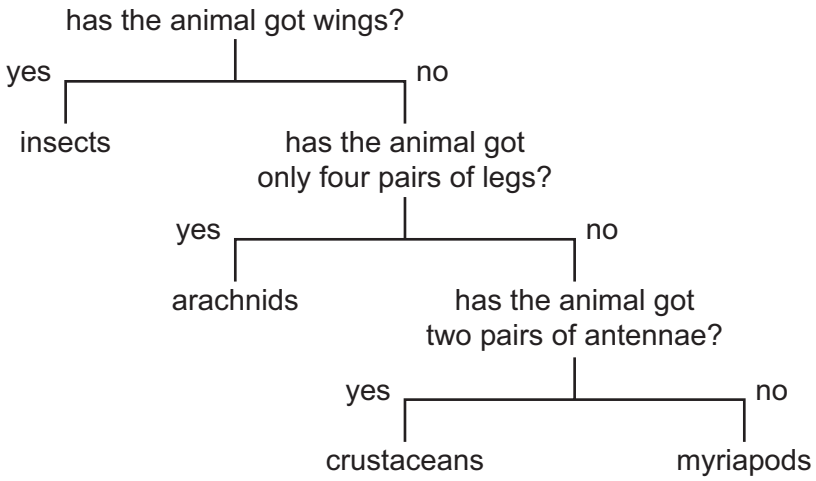
4 *Macropus rufus*

Which animals are in the same genus?

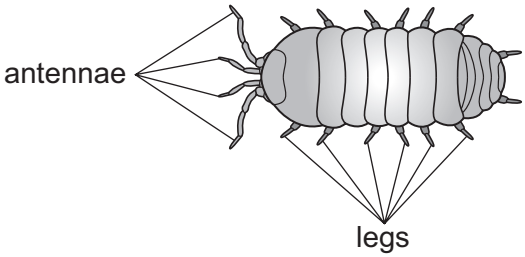
A 1, 2 and 3 **B** 2, 3 and 4 **C** 2 and 3 only **D** 3 and 4 only

© UCLES 2022

3 The diagram shows a dichotomous key for arthropods.



The organism shown is an arthropod called an isopod.



Which group does the isopod belong to?

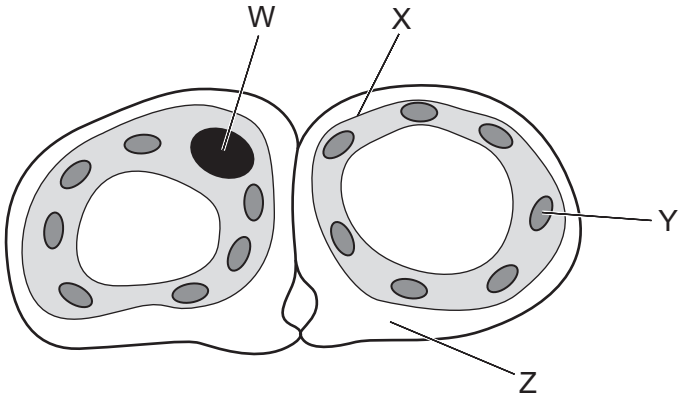
A arachnids

B crustaceans

C insects

D myriapods

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 Which level of organisation is shown by the heart of a mammal?

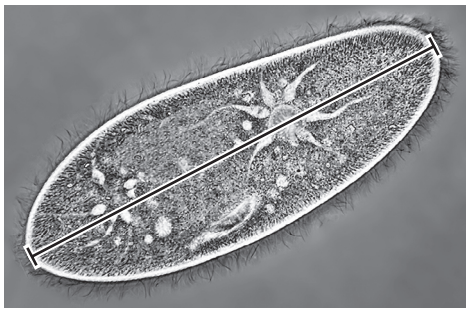
A a cell

B a tissue

C an organ

D an organ system

6 The image shows a single-celled organism called a *Paramecium*.



The length of the *Paramecium* in the image is 6 cm. The magnification is ×400.

Which calculation will give the correct actual length of the *Paramecium*, in mm?

A $\frac{6 \times 10}{400}$ **B** $\frac{6 \times 1000}{400}$ **C** $\frac{400 \times 10}{6}$ **D** $\frac{400}{6 \times 1000}$

7 Female moths release chemicals into the air. Male moths detect these chemicals and fly towards the females.

How do the chemicals spread through the air?

A active transport

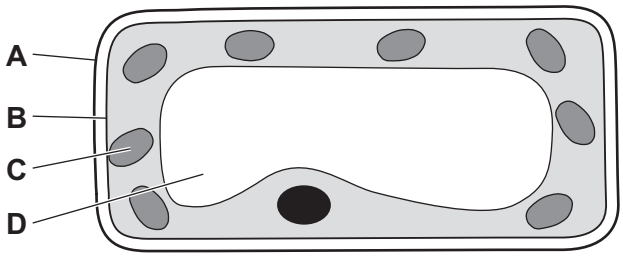
B diffusion

C osmosis

D transpiration

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 What is the correct definition of an enzyme?

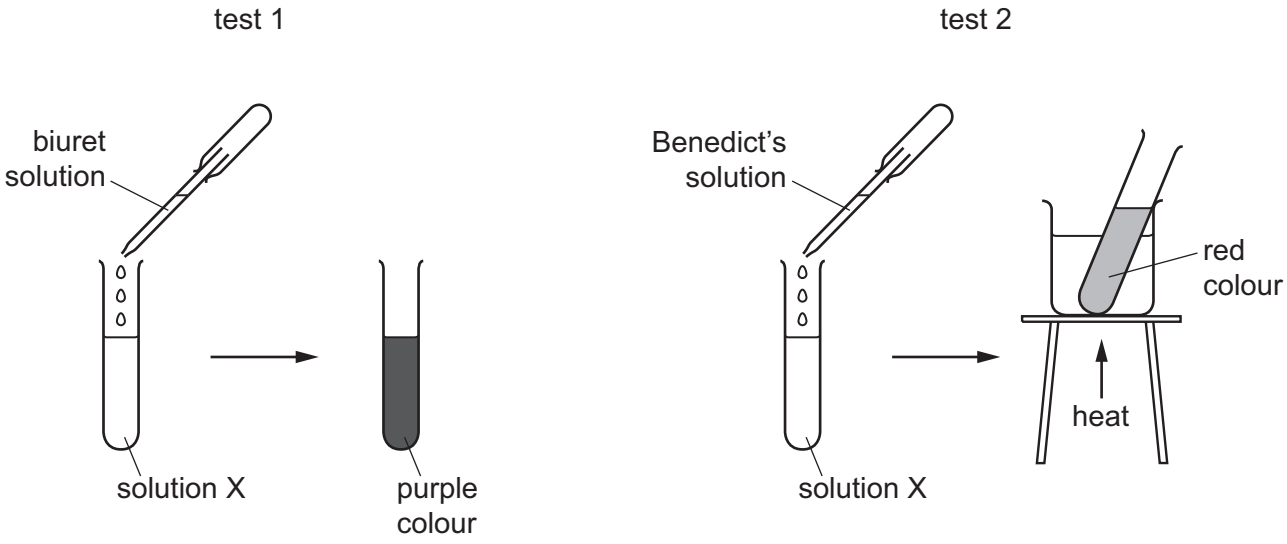
A a carbohydrate that functions as a biological catalyst

B a protein that functions as a biological catalyst

C a substance that is changed by the reaction

D a substance made of fats that changes the rate of a reaction

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

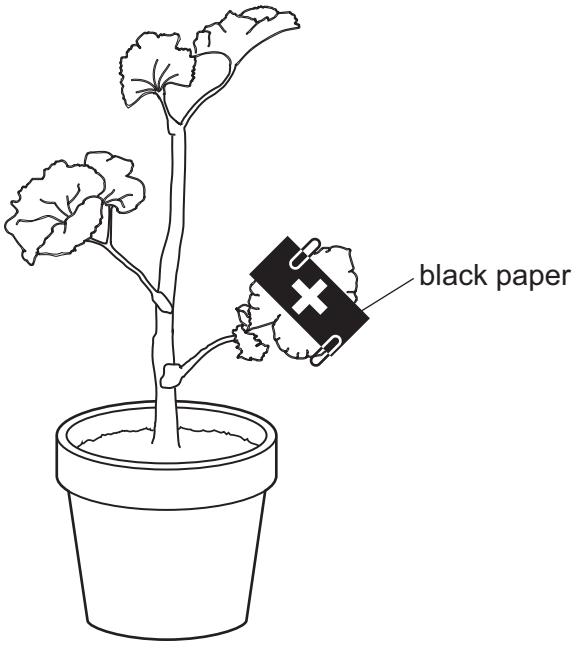
B glucose

C oxygen

D water

13 A student investigated one of the factors that affects photosynthesis.

Part of a leaf was covered with black paper, as shown.



After two days the student tested the leaf for the presence of starch.

Which factor did the student investigate?

A carbon dioxide

B chlorophyll

C light

D oxygen

14 Which nutrient is required to prevent scurvy?

A calcium

B iron

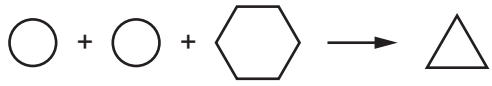
C vitamin C

D vitamin D

© UCLES 2022

15 Which diagram represents the action of lipase?

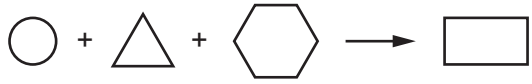
A



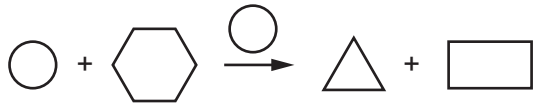
B

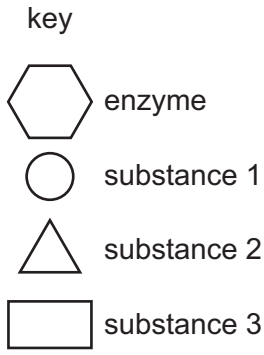


C

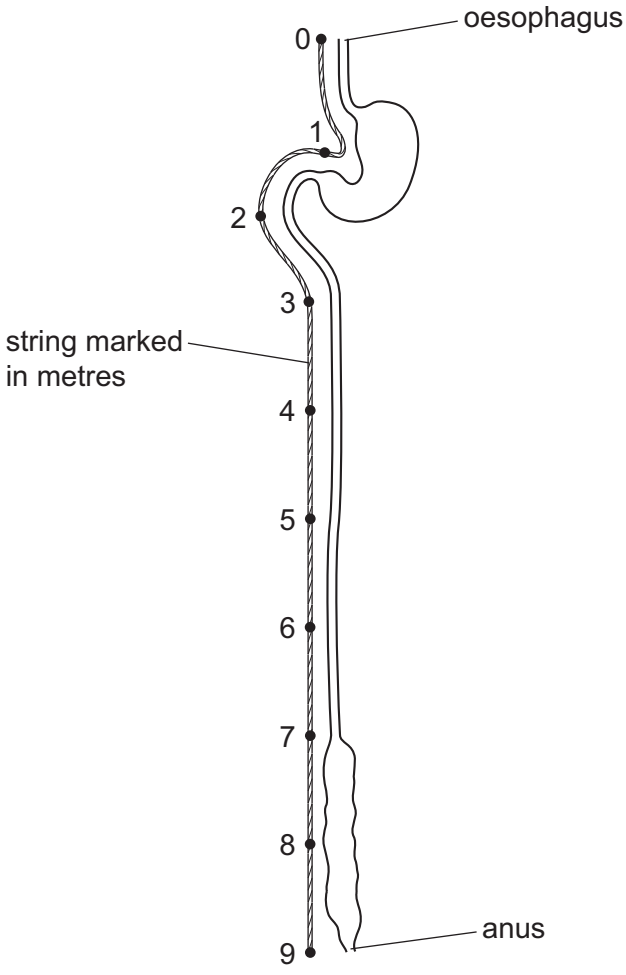


D





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

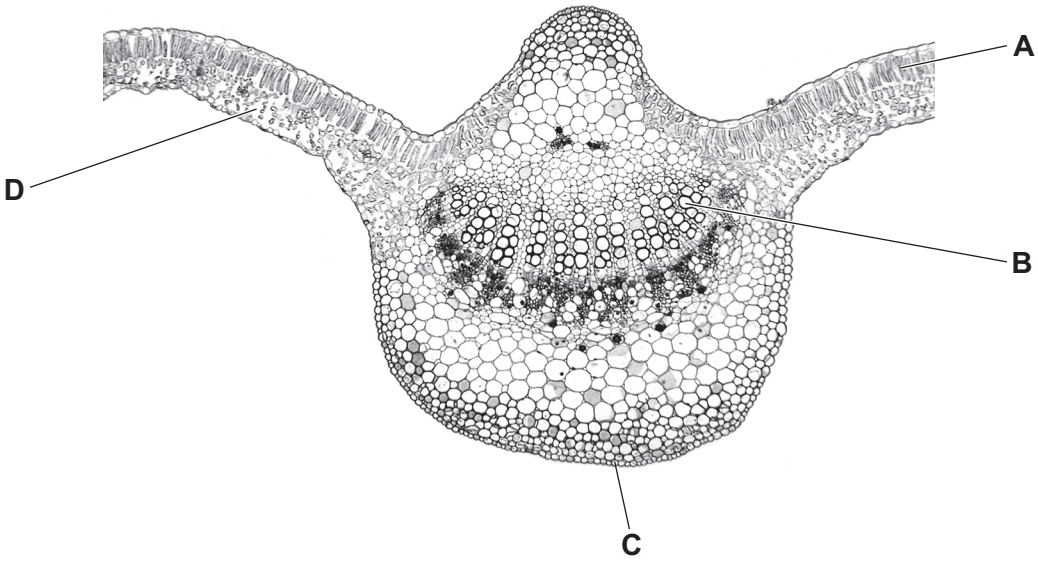


How long is the small intestine?

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

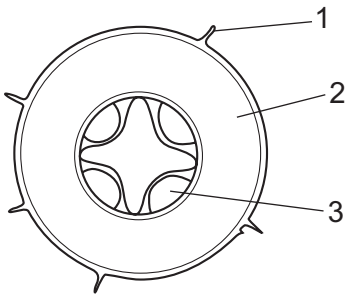
17 The image shows a cross-section of part of a leaf.

Which labelled structure is the xylem?



18 The diagram shows a cross-section of a root.

Three regions of the root are numbered.



Which regions contain cells through which water must pass to reach the xylem?

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

19 A student runs 400 metres.

Which effects will this have?

	depth of breathing	rate of breathing	pulse rate
A	decreases	increases	decreases
B	increases	decreases	increases
C	decreases	decreases	decreases
D	increases	increases	increases

© UCLES 2022

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

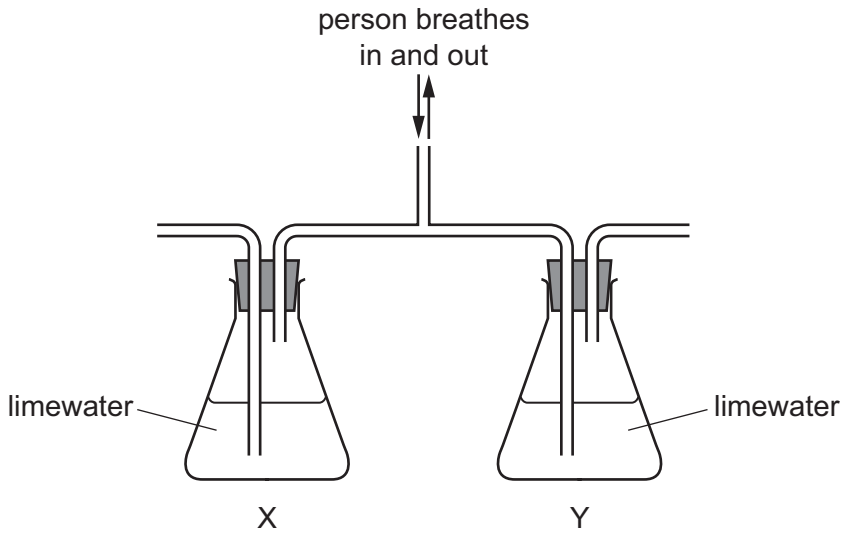
21 The body has several methods of avoiding infection by pathogens, including specialised cells, mechanical barriers and chemical barriers.

Which row has a correct example for each method?

	specialised cells	mechanical barrier	chemical barrier
A	hairs in the nose	stomach acid	phagocytes
B	hairs in the nose	phagocytes	stomach acid
C	phagocytes	stomach acid	hairs in the nose
D	phagocytes	hairs in the nose	stomach acid

22 The diagram shows the apparatus used in an investigation of gas exchange in humans.

The person breathes through the central tube five times.



What are the expected results in flasks X and Y?

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

23 Which substances are used in aerobic respiration?

	glucose	oxygen	water
A	✗	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

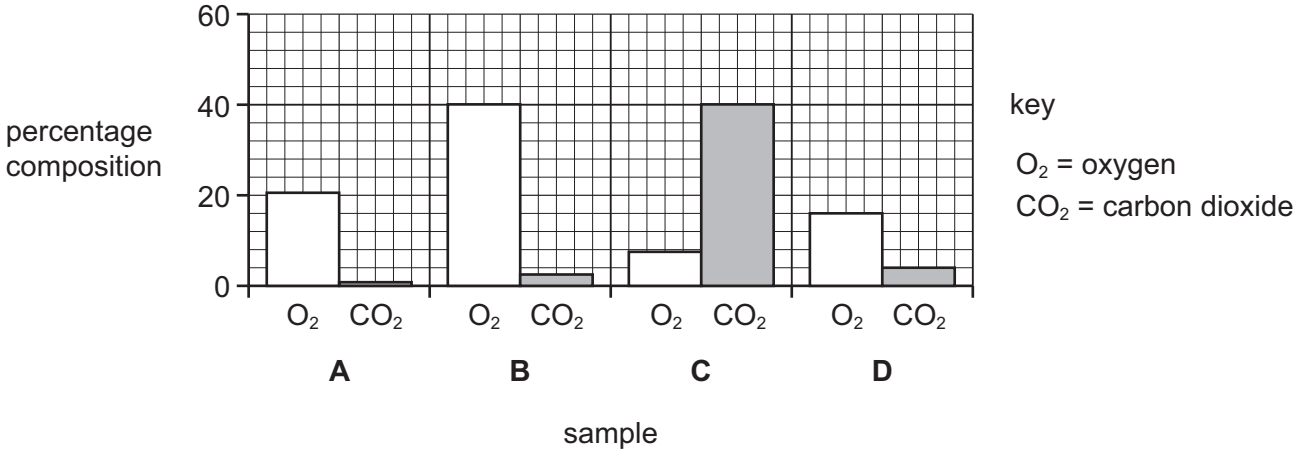
key

✓ = yes

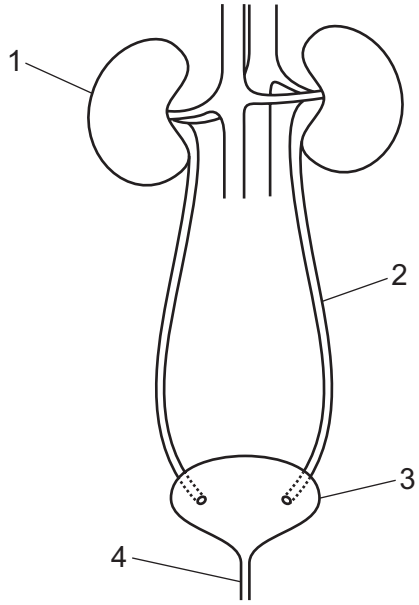
✗ = no

24 The bar chart shows the percentage composition of two gases in four samples of air.

Which sample is expired air?



25 The diagram shows the excretory system.



Which labels are the ureter and the bladder?

	ureter	bladder
A	2	1
B	2	3
C	4	3
D	4	1

26 Which conditions will result in the largest volume of urine being produced by the kidneys?

	water intake / cm^3	environmental temperature / °C	activity
A	1500	15	rest
B	500	15	exercise
C	1500	30	rest
D	500	35	exercise

27 A simple reflex arc consists of four components between a receptor and a response.

Which component is the motor neurone?

receptor ⟶ **A** ⟶ **B** ⟶ **C** ⟶ **D** ⟶ response

28 Which part of the eye focuses light on the retina?

A cornea

B pupil

C iris

D lens

29 Which statement about the hormone insulin is correct?

A It is produced by the liver and raises blood sugar concentration.

B It is produced by the liver and lowers blood sugar concentration.

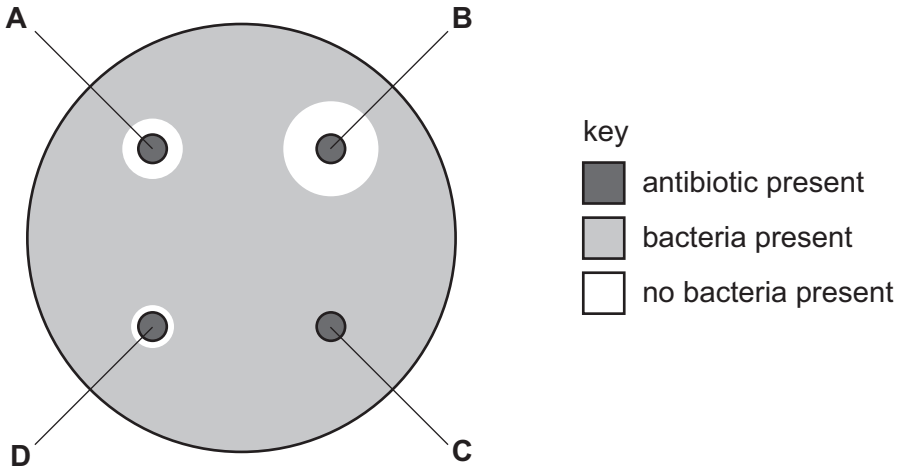
C It is produced by the pancreas and raises blood sugar concentration.

D It is produced by the pancreas and lowers blood sugar concentration.

30 The diagram shows the effect of four different antibiotics, **A**, **B**, **C** and **D**, on the growth of one type of bacteria. The bacteria were grown on agar jelly in a Petri dish. When bacteria covered the whole surface of the agar, paper discs soaked in each antibiotic were placed on top of the agar.

The diagram shows the appearance of the Petri dish 48 hours after the paper discs were added.

Which antibiotic is the **most** effective treatment for this type of bacteria?



31 Four processes involved in labour and birth are shown.

1 cutting the umbilical cord

2 contraction of muscles in the uterus wall

3 delivery of the afterbirth

4 dilation of the cervix

5 passage of the baby through the vagina

In which sequence do these events normally occur?

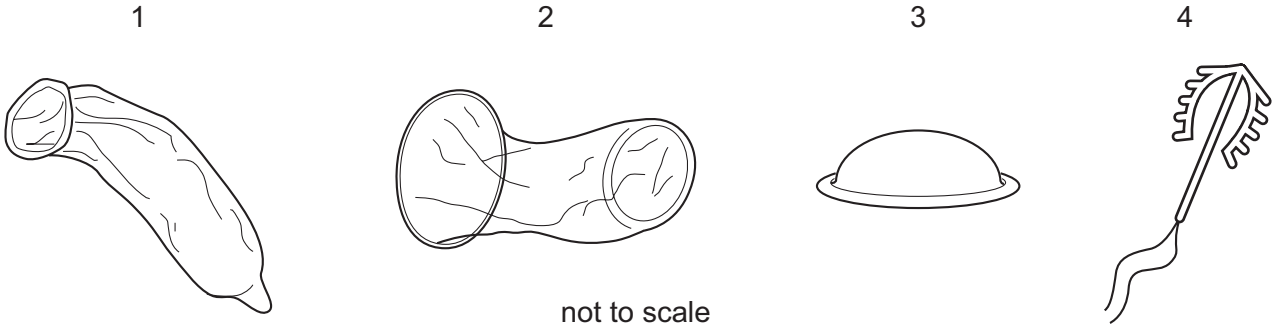
A $2 \rightarrow 4 \rightarrow 5 \rightarrow 1 \rightarrow 3$

B $2 \rightarrow 4 \rightarrow 3 \rightarrow 1 \rightarrow 5$

C $4 \rightarrow 3 \rightarrow 2 \rightarrow 5 \rightarrow 1$

D $4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 5$

32 The diagram shows four types of birth control device.



Which methods of birth control offer protection against sexually transmitted infections (STIs)?

	1	2	3	4
A	✓	✓	✗	✗
B	✗	✓	✓	✗
C	✗	✗	✓	✗
D	✗	✗	✓	✓

key

✓ = yes

✗ = no

33 The table shows the percentage of pregnancies in four groups of women. Each group used a different method of birth control.

method of birth control	percentage of pregnancies
the contraceptive pill	1
monitoring body temperature	14
diaphragm	7
vasectomy	0

Which type of birth control was the **most** effective?

A barrier

B chemical

C natural

D surgical

34 Which sex chromosomes in the egg cell and in the sperm will produce a female child?

	sex chromosome in the egg cell	sex chromosome in the sperm
A	X	X
B	X	Y
C	Y	X
D	Y	Y

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

© UCLES 2022

37 What is the name of an organism that obtains its energy from dead organic material?

A carnivore

B consumer

C decomposer

D herbivore

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?

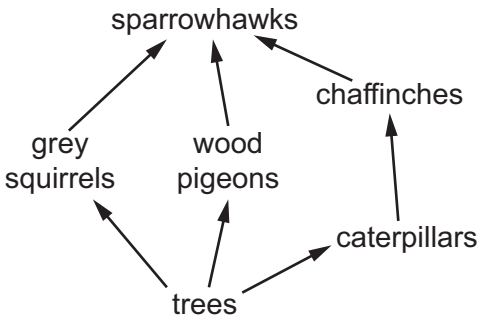
A using bacteria to produce insulin

B using enzymes in biological washing powders

C using pectinase in fruit juice production

D using yeast to produce ethanol

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.

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