UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY **5096/12**

Paper 1 Multiple Choice **May/June 2013**

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.
DO **NOT** WRITE IN ANY BAR CODES.

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 document consists of **15** printed pages and **1** blank page.

1 Which is correctly described?

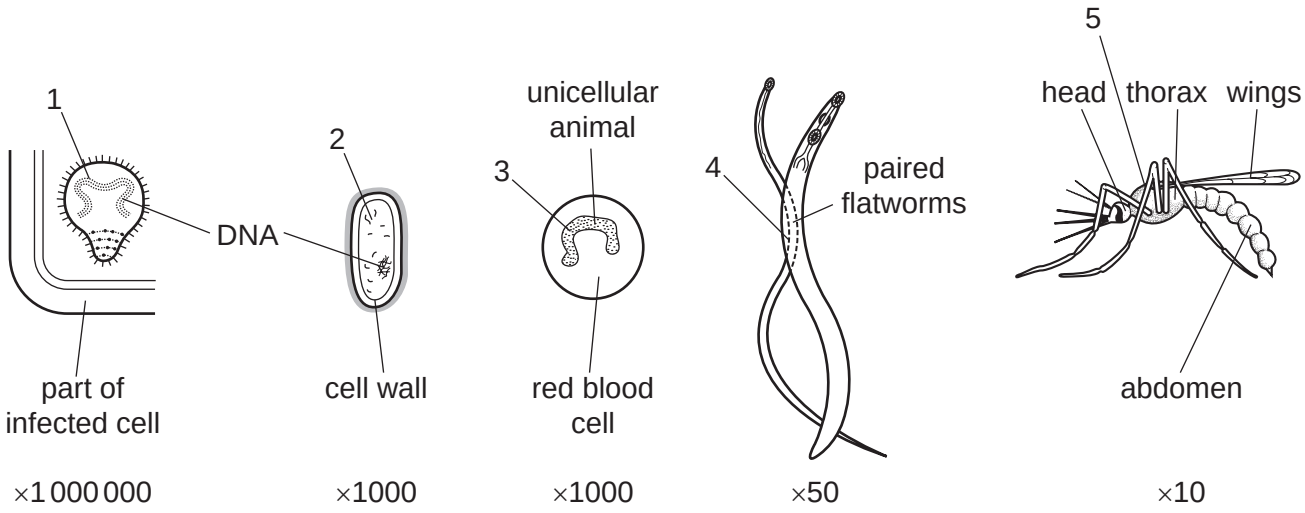
A A bacterium has a nucleus and no protein coat.

B A phagocyte has a cell membrane and no nucleus.

C A red blood cell has a nucleus and a cell membrane.

D A virus has a protein coat and no nucleus.

2 The diagrams show five types of organisms.



Which of these organisms **always** has to live inside a host for most of its life cycle?

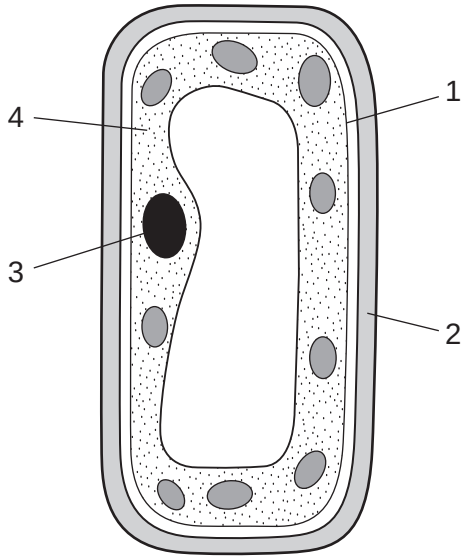
A 1 and 2 **B** 1, 3 and 4 **C** 2 and 3 **D** 3, 4 and 5

3 The table shows some features of different organisms.

Which organism is *Schistosoma*?

	multicellular	has two host organisms	reproduces asexually	reproduces sexually
A	yes	yes	yes	yes
B	yes	yes	no	yes
C	yes	no	yes	no
D	no	yes	yes	yes

4 The diagram shows a plant cell.

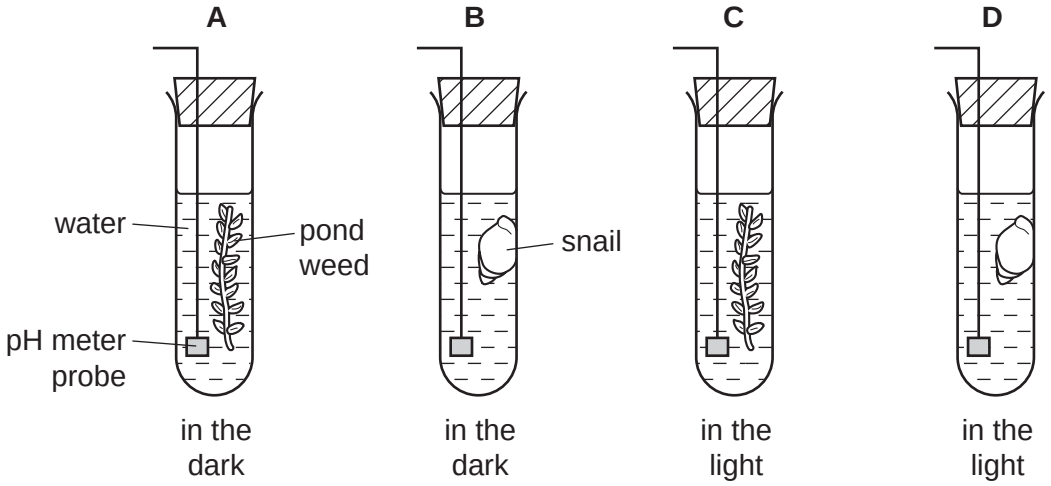


Which two parts of this cell are **not** present in a red blood cell?

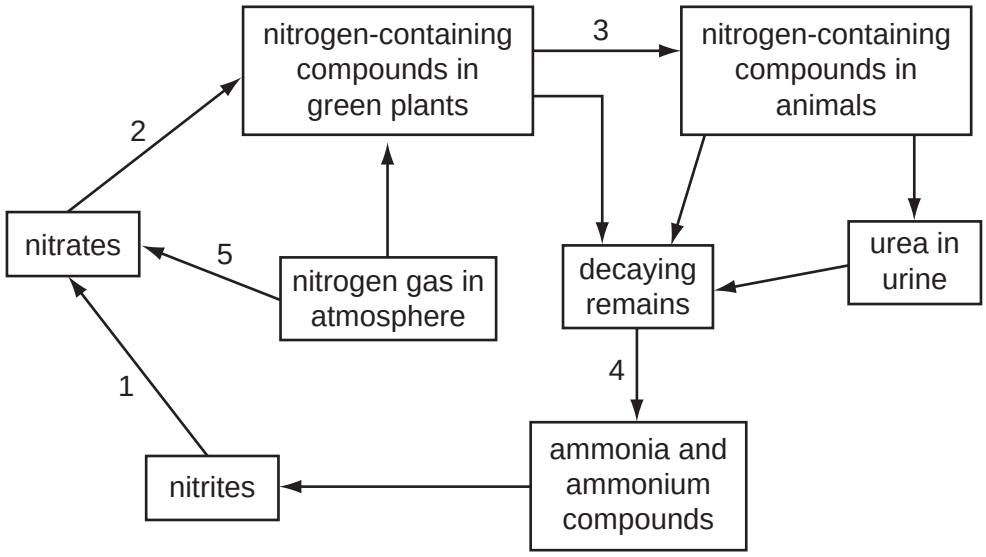
A 1 and 2 **B** 2 and 3 **C** 2 and 4 **D** 3 and 4

5 The diagram shows four test-tubes that were set up containing living organisms in water.

In which test-tube would the contents become more alkaline?



6 The diagram shows stages in the nitrogen cycle.



Which stages depend on the activity of bacteria?

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

7 A liquid food was tested, with the following results.

iodine solution test	Benedict's test
starch present	reducing sugar absent

Which colours would be shown by the solutions at the end of these tests?

	iodine solution	Benedict's solution
A	blue / black	blue
B	blue / black	red
C	yellow	blue
D	yellow	red

8 Which of the four diets in the table best shows the nutrient requirements for a breast-feeding mother?

	calcium / mg	iron / mg	protein / g	energy / kJ
A	250	15	70	30 500
B	600	27	45	8 000
C	800	6	20	5 500
D	1200	27	70	12 000

9 Which 100 g sample of food has the **least** carbohydrate content?

A bananas

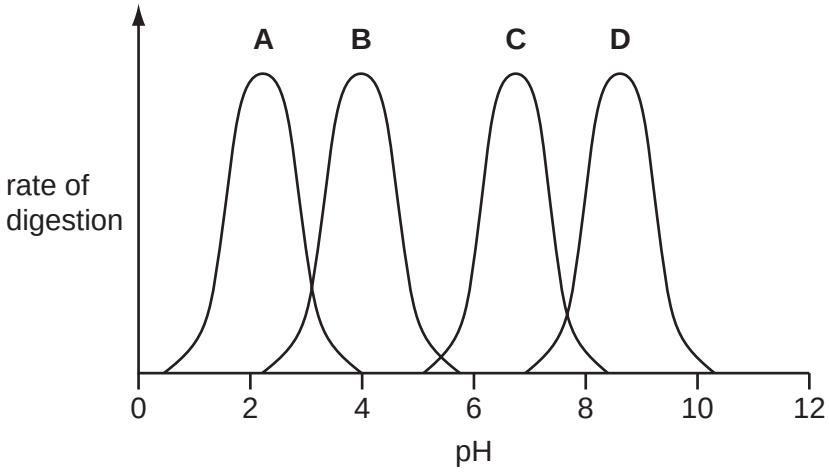
B beans

C beef

D rice

10 The diagram shows four graphs of the rate of reaction of enzymes over a range of pH.

Which graph represents the rate of reaction for both lipase and a protease in the human digestive system?



11 Where does the emulsification of fats by bile occur?

A colon

B duodenum

C liver

D pancreas

12 Which part of the alimentary canal receives enzymes that digest starch?

A mouth, stomach and duodenum

B mouth and duodenum only

C mouth and stomach only

D mouth only

13 During a heart beat, the bicuspid (mitral) valve prevents the backflow of blood from the

A aorta to the left ventricle.

B left atrium to the left ventricle.

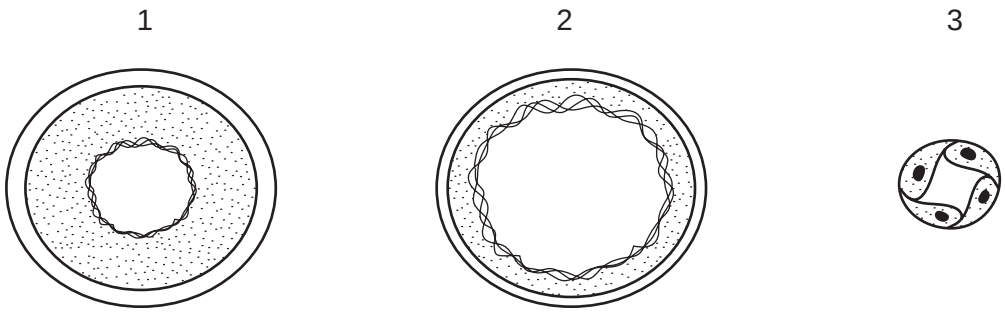
C left ventricle to the left atrium.

D right ventricle to the right atrium.

14 What is prevented when a blood clot forms a scab over a fresh cut on the skin?

	excessive loss of blood	further damage to cells under the cut	pathogens from entering the wound	spread of diseases such as ringworm
A	yes	yes	yes	no
B	yes	yes	no	yes
C	yes	no	yes	yes
D	no	yes	yes	yes

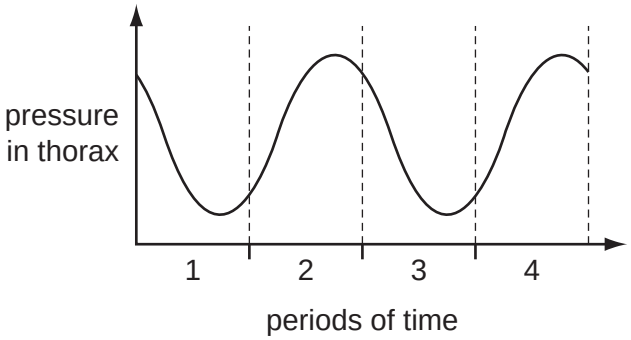
15 The diagram shows three types of blood vessels.



Which of the following describes features of each vessel?

	fluid can pass through wall	fluid is under high pressure	has least resistance to flow of fluid
A	1	2	3
B	2	1	3
C	3	1	2
D	3	2	1

16 The graph shows pressure changes in a person's thorax during a short period of time.

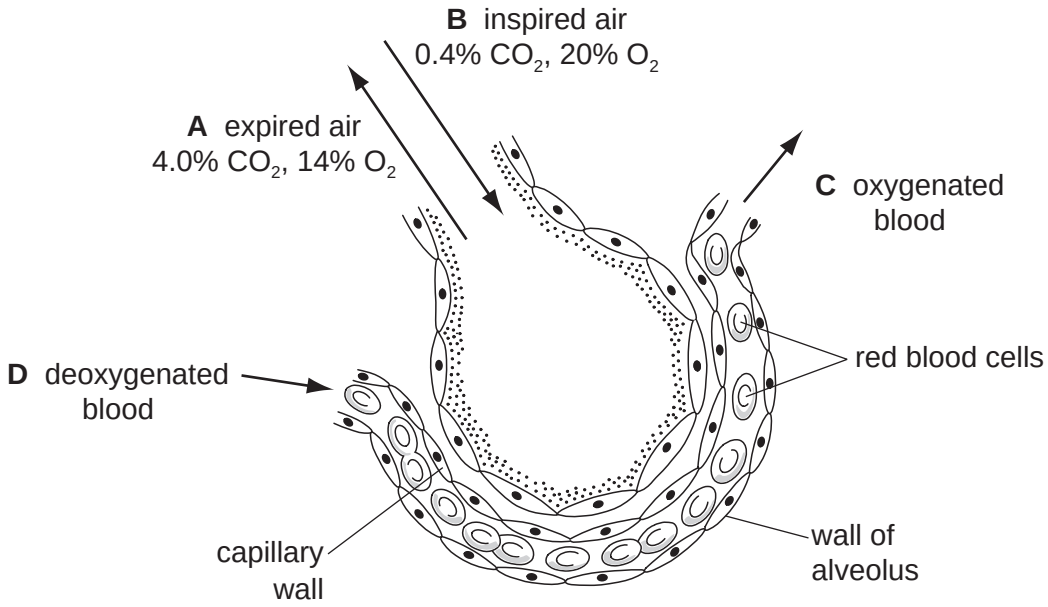


During which periods of time is the person breathing in?

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

17 The diagram shows one alveolus and one blood capillary.

Which label shows the condition that has affected the rate of breathing?



18 Which defines vital capacity?

A The maximum volume of air that can be expired after the maximum volume of air has been inspired.

B The maximum volume of air that can be expired in one breath.

C The total volume of air contained in the thorax, including the lungs, trachea, bronchi and bronchioles.

D The total volume of air in that always remains in the lungs after breathing out as much as possible.

19 Which statement about the function of ligaments and tendons is correct?

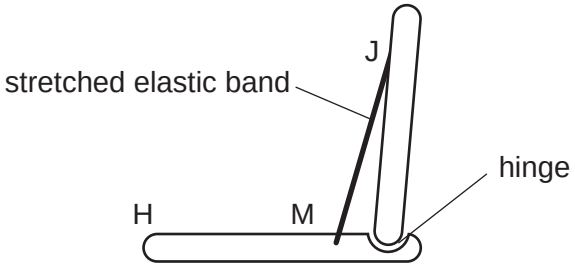
A Ligaments join two bones together, tendons join muscles to bones.

B Ligaments join two bones together, tendons join two muscles together.

C Ligaments join two muscles together, tendons join muscles to bones.

D Ligaments join two muscles together, tendons join two bones together.

20 The diagram shows a model of a muscle and bones at a joint.



The elastic band attached at J and M represents a muscle.

When the elastic band shortens, what is the distance moved and the speed of movement at both M and at H?

	movement at M		movement at H	
	distance	speed	distance	speed
A	large and fast		large and fast	
B	large and fast		small and slow	
C	small and slow		large and fast	
D	small and slow		small and slow	

21 Which three substances are normally present in the filtrate in the kidney tubule?

A glucose, mineral salts, urea

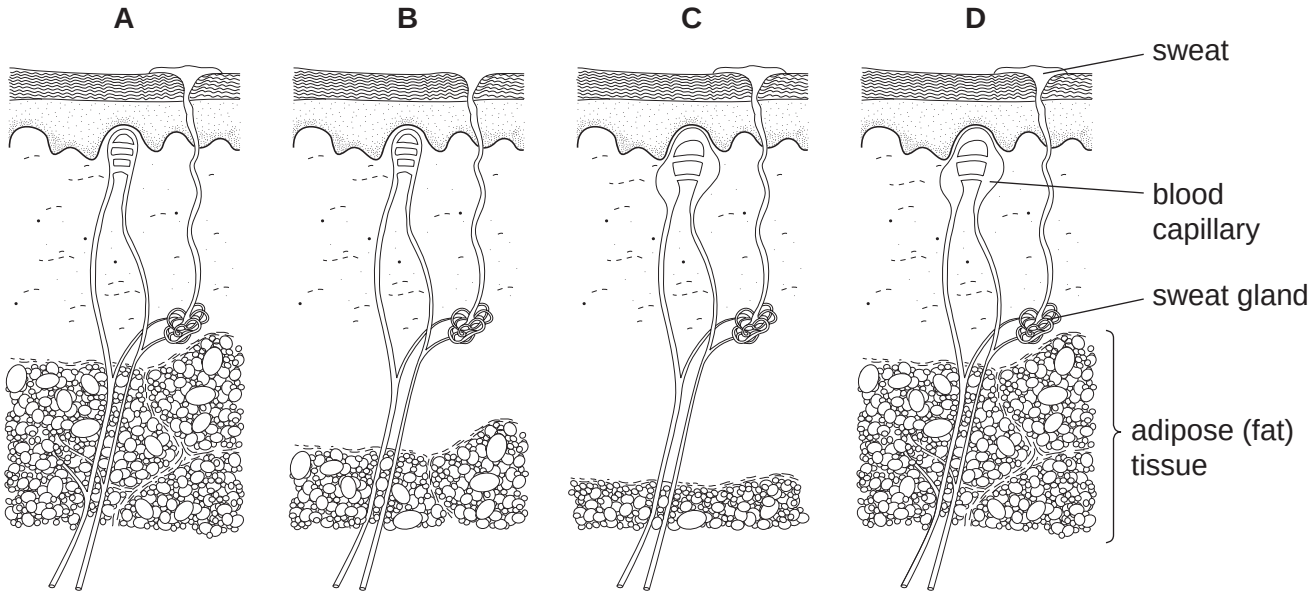
B glucose, protein, water

C mineral salts, protein, urea

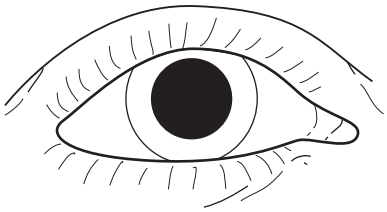
D protein, urea, water

22 The diagrams show four sections of the skin with some features adapted to different temperatures.

Which diagram shows a section of skin best adapted to lose heat?



23 The diagram shows the front view of the eye of a person reading this examination paper in a room.

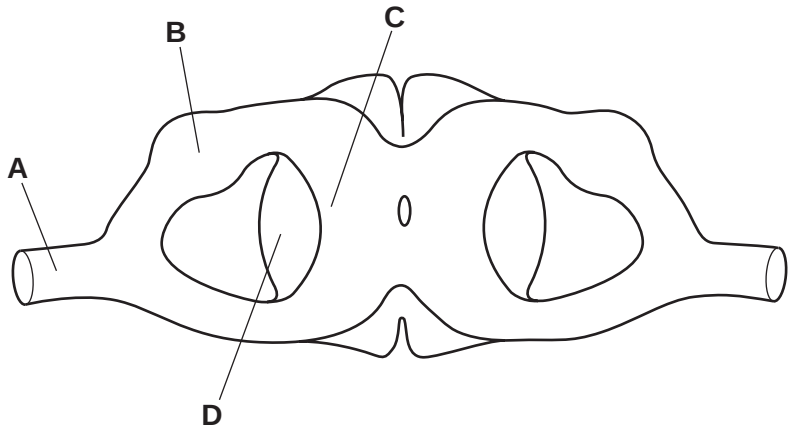


What is the level of light intensity in the room and which cells will be mainly stimulated?

	level of light intensity in the room	sensory cells mainly stimulated
A	high	cones
B	high	rods
C	low	cones
D	low	rods

24 The diagram shows a section through the spinal cord.

Where are both sensory and motor neurones found?



25 Which shows the functions of both oestrogen and progesterone?

	oestrogen	progesterone
A	causes repair of uterus lining after menstruation	prevents release of eggs during pregnancy
B	maintains uterus lining	helps stimulate release of eggs from ovary
C	promotes menstruation	prevents menstruation
D	prevents release of eggs during pregnancy	promotes menstruation

26 Which two structures are connected by the oviduct?

A ovary and ovum

B ovary and uterus

C ovum and cervix

D ovum and vagina

27 What is the best definition of mitosis?

A division of a cell to produce either four sperms or one ovum

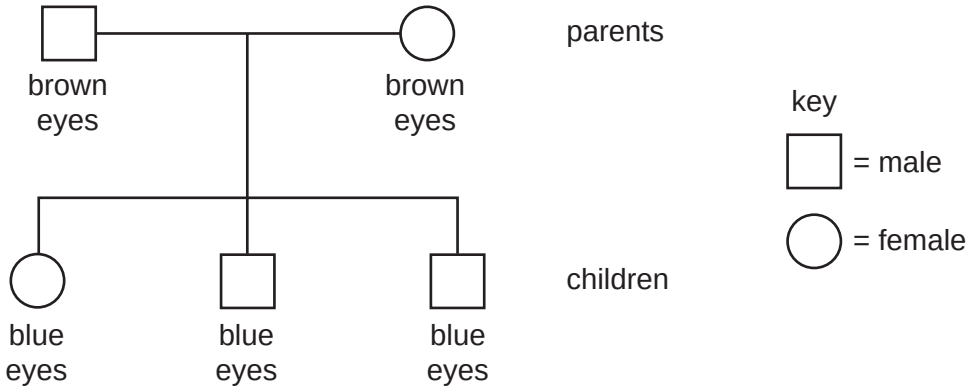
B division of a cell to produce two cells, each with half the original genetic information

C division of a nucleus to produce two nuclei, each with the same number of chromosomes

D the process by which larger numbers of identical cells are produced in the body

28 An example of monohybrid inheritance is a certain blue or brown eye colour.

The diagram shows the inheritance of this eye colour in a family.



What conclusions can be made from this diagram?

A Blue eyes is controlled by a dominant allele.

B Both parents have dominant alleles for blue eyes.

C Both parents have dominant and recessive alleles.

D Brown eyes is controlled by a recessive allele.

29 Which is **not** a method used to limit the spread of influenza?

A avoiding overcrowded and badly ventilated places

B taking antibiotics as a precautionary measure

C using face masks to stop droplet spread

D vaccinating people against that strain of virus

30 What type of organism causes AIDS?

A bacterium

B fungus

C protozoan

D virus

31 How are carriers of typhoid best identified?

A Examine their skin for signs of a rash.

B Examine their urine for the presence of bacteria.

C Take their core temperature to see if they have a fever.

D Test their faeces for the presence of bacteria.

32 The table shows the occurrence of different diseases among children in four schools.

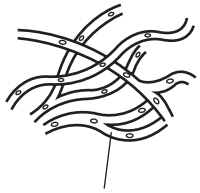
In which school was BCG vaccination successful?

disease	number of cases of disease recorded in children			
	school **A**	school **B**	school **C**	school **D**
cholera	4	3	0	5
ringworm	1	3	0	15
sickle cell anaemia	8	1	3	0
tuberculosis	9	0	3	5

33 Which diagram shows the type of organism that is commonly killed by an antibiotic?

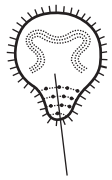
A

×50



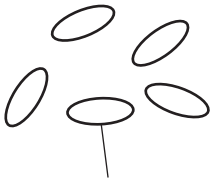
B

×10 000



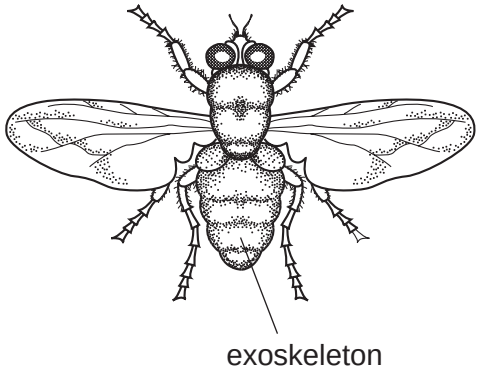
C

×500



D

×2



34 Which methods can be used to help reduce the spread of malaria?

1 introduction of fish into stagnant water

2 feeding larvae with certain parasitic bacteria

3 prevention of access to faeces

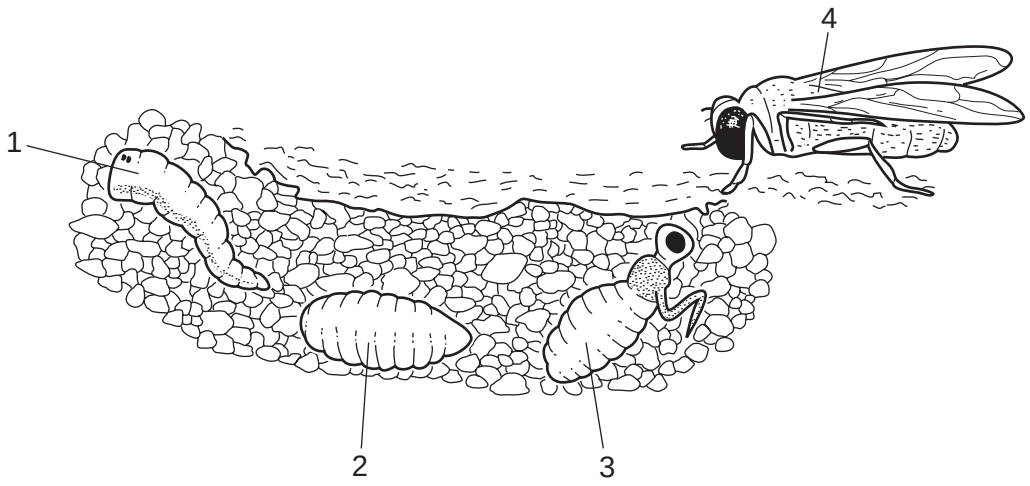
A 1, 2 and 3

B 1 and 2 only

C 2 and 3 only

D 2 only

35 The diagram shows some of the stages in the life cycle of the housefly.



What would be an effective method of controlling the spread of disease by houseflies?

A keeping stage 1 away from water snails

B spraying stage 2 with an insecticide

C sleeping under nets to avoid stage 4

D preventing stage 4 from feeding

36 How should a person with a tetanus infection be treated?

A injected with a serum to provide active immunity

B injected with a serum to provide passive immunity

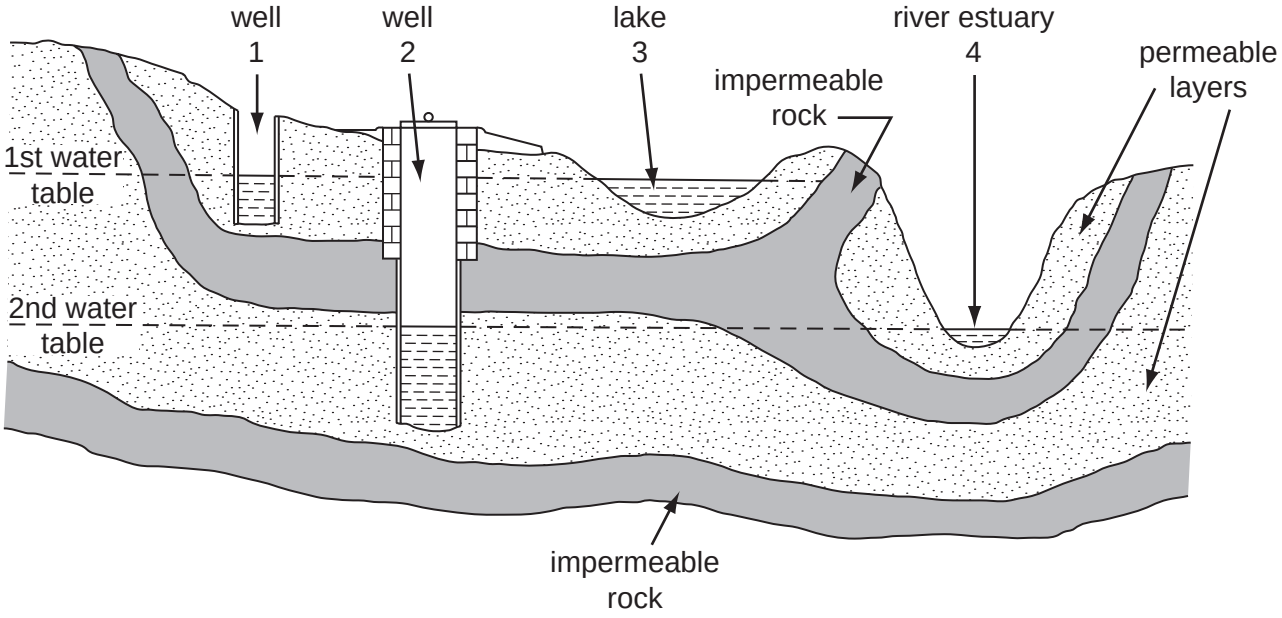
C injected with a vaccine to provide active immunity

D injected with a vaccine to provide passive immunity

37 What is the correct sequence for the treatment of sewage?

	1	2	3	4
A	aeration	in sewers	screening	sedimentation
B	sedimentation	in sewers	screening	aeration
C	in sewers	aeration	sedimentation	screening
D	in sewers	screening	sedimentation	aeration

38 The diagram shows four sources of water in the environment.



Which shows the order from safest to least safe water to drink?

	safest to drink → least safe to drink			
A	1	2	3	4
B	2	1	3	4
C	2	3	4	1
D	4	3	2	1

39 What is the main reason for covering a water storage tank after chlorine has been added?

A to keep the water at a low temperature

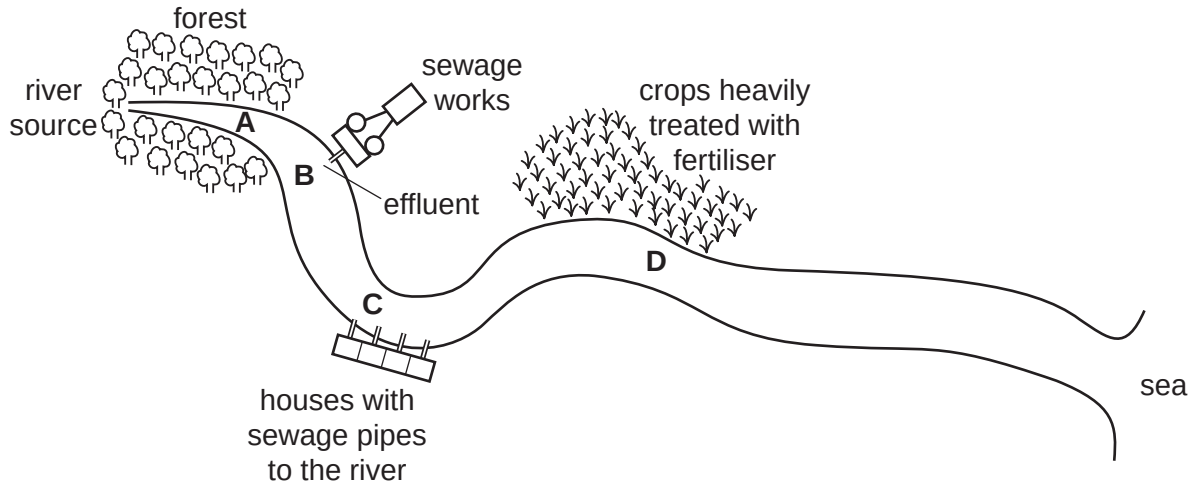
B to prevent organisms from reaching the water

C to reduce the loss of chlorine

D to stop the water from evaporating

40 The map shows a river from its source to the sea.

At which point in the river will the greatest growth of water weed occur?



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