



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY

5096/01

Paper 1 Multiple Choice

October/November 2007

1 hour

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



READ THESE INSTRUCTIONS FIRST

Write in soft pencil.

Do not use staples, paper clips, highlighters, 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.

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.

This document consists of **20** printed pages.



1 Which activity is essential for all the others to take place?

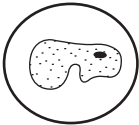
- A excretion
- B growth
- C movement
- D respiration

2 Respiration is the release of **X** from glucose in the **Y** structures in the cell.

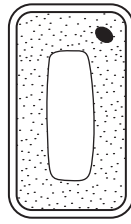
What are **X** and **Y**?

	X	Y
A	carbon dioxide	ribosomes
B	energy	mitochondria
C	oxygen	mitochondria
D	energy	ribosomes

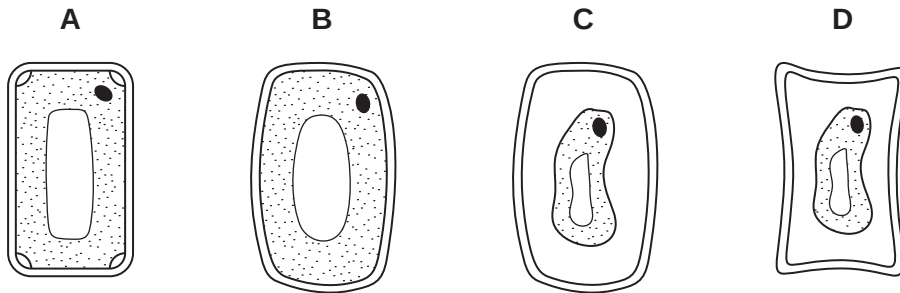
3 Which diagram shows the type of organism that causes tuberculosis?

A	B	C	D
 × 1000	 × 15	 × 1000	 × 50
unicellular; reproduces by fission	multicellular; larval stages worm-like	unicellular; no true nucleus	mycelium of hyphae

- 4 The diagram shows a cell removed from an onion.



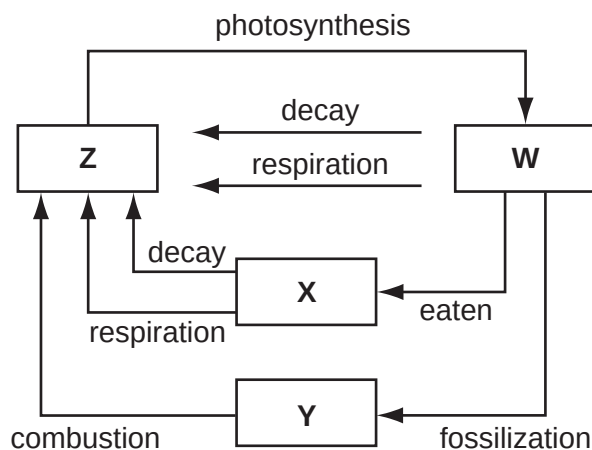
Which diagram shows the same cell after it has been placed in distilled water for 20 minutes?



- 5 What is made during photosynthesis?

- A carbon dioxide and oxygen
- B oxygen and carbohydrate
- C carbohydrate and water
- D water and carbon dioxide

- 6 The diagram shows the carbon cycle.



What does **Z** represent?

- A animals
- B carbon dioxide
- C oxygen
- D plants

7 Which nutrient contains the **most** energy in each gram?

- A carbohydrate
- B fat
- C fibre
- D protein

8 The concentration of calcium in the ileum is often lower than that in the capillaries of the villi.

What occurs and what needs to be present for the calcium to be absorbed?

	active transport occurs	osmosis occurs	vitamin C present	vitamin D present
A	✓	✓	✓	
B		✓	✓	✓
C	✓	✓	✓	✓
D	✓			✓

key
✓ = occurs / present

9 The table shows the results of testing five foods.

Which food is milk?

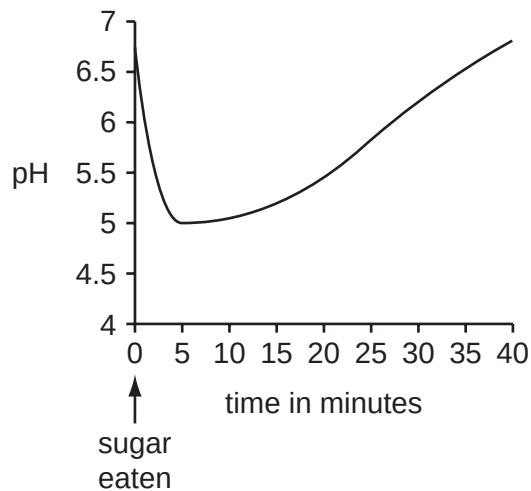
	iodine test	Benedict's test	biuret test
A	✓	x	✓
B	x	✓	x
C	✓	x	x
D	x	✓	✓

key
✓ = positive result
x = negative result

10 What is lost if green vegetables are cooked for too long a time?

- A calcium salts
- B iron
- C vitamin C
- D vitamin D

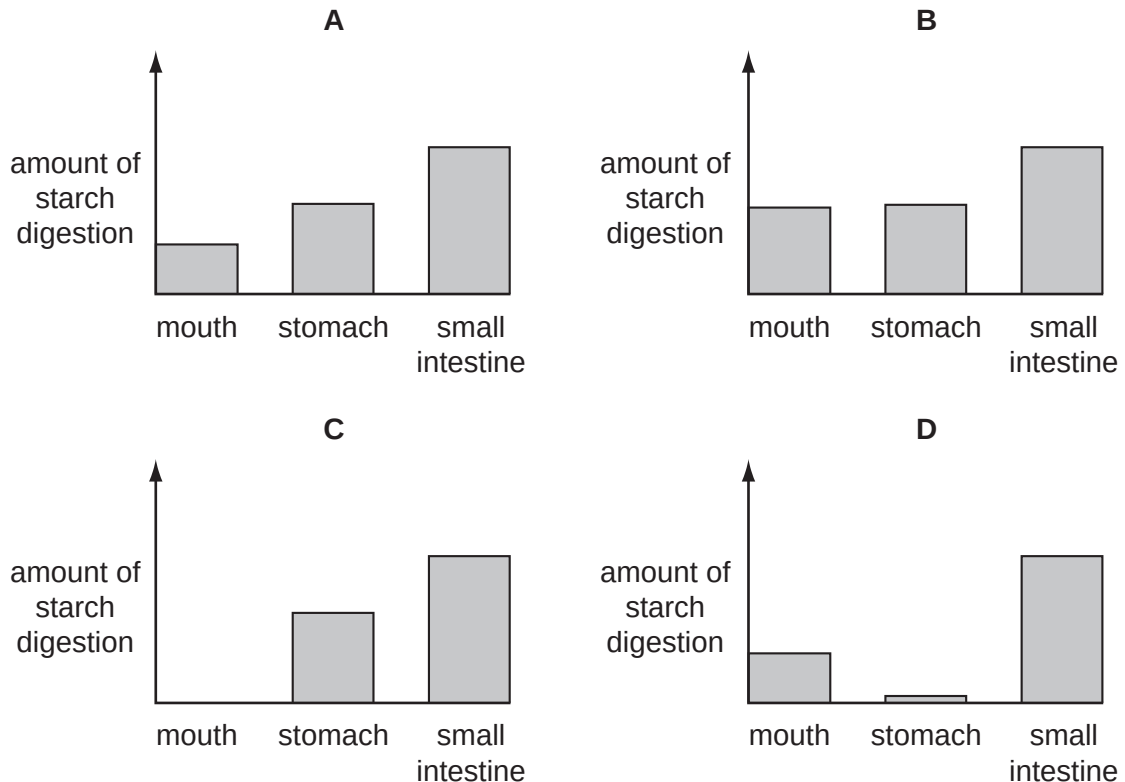
11 The graph shows the pH of plaque on the teeth after sugar was eaten.



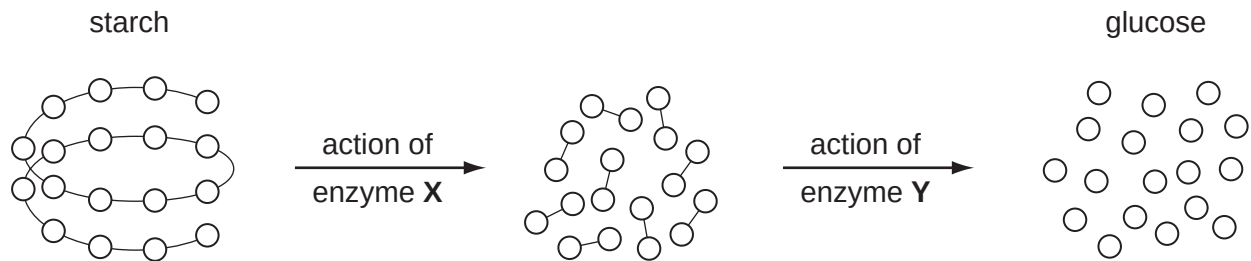
What is the likely explanation for this graph?

- A** Amylase in saliva digests the sugar between 0 and 5 minutes after eating it.
- B** Bacteria act on the sugar producing acid between 0 and 5 minutes after eating it.
- C** Bacteria rapidly multiply between 5 and 40 minutes after eating sugar.
- D** The concentration of acid increases from 5 minutes after eating the sugar.

12 Which bar chart shows the amount of starch digestion in the mouth, stomach and small intestine?



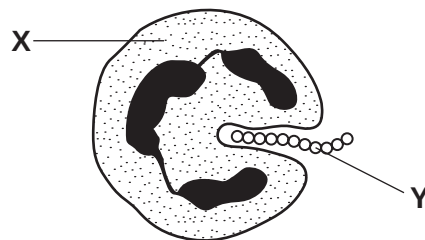
- 13** The diagram shows the stages in which a starch molecule is broken down to smaller molecules of glucose.



What are the correct names for **X** and **Y**?

	enzyme X	enzyme Y
A	salivary amylase	pancreatic amylase
B	salivary amylase	maltase
C	maltase	pancreatic amylase
D	lipase	maltase

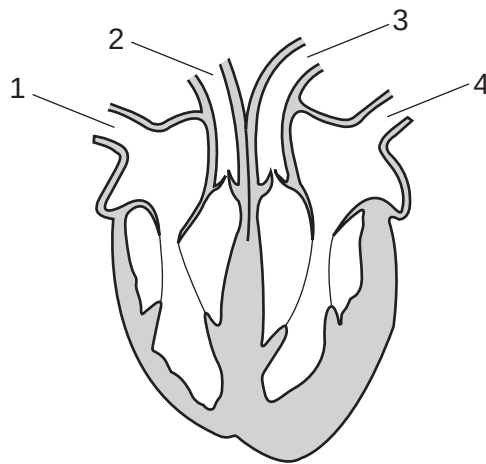
- 14** The diagram shows a blood cell **X**.



What type of blood cell is **X** and what is happening at **Y**?

	X	Y
A	a lymphocyte	bacteria being ingested
B	a lymphocyte	antibodies being ingested
C	a phagocyte	bacteria being ingested
D	a phagocyte	antibodies being ingested

15 The diagram shows a section of the heart from the front.



Which blood vessels carry oxygenated blood?

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

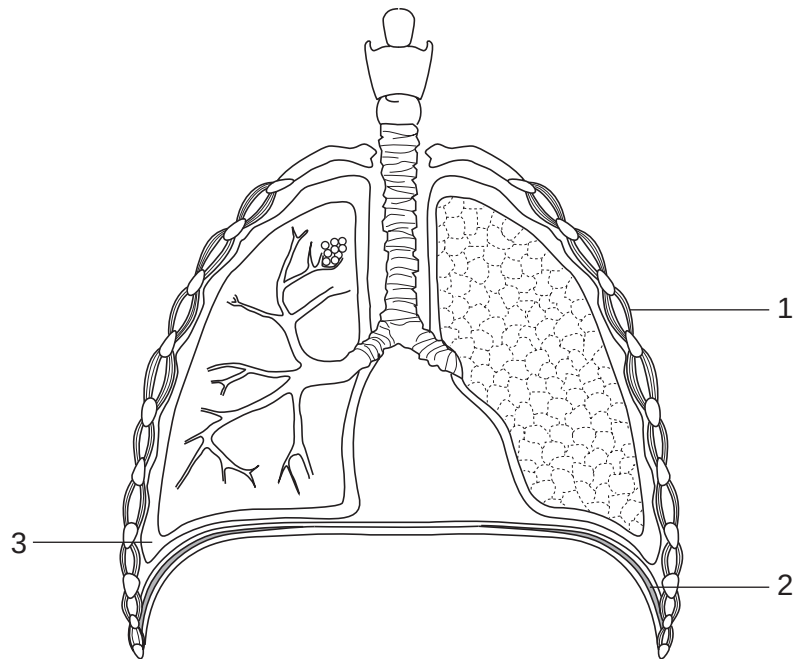
16 Which substances would you expect to find in larger quantities in lymph than in tissue fluid?

	fats	glucose	lymphocytes	oxygen
A		✓		✓
B		✓	✓	
C	✓		✓	
D	✓			✓

key

✓ = larger quantities in lymph

17 The diagram shows a section through the human thorax.



What occurs for air to enter the lungs?

	muscles at 1	muscles at 2	pressure at 3
A	contract	contract	decreased
B	contract	relax	decreased
C	relax	contract	increased
D	relax	relax	increased

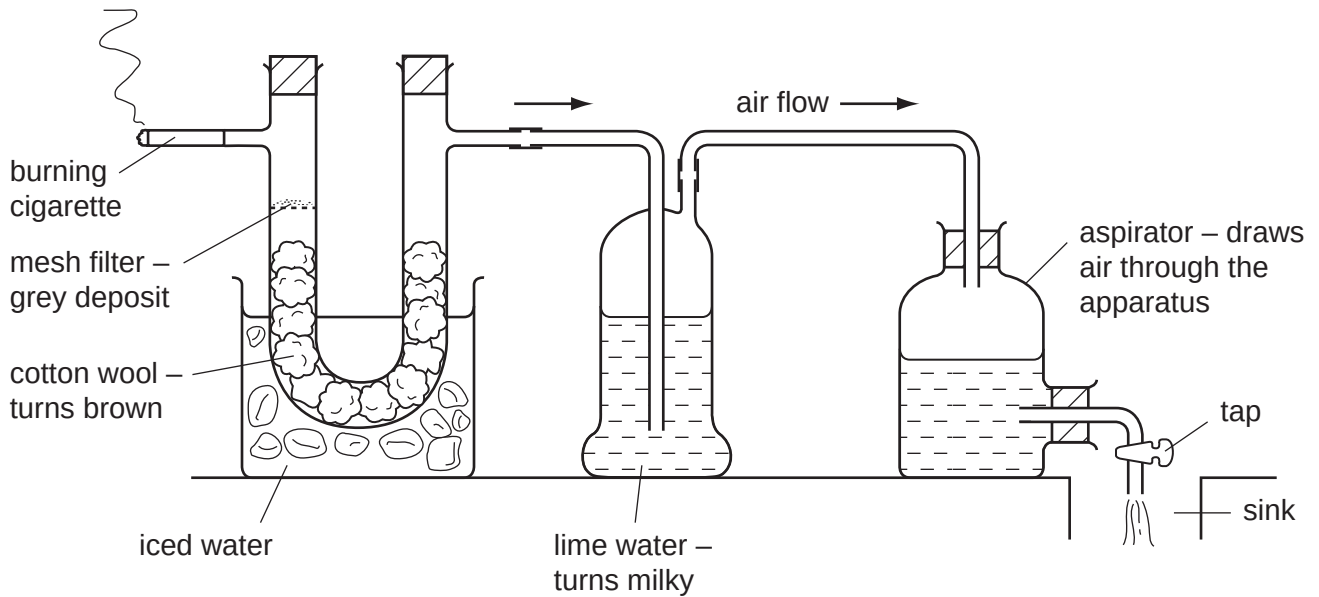
18 Mouth to mouth resuscitation is used to revive a person who has stopped breathing.

How much oxygen is present in the air blown into the person's lungs?

- A** 0.04 % **B** 4 % **C** 16 % **D** 20 %

19 The diagram shows the apparatus used to show some of the toxic materials in cigarette smoke.

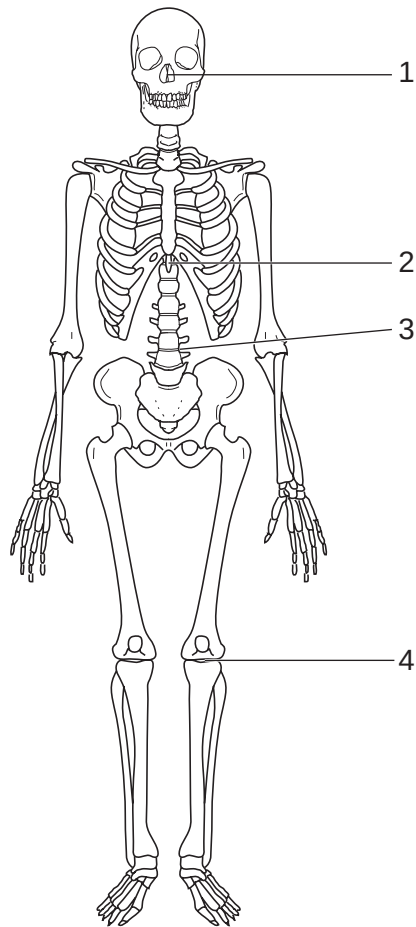
The labels indicate the results after five minutes.



Which materials that are in cigarette smoke did this apparatus detect?

	grey deposit on mesh filter	cotton wool turns brown	lime water turns milky
A	nitrates	tar	carbon monoxide, formed from carbon dioxide
B	nitrates	nicotine	carbon dioxide, formed from carbon monoxide
C	particles	tar	carbon dioxide, formed from carbon monoxide
D	particles	nicotine	carbon monoxide, formed from carbon dioxide

20 The diagram shows a human skeleton.

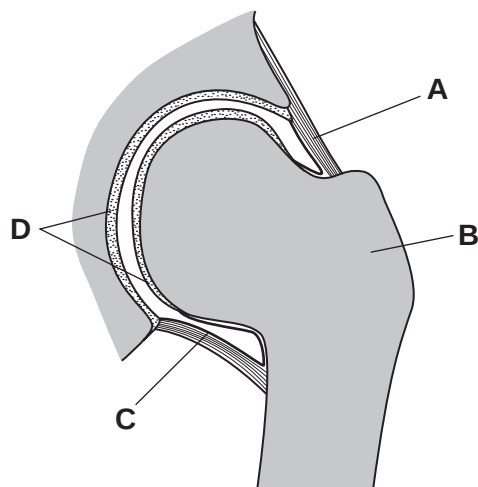


At which positions shown on the diagram does the cartilage provide cushioning for joints?

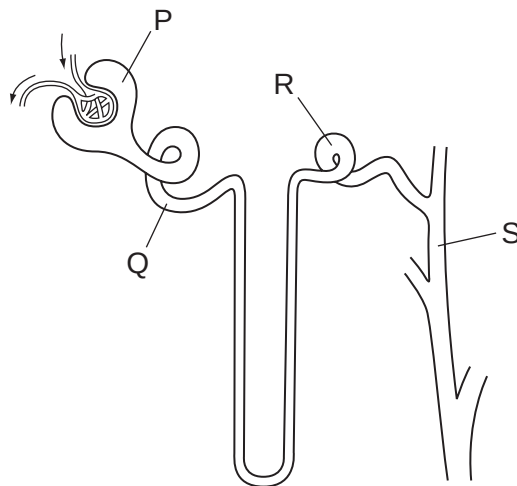
- A** 1 and 2 **B** 1 and 3 **C** 2 and 4 **D** 3 and 4

21 The diagram shows a section through a joint.

Which labelled part prevents dislocation of the joint?



22 The diagram shows a kidney tubule.

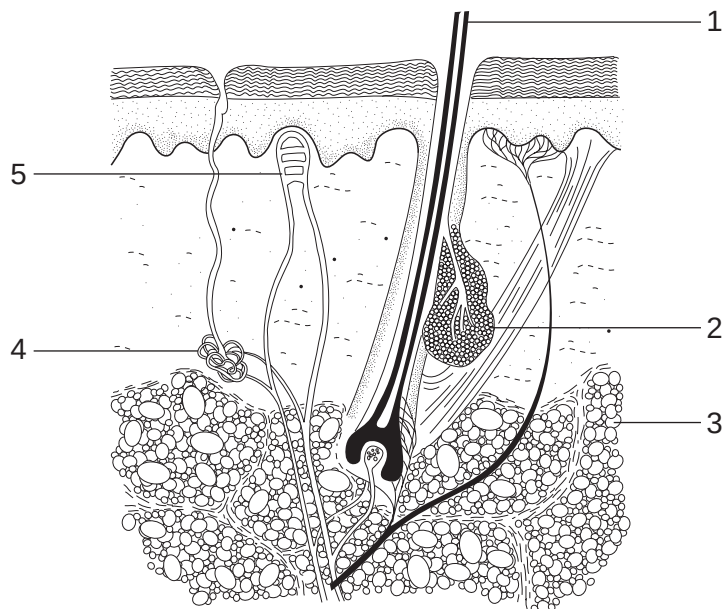


A person sweats a lot.

How does this affect the activity of the kidney tubule?

- A At P more water enters the tubule.
- B At Q less water enters the tubule.
- C At R less water enters the tubule.
- D At S more water leaves the tubule.

23 The diagram shows a section through human skin.



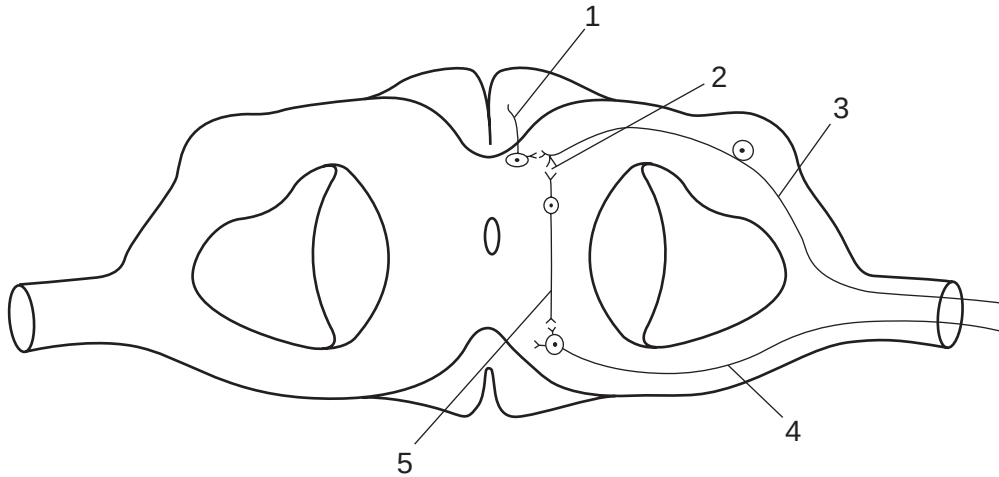
Which two structures help to increase heat loss from the body?

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

24 Which organ controls the concentration of sugar in the blood?

- A brain
- B kidney
- C pancreas
- D stomach

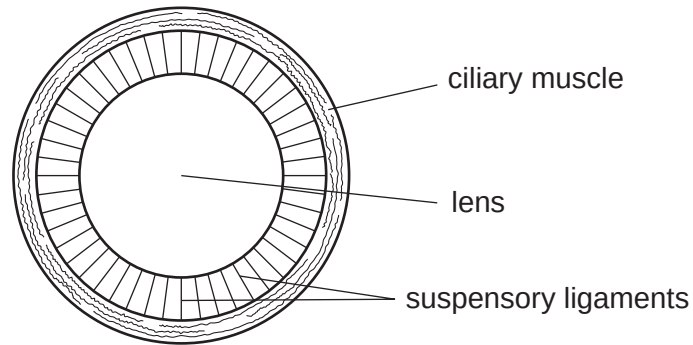
25 The diagram shows part of a spinal reflex arc.



What is the path of an impulse in a spinal reflex arc?

- A 1 → 2 → 3
- B 1 → 2 → 5 → 4
- C 3 → 2 → 5 → 4
- D 4 → 5 → 2 → 3

26 The diagram shows a section of part of the eye when looking at an object in the distance.



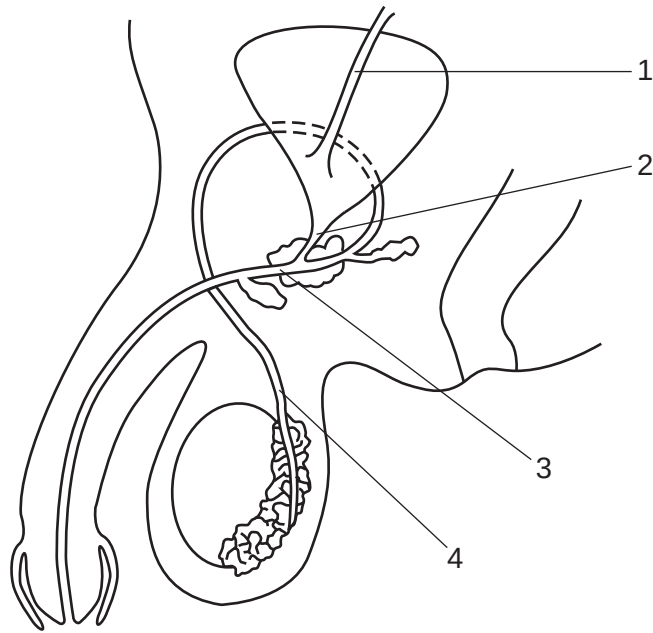
What happens when the eye is used to read a book?

	ciliary muscle	suspensory ligaments	pull on the lens	lens shape
A	contracts	loose	less	more convex
B	contracts	loose	more	more convex
C	relaxes	tight	more	less convex
D	relaxes	tight	less	less convex

27 The effect of heroin on a user is that

- A** their bones lose calcium, become brittle and break easily.
- B** increasing amounts are needed to obtain the same effect.
- C** their mental processes become quicker.
- D** they do not become dependent.

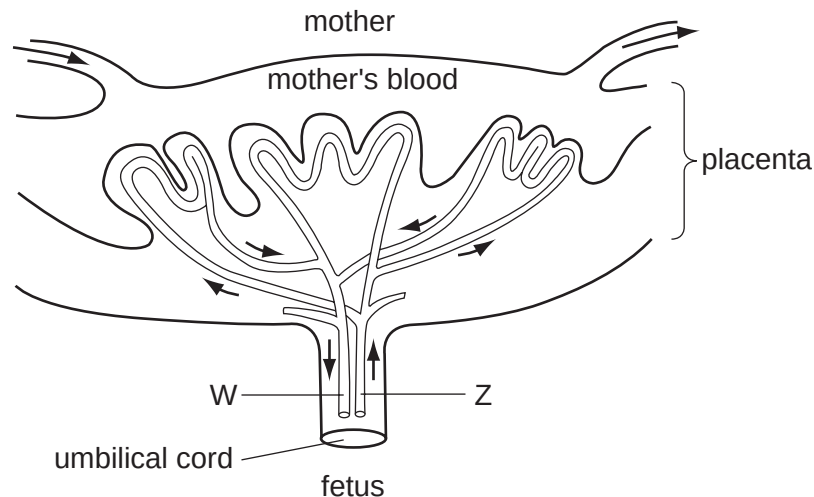
28 The diagram shows part of the male urinary and reproductive systems in side view.



What is transported in the tubes labelled 1, 2, 3 and 4?

	1	2	3	4
A	sperm only	sperm and urine	urine only	urine only
B	sperm and urine	urine only	sperm and urine	sperm only
C	urine only	sperm and urine	sperm only	urine only
D	urine only	urine only	sperm and urine	sperm only

29 The diagram shows the placenta and umbilical cord.



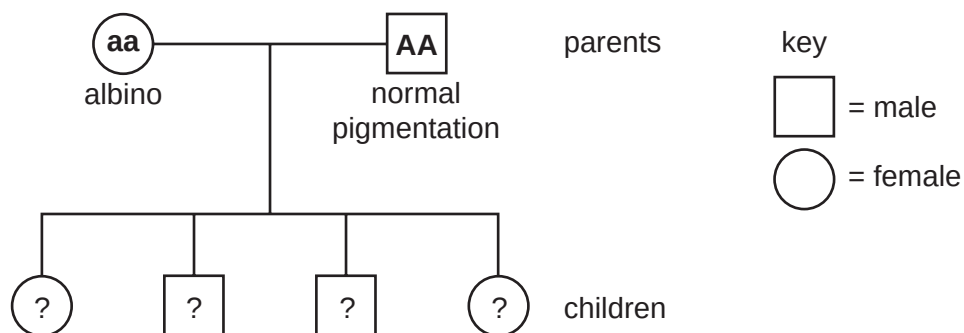
How does the blood in W differ from that in Z?

	blood in W contains	blood in Z contains
A	less amino acids	more amino acids
B	less glucose	more glucose
C	less oxygen	more oxygen
D	less urea	more urea

30 The albino condition, in which the body has no pigmentation, is controlled by a recessive allele, **a**.

The dominant allele, **A**, produces normal pigmentation.

The diagram shows the monohybrid inheritance of this condition in a family.



What will be the theoretical ratio of the pigmentation of the children?

- A** All will be albino.
- B** All will have normal pigmentation.
- C** Half will be albino and half will have normal pigmentation.
- D** They will be in the ratio of 1 albino to 3 with normal pigmentation.

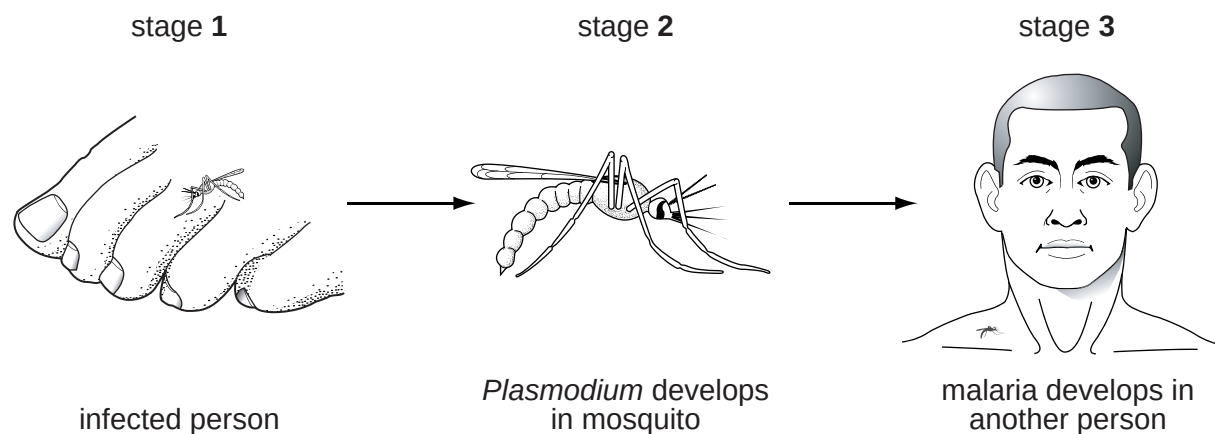
31 Which is a degenerative disorder?

- A** coronary heart disease
- B** rickets
- C** sickle cell anaemia
- D** typhoid

32 Which shows the pathogens that cause these named diseases?

	cholera	influenza	malaria	ringworm
A	bacterium	bacterium	protozoan	protozoan
B	fungus	virus	virus	fungus
C	bacterium	virus	protozoan	fungus
D	fungus	bacterium	virus	protozoan

33 The diagrams show some of the stages in the transfer of *Plasmodium*.



Which methods of control will help to reduce the spread of malaria at stages 1, 2 and 3?

	stage 1	stage 2	stage 3
A	insecticide spray	taking an anti-malarial drug	sleeping under a mosquito net
B	use of <i>Bacillus thuringiensis</i>	insecticide spray	taking an antibiotic
C	sleeping under a mosquito net	insecticide spray	taking an anti-malarial drug
D	oil on water	taking an antibiotic	insecticide spray

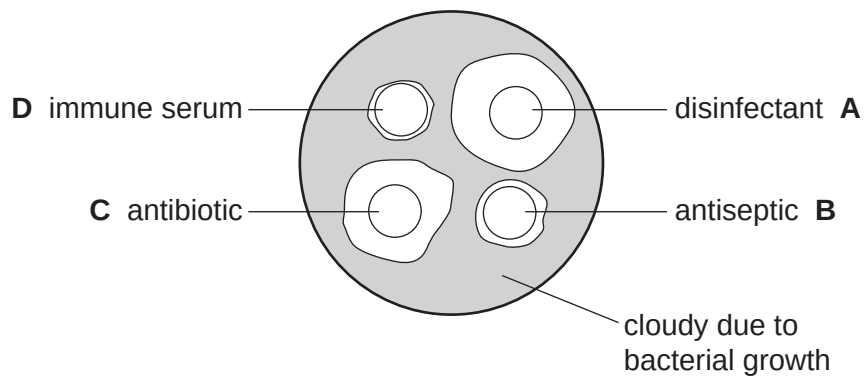
34 Which is a vector for typhoid?

- A** bacteria
- B** houseflies
- C** mosquitoes
- D** protozoa

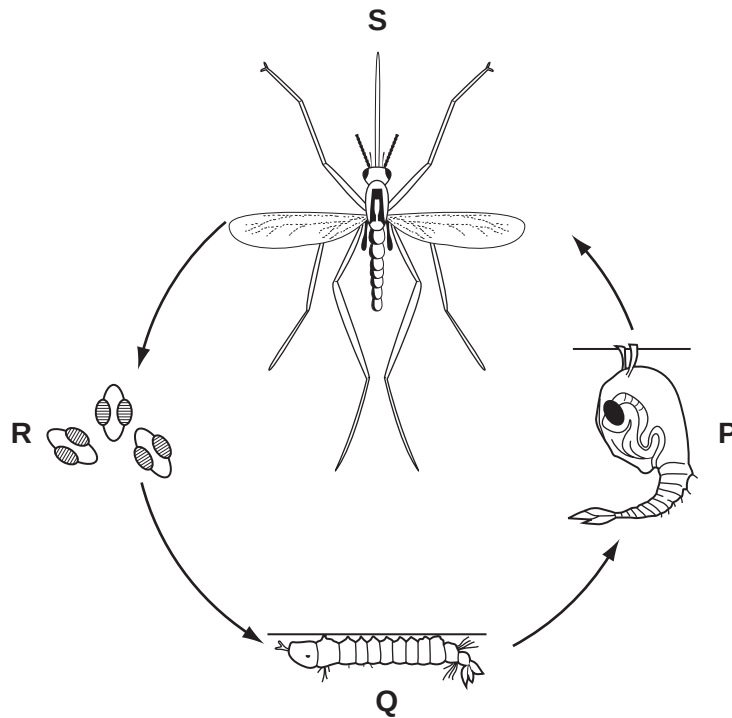
35 A swab from a hospital table was smeared on an agar plate which was then incubated. It became cloudy due to bacterial growth.

Drops of four substances were added to wells in the agar plate. A few days later, clear areas had developed around them as shown in the diagram.

Which substance would be best to destroy the bacteria on the hospital table?



36 The diagram shows four stages in the life cycle of the *Anopheles* mosquito.



What is the best method of controlling mosquitoes?

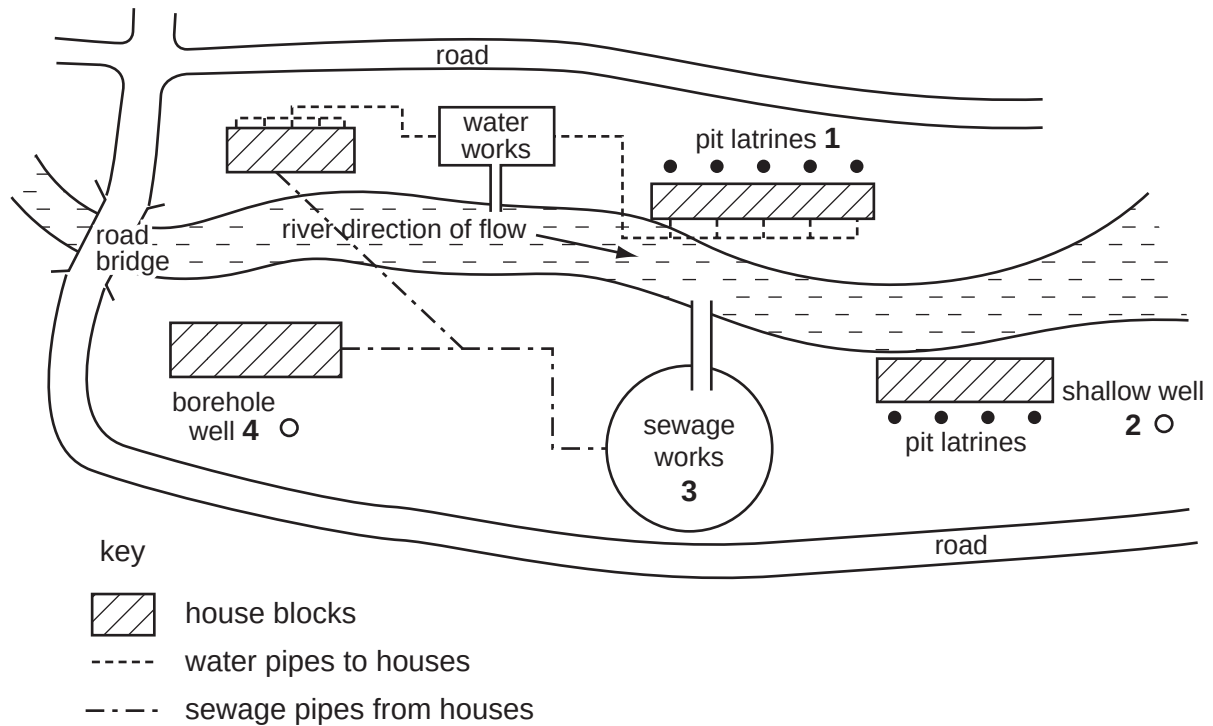
- A** Destroy food plants in the water to prevent stage **P** feeding.
- B** Introduce fish to feed on stage **Q**.
- C** Spray the breeding grounds with insecticide to kill stage **R**.
- D** Release sterile females to prevent stage **S** breeding.

37 A person is taken to hospital with a deep cut containing garden soil. The doctor gives him an injection to reduce the risk of developing tetanus.

What would the injection contain?

- A** cell membranes of dead bacteria with antigens
- B** dead or weakened tetanus bacteria
- C** tetanus antibodies obtained from an animal's blood
- D** tetanus toxins from a patient with the disease

38 The diagram shows a plan of a small town in which outbreaks of cholera keep occurring.



Which action is most likely to be **best** to prevent further outbreaks of cholera?

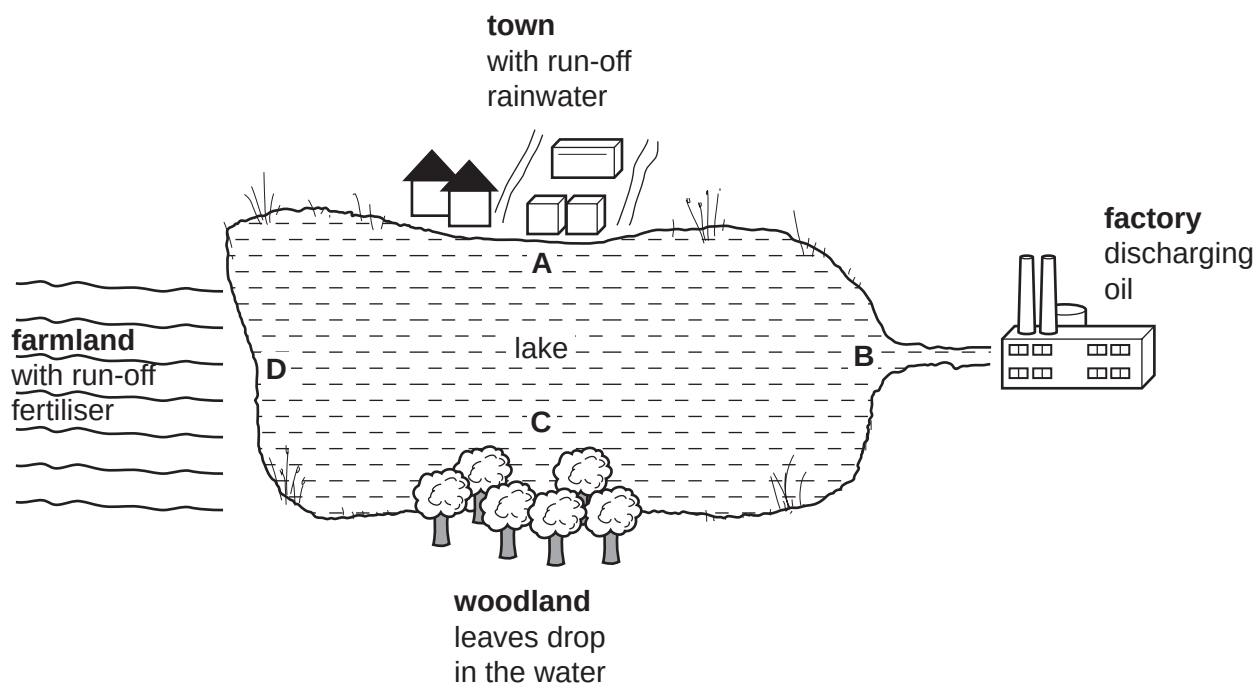
- A Close the pit latrines 1 and pipe sewage to the works.
- B Close the shallow well 2 and supply water from the works.
- C Divert the effluent from the sewage works 3 to further downstream.
- D Move the borehole well 4 away from the houses.

39 Why does covering a rubbish heap with a layer of dry soil help to reduce the numbers of houseflies?

- A The larvae are unable to breathe.
- B The soil prevents the rubbish from drying out.
- C The pupae cannot move through the soil.
- D The adults do not lay eggs on dry soil.

40 The diagram shows a lake with a town, a factory, woodland and farmland on its banks.

In which part of the lake would large numbers of water plants be most likely to grow?



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