Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/23**

Paper 2 Multiple Choice (Extended) **May/June 2019**

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

* 2 4 5 7 0 1 6 5 0 2 *

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, glue or correction fluid.
Write your name, centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.
DO **NOT** WRITE IN ANY BARCODES.

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 separate Answer Sheet.

Read the instructions on the Answer Sheet very carefully.

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.
Electronic calculators may be used.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **18** printed pages and **2** blank pages.

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1 Students find a small organism in a pond. They catch it and put it into a large jar of water. They see that the organism swims away from light. It lays some eggs before they put it back into the pond.

Which characteristics of living things did the students see in this organism?

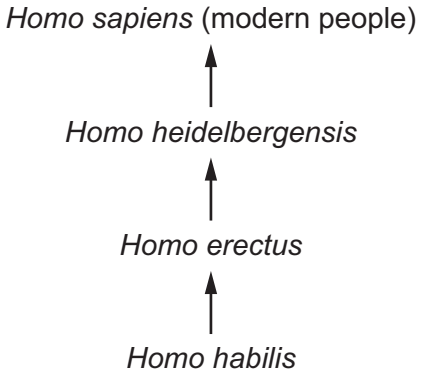
A excretion, growth and respiration

B growth, nutrition and sensitivity

C movement, reproduction and sensitivity

D movement, reproduction and respiration

2 The diagram shows how *Homo sapiens* (modern people) could have evolved from earlier ancestors.



Which statement about modern people and their ancestors is correct?

A They are in the same species and the same genus.

B They are in the same species but not the same genus.

C They are in the same genus but not the same species.

D They are neither the same species nor the same genus.

3 In cells with a high respiration rate, what would be found in the cytoplasm in increased numbers?

A mitochondria

B ribosomes

C rough endoplasmic reticulum

D vesicles

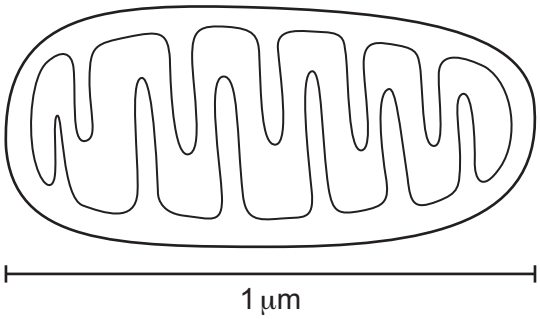
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4 Which features are possessed by **all** plant cells?

	a cell wall	chloroplasts
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key
✓ = present
✗ = absent

5 The diagram shows a mitochondrion.

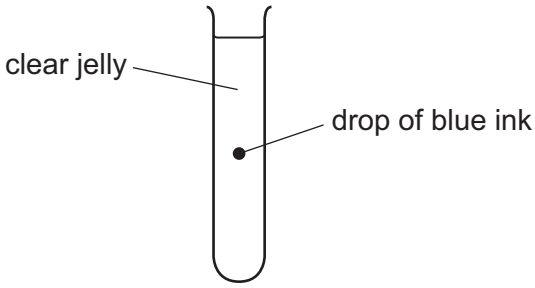


The diagram is 70 mm long.

What is the magnification of the diagram?

A ×0.0007 **B** ×70 **C** ×7000 **D** ×70 000

6 The diagram shows a test-tube containing clear jelly. A drop of blue ink is injected into the middle of the jelly.



The blue colour of the ink spreads throughout the jelly.

By which process does the blue ink spread through the jelly?

A active transport

B catalysis

C diffusion

D osmosis

7 Which row describes active transport?

	movement of water	uses energy from respiration	through a cell membrane
A	yes	no	no
B	yes	no	yes
C	no	yes	no
D	no	yes	yes

8 Which reagent is used when testing a food for vitamin C?

A Benedict's solution

B DCPIP

C ethanol

D iodine solution

9 Small molecules are used as the basic units in the synthesis of large food molecules.

Which statement is correct?

A Amino acids are basic units of carbohydrates.

B Fatty acids are basic units of glycogen.

C Glycerol is a basic unit of oils.

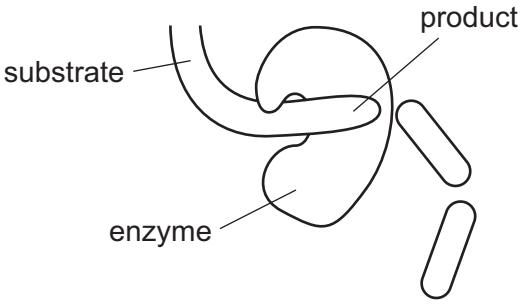
D Simple sugar is a basic unit of protein.

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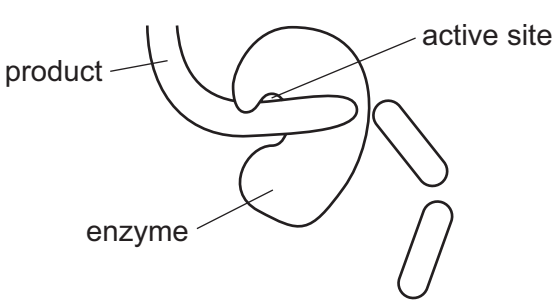
10 The diagrams show a protease enzyme catalysing the breaking of part of a protein molecule into smaller pieces.

Which diagram has three correct labels?

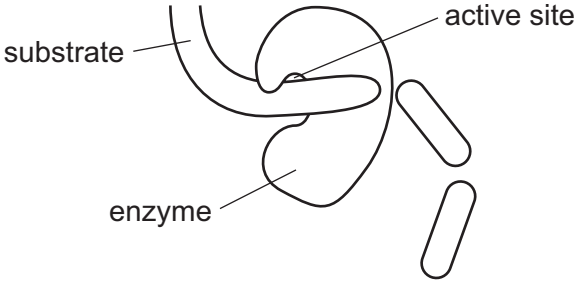
A



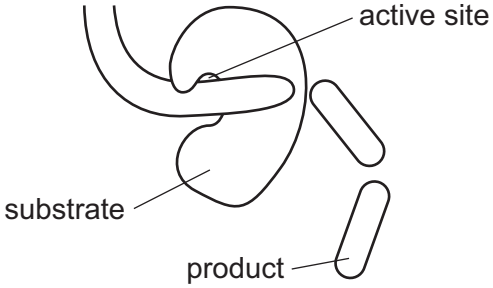
B



C

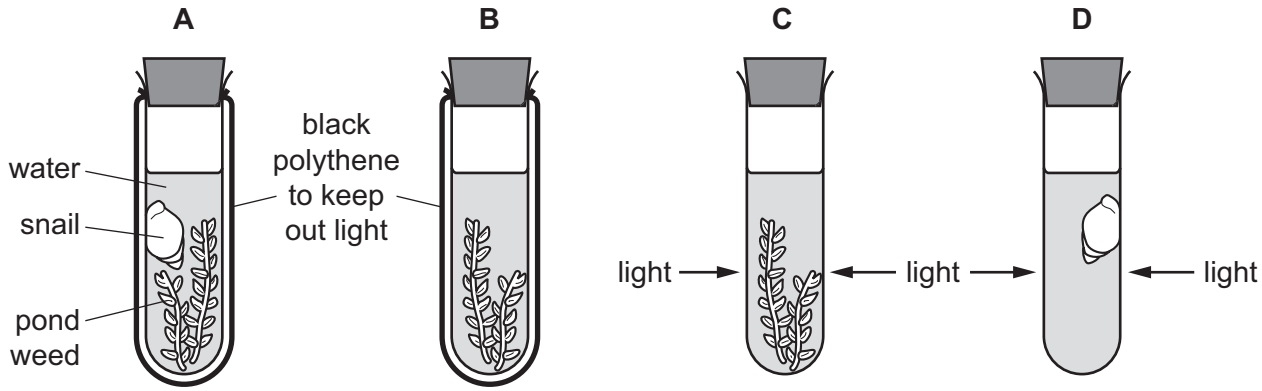


D



11 The diagram shows an experiment to investigate the balance between respiration and photosynthesis.

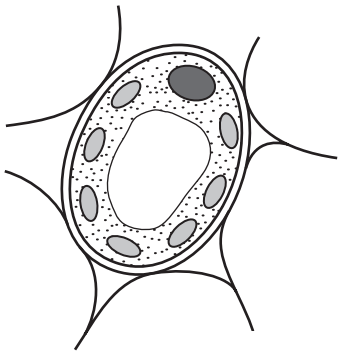
In which tube are photosynthesis and respiration taking place at the same time?



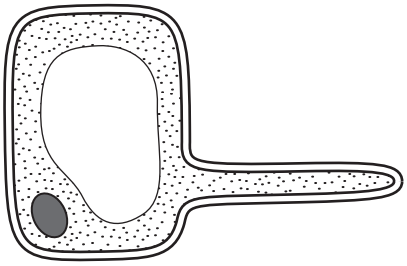
12 The diagrams show the structure of four different cells from a plant.

Which cell is from the upper epidermis of a leaf?

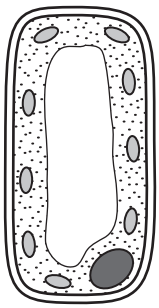
A



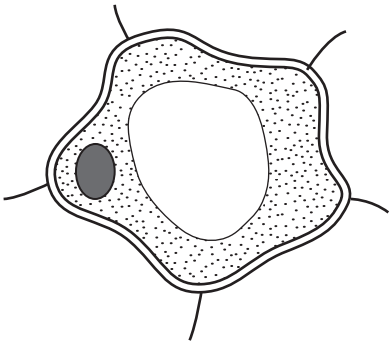
B



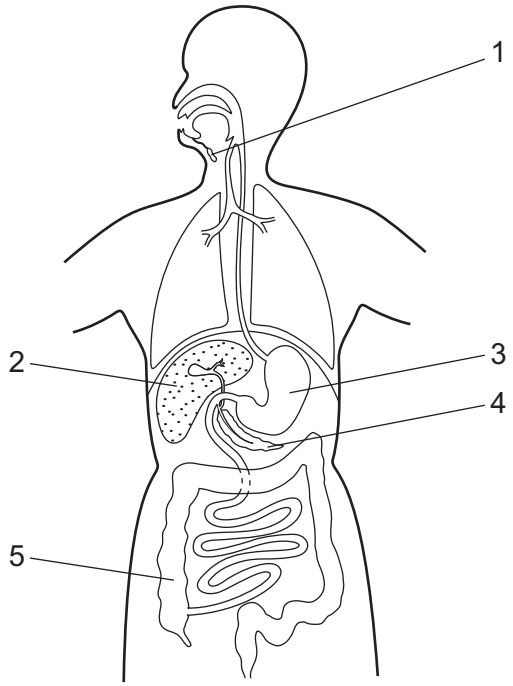
C



D



13 The diagram shows the human alimentary canal.



Which pair of structures both produce digestive enzymes?

A 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 5

14 The cholera bacterium produces toxins that cause chloride ions to be secreted into the small intestine.

How does this affect the water potential of blood in the intestinal capillaries and the intestinal contents?

	water potential	
	blood in capillaries	contents of small intestine
A	lowered	lowered
B	lowered	raised
C	raised	lowered
D	raised	raised

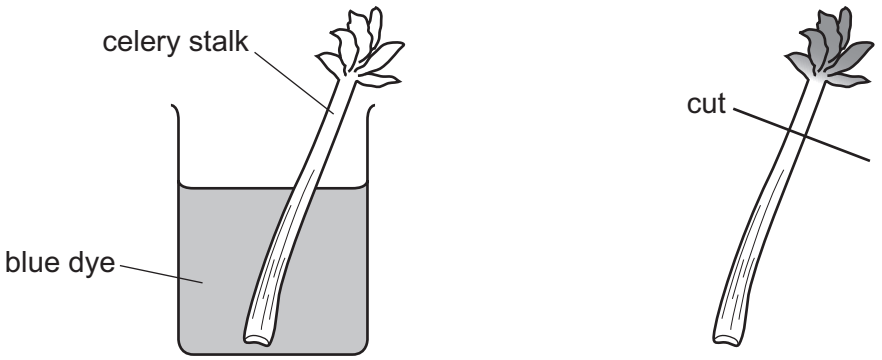
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15 Starch in food is digested in two stages.

In which parts of the alimentary canal do the two stages occur?

	starch into maltose	maltose into glucose
A	duodenum	stomach
B	lining of small intestine	mouth
C	mouth	lining of small intestine
D	stomach	duodenum

16 A celery stalk was placed into a beaker of blue dye. When the dye reached the leaves, the stalk was taken out and a section was cut, as shown in the diagram.

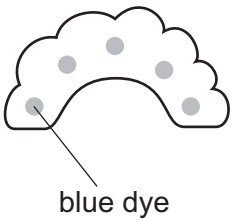


Which diagram shows the appearance of the cut end of the stalk?

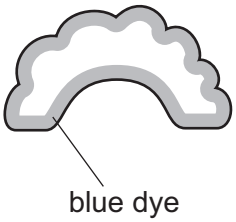
A



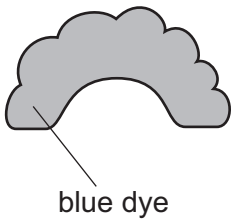
B



C



D



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17 The table shows the rate of water flow through a tree over a 12 hour period.

time of day	rate of flow / cm per hour
7:00	100
9:00	120
11:00	140
13:00	250
15:00	300
17:00	260
19:00	180

What conclusion can be drawn from the table?

A Between 7:00 and 17:00 hours the rate of flow continuously increases.

B The greatest increase in rate of flow in a two-hour period is between 11:00 and 13:00 hours.

C Water does not flow up through a tree at night.

D Water flow is affected by humidity.

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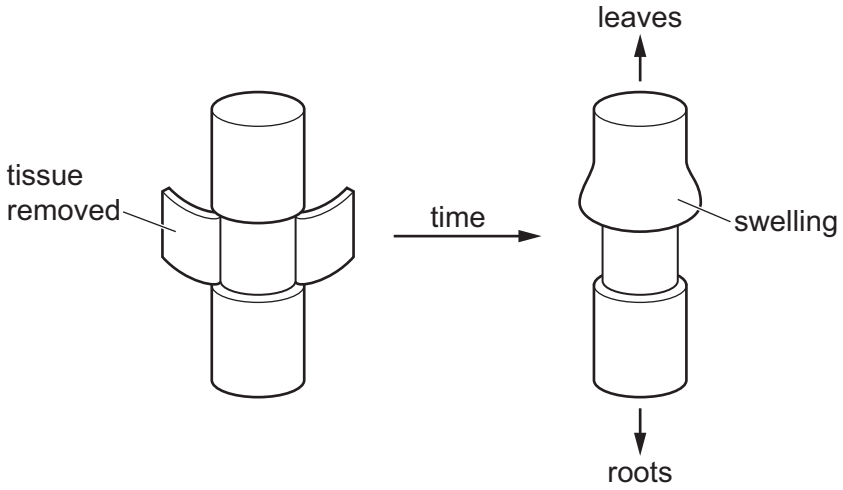
[Turn over

18 Scientists investigate the movement of substances in a plant.

They cut a ring of tissue from the stem.

Removing the tissue removes some of the transport vessels found around the edge of the stem.

A few days later they notice swelling above the area where the tissue has been removed.



What causes the swelling?

A Phloem vessels have been removed and sucrose cannot move to the sink.

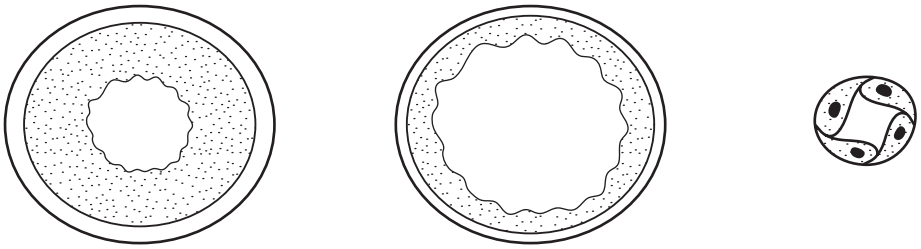
B Phloem vessels have been removed and sucrose cannot move to the source.

C Xylem vessels have been removed and minerals cannot move to the sink.

D Xylem vessels have been removed and minerals cannot move to the source.

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19 The diagram shows cross-sections through three types of blood vessel, **not** drawn to the same scale.



V W X

Which section is from a vein and which is from a capillary?

	vein	capillary
A	V	W
B	W	V
C	W	X
D	X	W

20 By which route would an HIV infection **not** be transmissible?

A blood

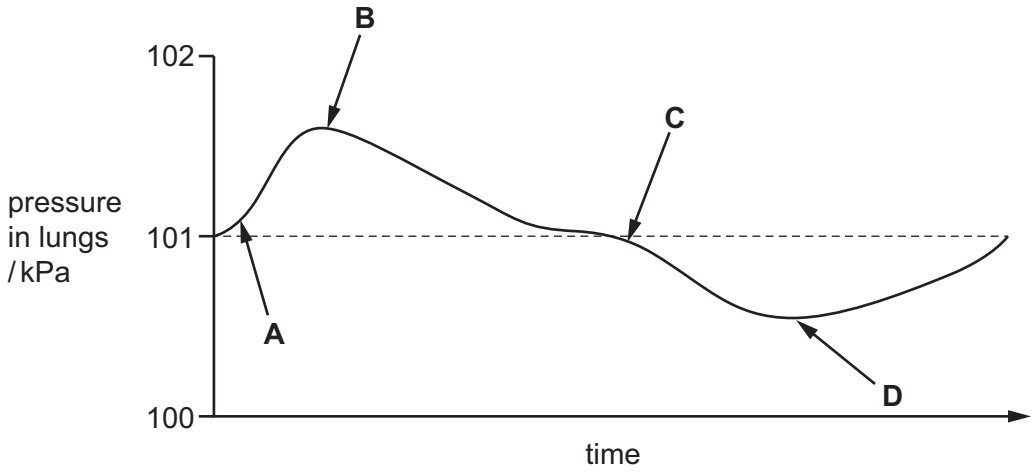
B saliva

C sharing needles for injections

D semen

21 The diagram illustrates changes in air pressure taking place inside the lungs during a complete cycle of breathing. Atmospheric pressure is 101 kPa.

At which point on the diagram are the ribs beginning to be lowered?



22 Which process uses energy released by respiration?

A diffusion

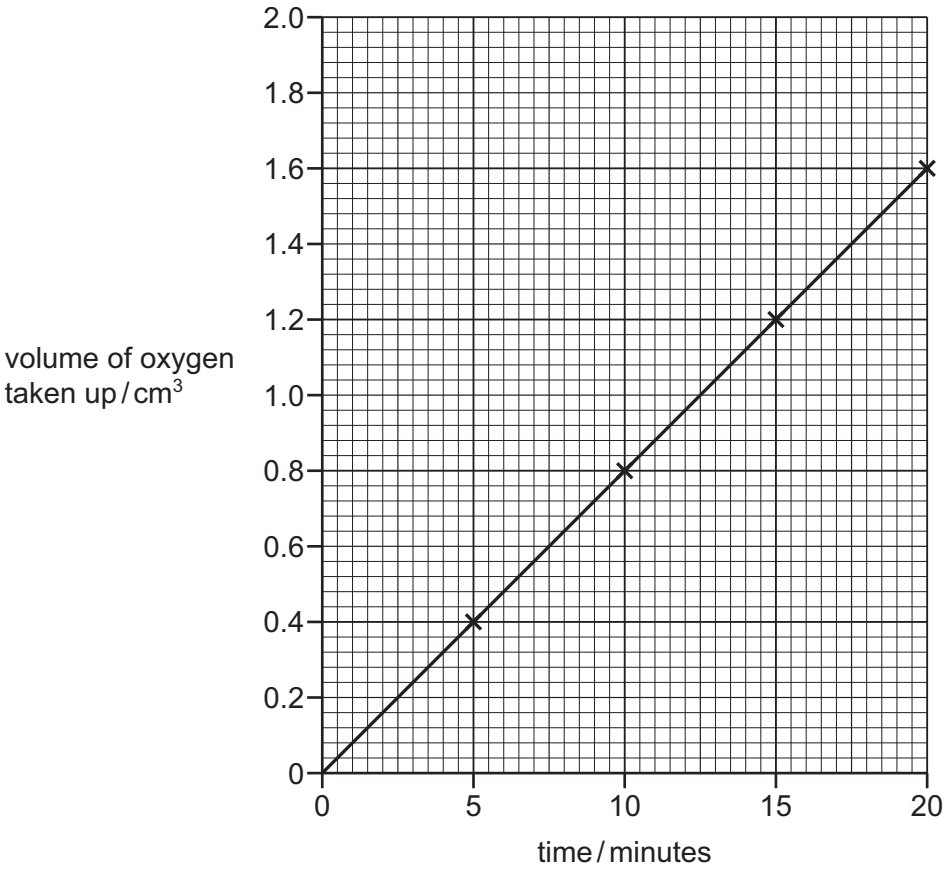
B evaporation

C growth

D osmosis

23 The volume of oxygen taken up by germinating seeds was measured.

The graph shows the results.



What is the rate of oxygen uptake?

A 0.08 cm^3 per minute

B 8.00 cm^3 per minute

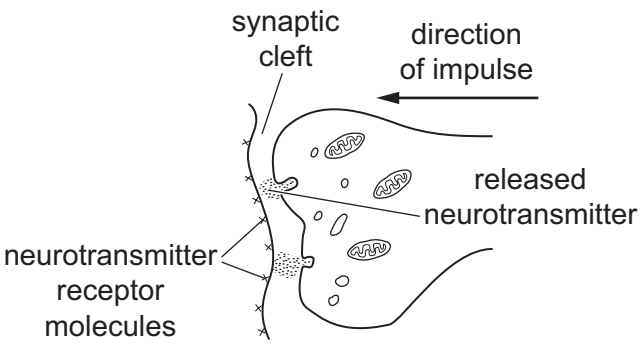
C 10.8 cm^3 per minute

D 12.50 cm^3 per minute

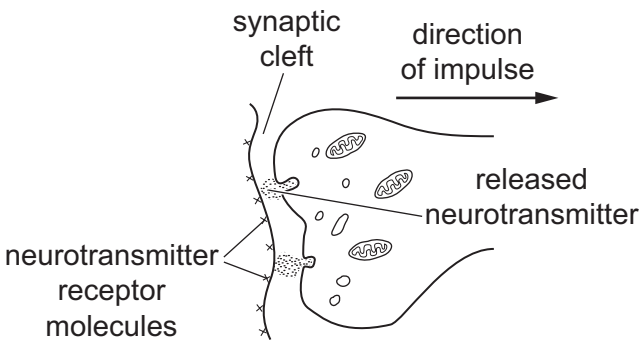
24 The diagrams show the structures on each side of a synaptic cleft.

Which diagram is correctly labelled?

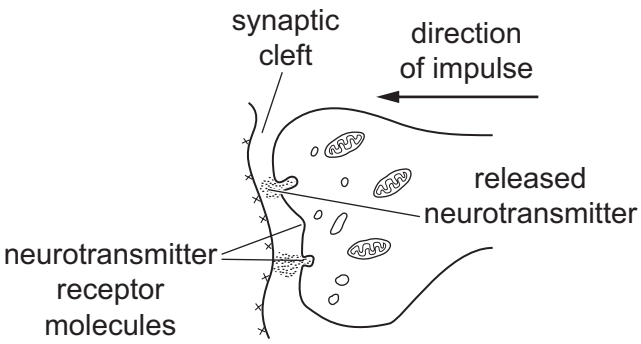
A



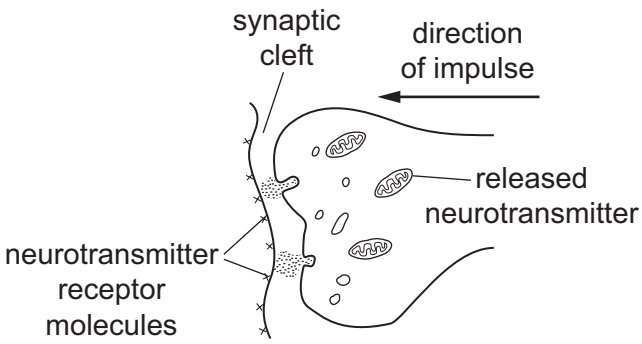
B



C



D



25 Dialysis is a method of regulating the composition of blood when the kidneys are not working properly.

Which substance is absent from fresh dialysis fluid?

A bile

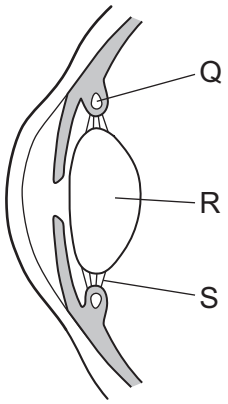
B glucose

C salt

D water

26 The diagram shows a vertical section through part of a human eye. A fly is coming nearer to the eye. The eye begins to focus the image of the fly on its retina.





How do the labelled parts of the diagram change?

	Q	R	S
A	contracts	thinner	tighter
B	relaxes	fatter	slacker
C	contracts	fatter	slacker
D	relaxes	thinner	tighter

27 Where is glucagon secreted, and what is its effect on blood glucose concentration?

	secreted by	effect on blood glucose concentration
A	liver	increases
B	liver	decreases
C	pancreas	increases
D	pancreas	decreases

28 Which statement about antibiotics is correct?

A Antibiotics are effective against viral diseases.

B Antibiotics are produced by white blood cells.

C Antibiotics can provide pain relief.

D Antibiotics can stop bacteria making new cell walls.

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29 Where is progesterone produced?

A ovary

B pituitary gland

C prostate gland

D uterus

30 Which feature allows the sperm to dissolve the jelly coating of the egg cell?

A acrosome

B flagellum

C mitochondria

D nucleus

31 Parents with alleles I^AI^B and I^oI^o can produce children with which blood groups?

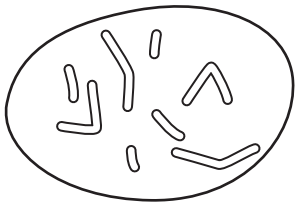
A A and B

B AB

C A and O

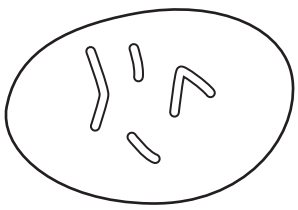
D B and O

32 The diagram shows the chromosomes in the nucleus of a cell that divides by mitosis.

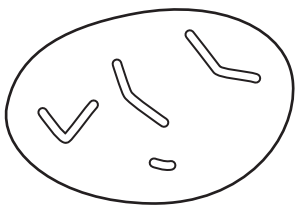


Which diagram shows the chromosomes in the nucleus of one of the daughter cells produced?

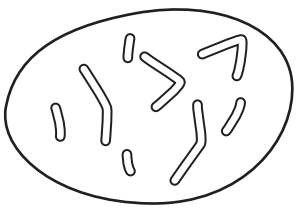
A



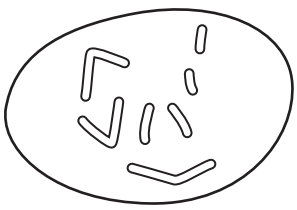
B



C



D



33 During protein synthesis, what is the function of the ribosome?

A assemble amino acids in a chain

B carry a copy of a gene to the cytoplasm

C contain the code for the synthesis of a protein

D determine the order of bases in the protein

34 The table shows some inherited features.

Which features show co-dominance?

	blood group	colour blindness	sex
A	✓	✓	✗
B	✓	✗	✗
C	✗	✓	✓
D	✗	✓	✗

key

✓ = co-dominant

✗ = not co-dominant

35 These events may happen when an antibiotic is used to treat a bacterial infection.

1 The antibiotic kills most of the bacteria.

2 The antibiotic resistant bacteria reproduce.

3 The antibiotic resistant bacteria survive.

4 Some bacteria mutate and are resistant to the antibiotic.

Which sequence may produce a strain of antibiotic resistant bacteria?

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

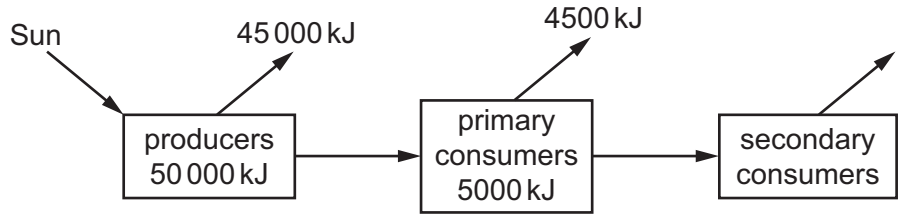
B $2 \rightarrow 3 \rightarrow 1 \rightarrow 4$

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

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

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36 The diagram shows the energy within the producers in an ecosystem and how much is transferred to primary consumers and eventually lost to the environment.



How much energy is transferred from primary consumers to secondary consumers?

A 5 kJ **B** 50 kJ **C** 500 kJ **D** 5000 kJ

37 Which is the tertiary consumer in this food chain?

	A		**B**		**C**		**D**
aquatic plant	→	pond snails	→	small fish	→	large fish	→	fish eagles

38 Scientists in one country are using bacteria to break down crude oil in abandoned oil fields. This produces natural gas which is used as a fuel.

Why are bacteria useful in this example of biotechnology?

A Bacteria are involved in the nitrogen cycle.

B Bacteria are microorganisms.

C Bacteria can be pathogens.

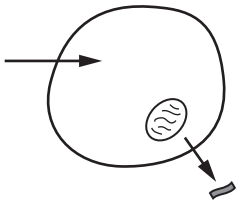
D Bacteria can reproduce very quickly.

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39 The diagrams show the stages in the production of human insulin.

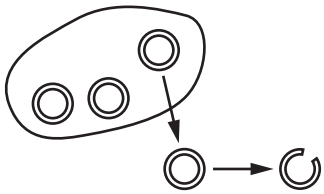
Which stage uses the enzyme DNA ligase?

A



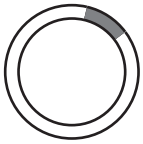
gene for insulin identified and removed from a human cell

B



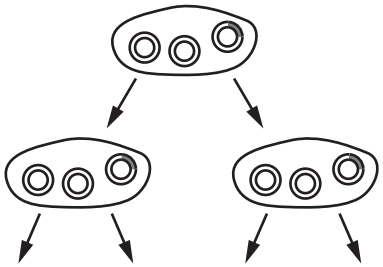
plasmid is removed from a bacterium and cut open

C



the gene for insulin is inserted into the plasmid

D



the plasmid is inserted into a bacterium which reproduces and insulin is produced

40 What is an undesirable effect of deforestation?

A habitat creation

B loss of soil

C more species

D reduced carbon dioxide in the atmosphere

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