



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

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HUMAN AND SOCIAL BIOLOGY

5096/13

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)

* 3 6 3 5 3 7 9 4 5 0 *

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.

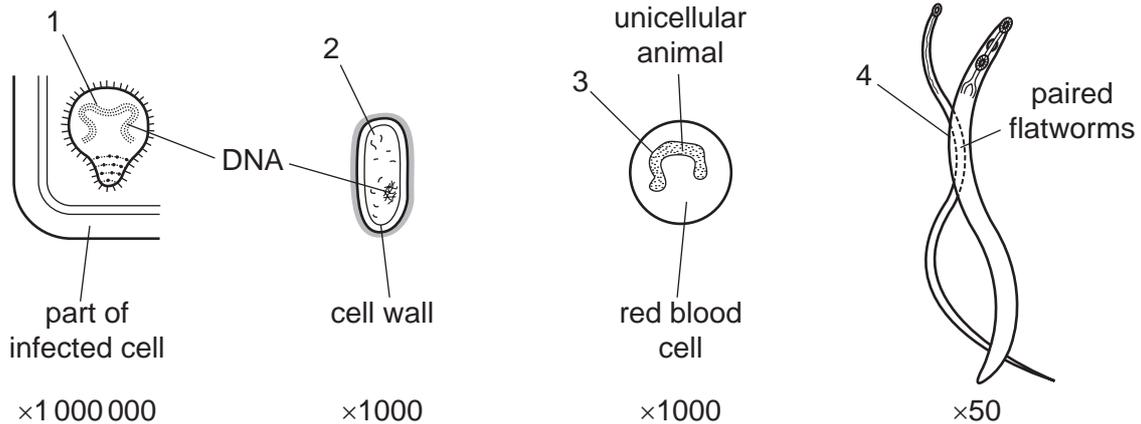
This document consists of **18** printed pages and **2** blank pages.



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 four types of organisms.



In which of these organisms will a nuclear membrane be absent?

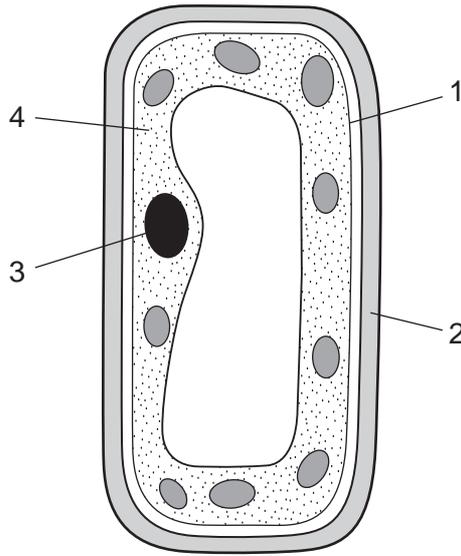
- A 1, 2 and 3
- B 1 and 2 only
- C 2 and 3 only
- D 3 and 4 only

3 What are the features of *Plasmodium*?

	unicellular	non-cellular	possess a cell wall	possess a nucleus	can divide by mitosis
A	no	no	yes	yes	yes
B	no	yes	no	no	no
C	yes	no	no	yes	yes
D	yes	no	yes	no	no

3

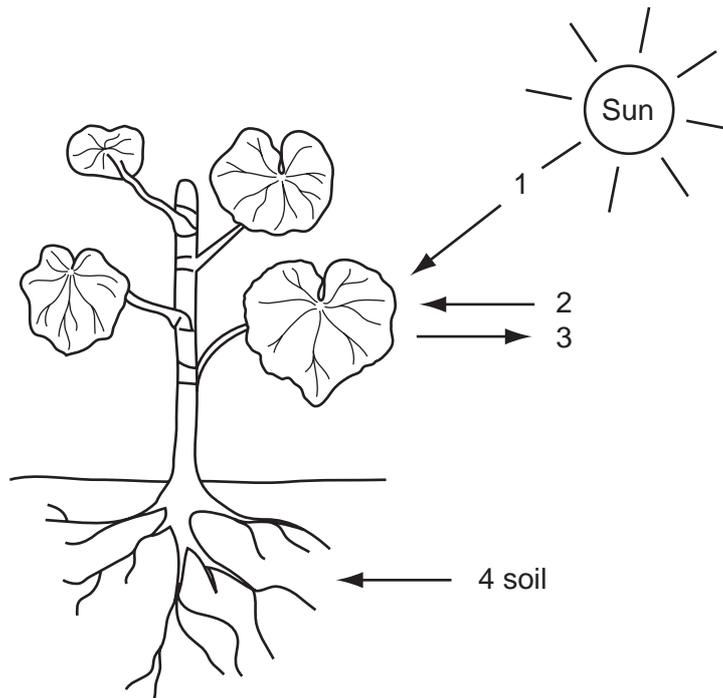
4 The diagram shows a plant cell.



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

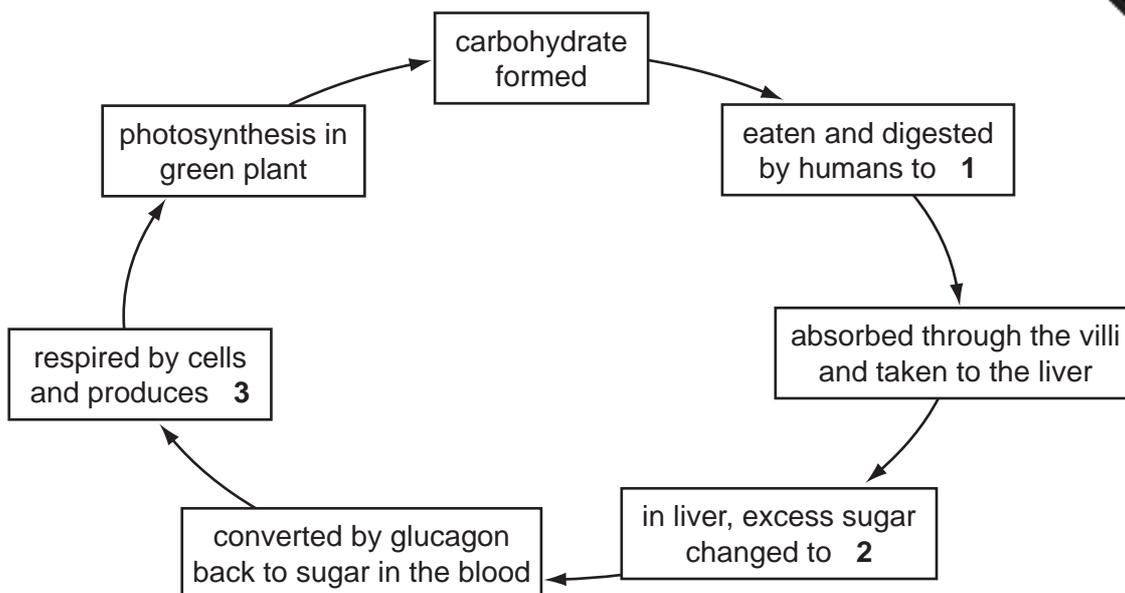
- 5 The arrows on the diagram show how energy and substances enter or leave a plant during photosynthesis.



What do the arrows represent?

	1	2	3	4
A	heat	oxygen	water	energy
B	heat	water	oxygen	energy
C	light	carbon dioxide	oxygen	water
D	light	oxygen	carbon dioxide	water

- 6 Which words are required to replace the numbers in the boxes in this carbon cycle?



	carbon dioxide	glucose	glycogen
A	1	3	2
B	2	1	3
C	3	1	2
D	3	2	1

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

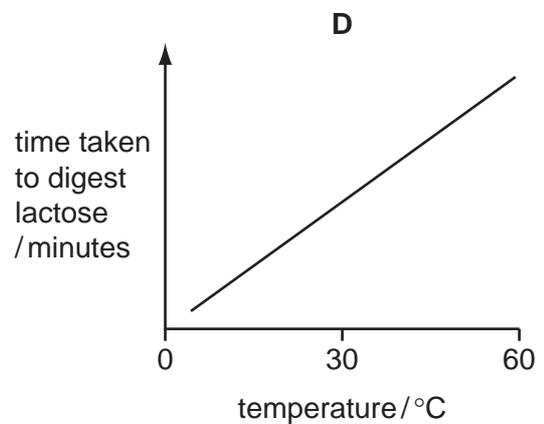
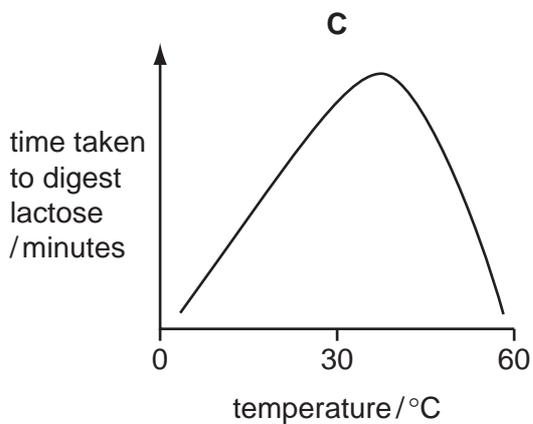
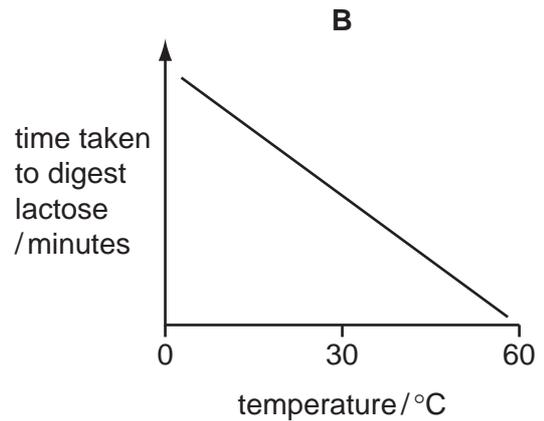
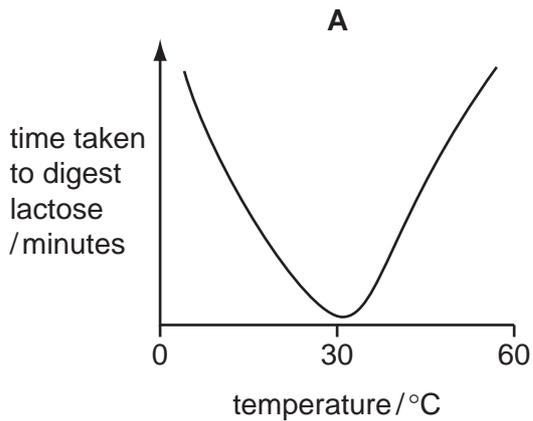
iodine solution test	Benedict's test
starch present	reducing sugar absent

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

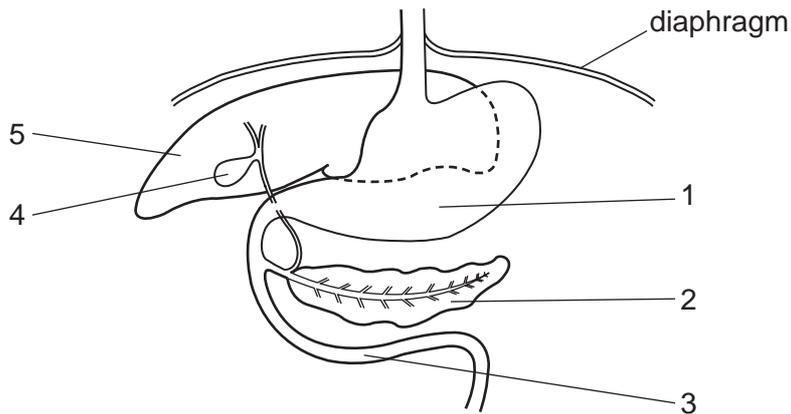
	iodine solution	Benedict's solution
A	blue/black	blue
B	blue/black	red
C	yellow	blue
D	yellow	red

- 8 What is the value of fibre in the diet?
- A It contains enzymes to digest cellulose.
 - B It helps absorb fats into the blood.
 - C It helps the muscles during peristalsis.
 - D It reabsorbs water from the urine.
- 9 Which 100g sample of food has the **least** carbohydrate content?
- A bananas
 - B beans
 - C beef
 - D rice

- 10 A student investigated the effect of temperature on an enzyme that digests lactose.
- Which graph shows the results of the investigation?



11 The diagram shows part of the digestive system.



Which organs produce enzymes that digest proteins?

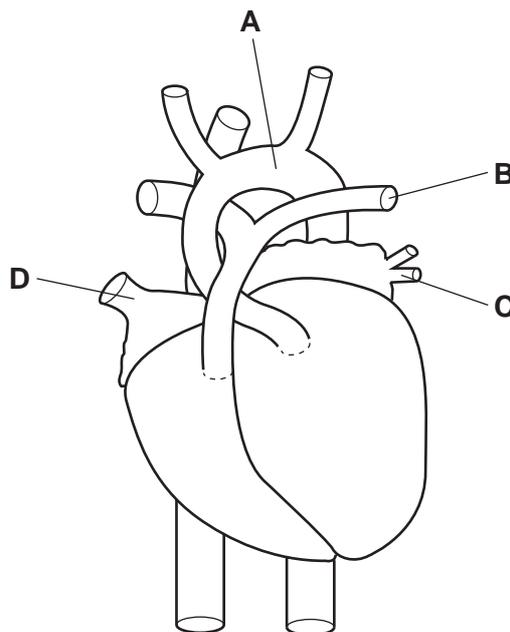
- A** 1, 2 and 3 **B** 2, 3 and 4 **C** 2, 4 and 5 **D** 3, 4 and 5

12 Which substances diffuse from the ileum into the lacteals of the villi?

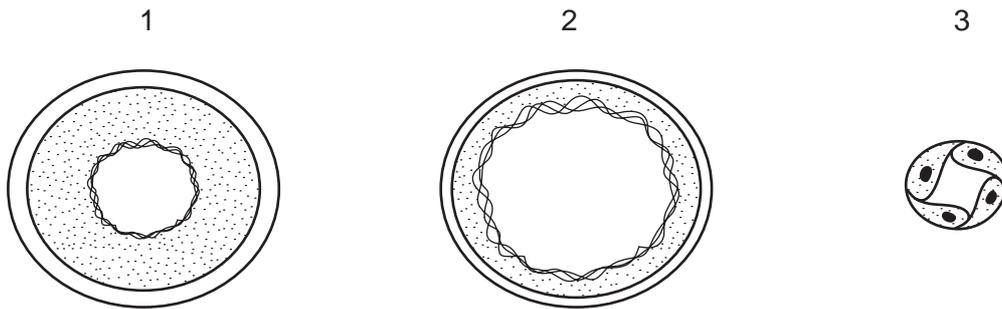
- A** amino acids and glucose
B amino acids and glycerol
C fatty acids and glycerol
D glycogen and starch

13 The diagram shows the main blood vessels associated with the heart.

Which vessel carries blood to the lungs?



14 The diagram shows three types of blood vessels.

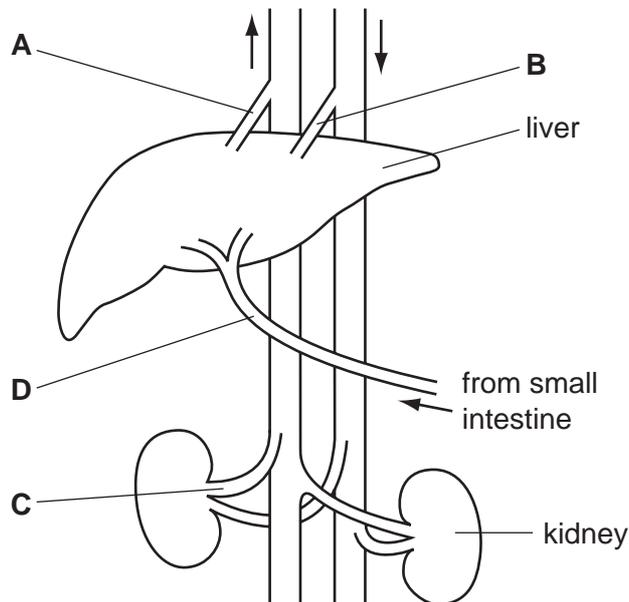


Which of the following describes features of each vessel?

	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

15 The diagram shows the blood supply to various organs.

Which blood vessel carries blood with the highest concentration of urea?

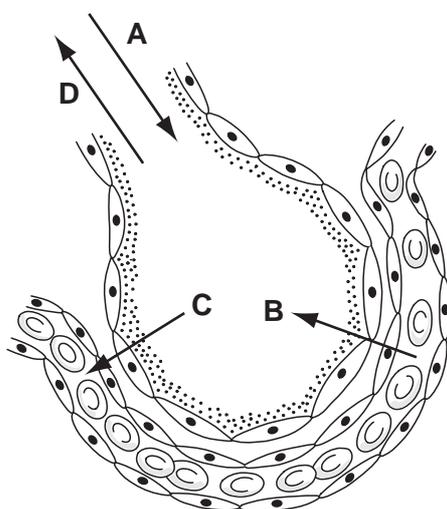


16 Which sequence of events occurs when a person breathes in?

A	contraction of external intercostal muscles	decrease in volume of lungs	initial increase in pressure in lungs
B	contraction of external intercostal muscles	increase in volume of lungs	initial decrease in pressure in lungs
C	contraction of internal intercostal muscles	decrease in volume of lungs	initial increase in pressure in lungs
D	contraction of internal intercostal muscles	increase in volume of lungs	initial decrease in pressure in lungs

17 The diagram shows an alveolus and associated blood capillary.

Which arrow shows the main direction for the diffusion of carbon dioxide?



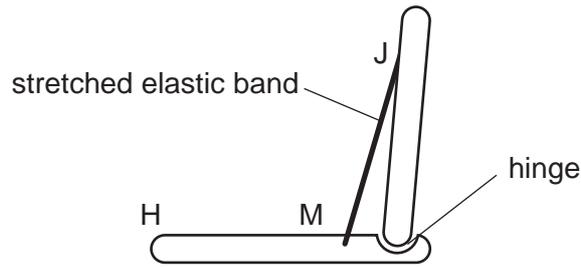
18 Which process does **not** use energy?

- A** cell division
- B** circulating the blood
- C** maintaining body temperature
- D** osmosis in cells

19 Which statement about tendons is correct?

- A** They are elastic and join bones to bones.
- B** They are elastic and join bones to muscles.
- C** They are inelastic and join bones to bones.
- D** They are inelastic and join bones to muscles.

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.

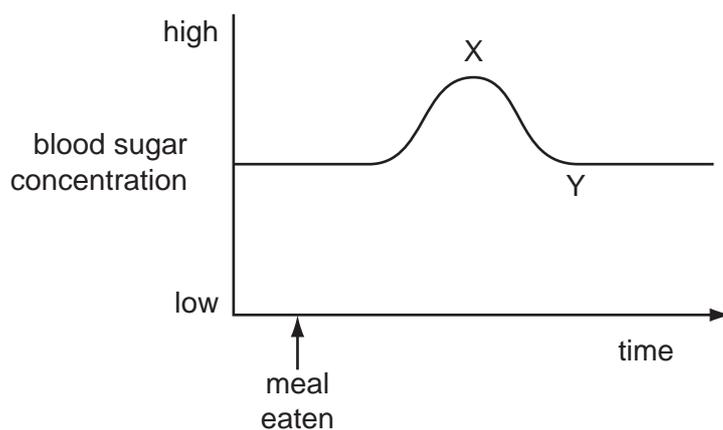
When the elastic band shortens, what is the distance moved and the speed of movement at both M and at H?

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

21 Which process is an example of homeostasis in the kidney?

- A** breaking down excess amino acids to form urea
- B** filtering plasma proteins from the blood
- C** preventing red blood cells leaving the blood
- D** reabsorbing sodium ions into the blood

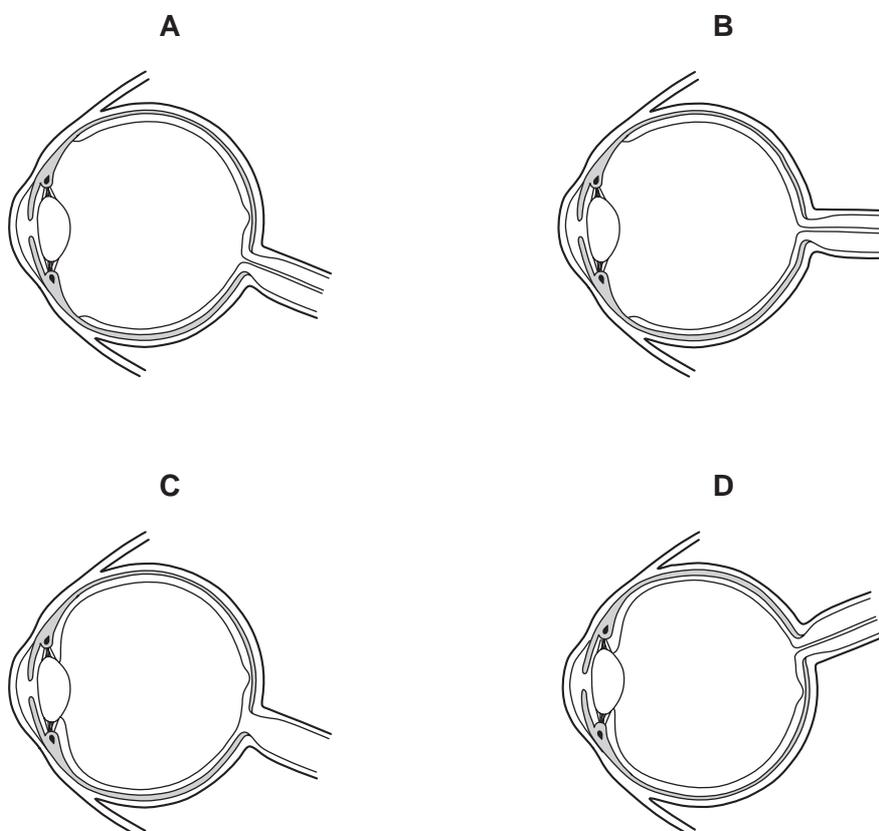
22 The graph shows the changes in blood sugar concentration as a meal is digested.



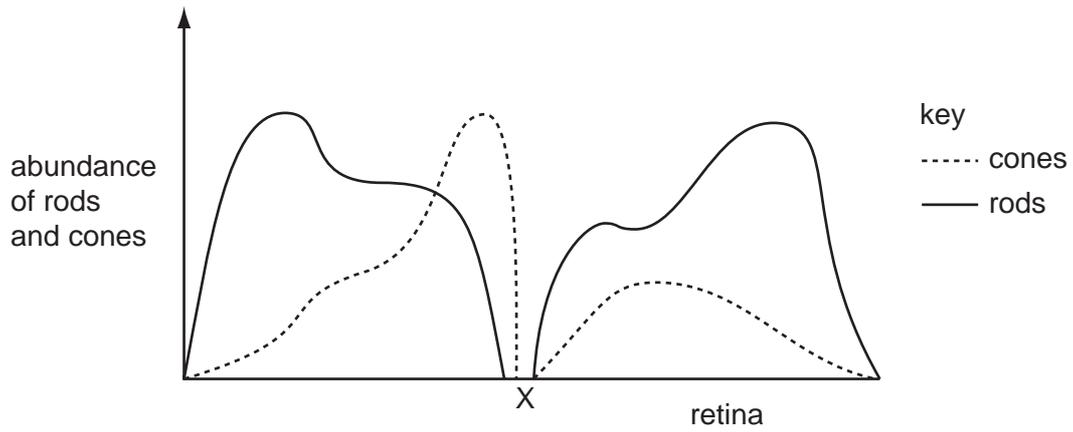
Which secretion causes the change in blood sugar concentration between times X and Y?

- A glucagon by the pancreas
- B glucose by the liver
- C glycogen by the liver
- D insulin by the pancreas

23 Which diagram represents a horizontal section through the right eye?



24 The graph shows the distribution of rods and cones across the retina of the eye.

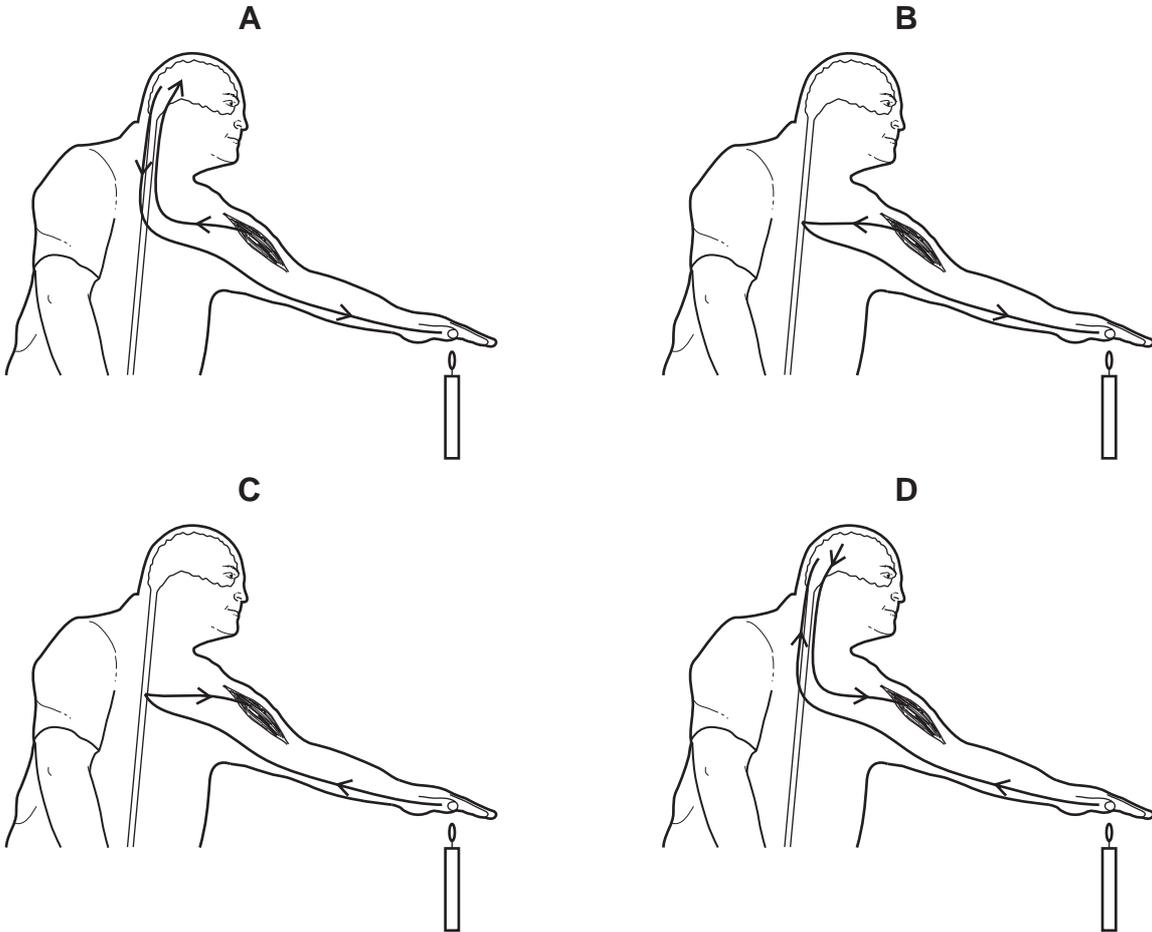


What is at point X?

- A blind spot
- B fovea (yellow spot)
- C iris
- D lens

25 The diagrams show a person accidentally putting their hand on a hot candle flame.

Which diagram shows the reflex action?



26 What is caused by an increase of progesterone in the blood?

- A menstruation
- B prevents implantation
- C prevents ovulation
- D uterus contractions at birth

27 Why is meiosis important in human reproduction?

- A so that offspring show variation when they develop
- B so that when cells divide they receive the same DNA
- C to double the chromosome number for gamete production
- D to ensure that similar gametes are produced for fertilisation

- 28 An example of monohybrid inheritance is the ability of a person to taste a certain chemical. The allele for tasting is dominant to that for the inability to taste the chemical.

A heterozygous person carries one of each type of allele.

If both parents are heterozygous for the ability to taste this chemical, what is the probability that a child will be heterozygous?

- A** 0% **B** 25% **C** 50% **D** 100%

- 29 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.

- 30 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

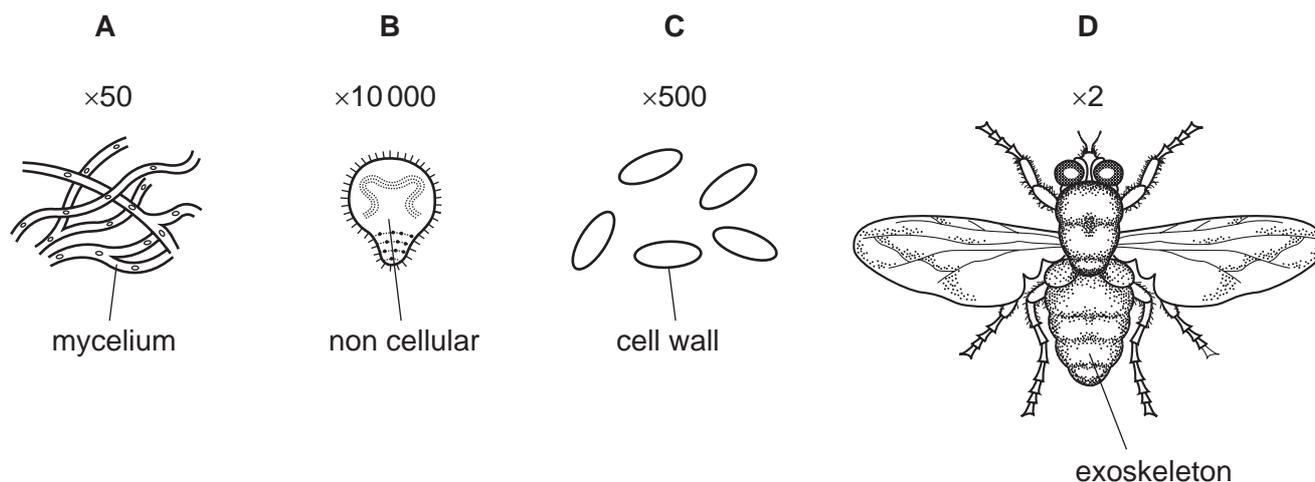
- 31 What will help to reduce the incidence of cholera?

- A** a diet containing adequate vitamin B
B BCG vaccination
C good ventilation
D proper treatment of sewage

32 Using a microscope, what would a doctor look for in the red blood cells to establish that a patient was suffering from malaria?

- A bacteria
- B protozoa
- C viruses
- D worms

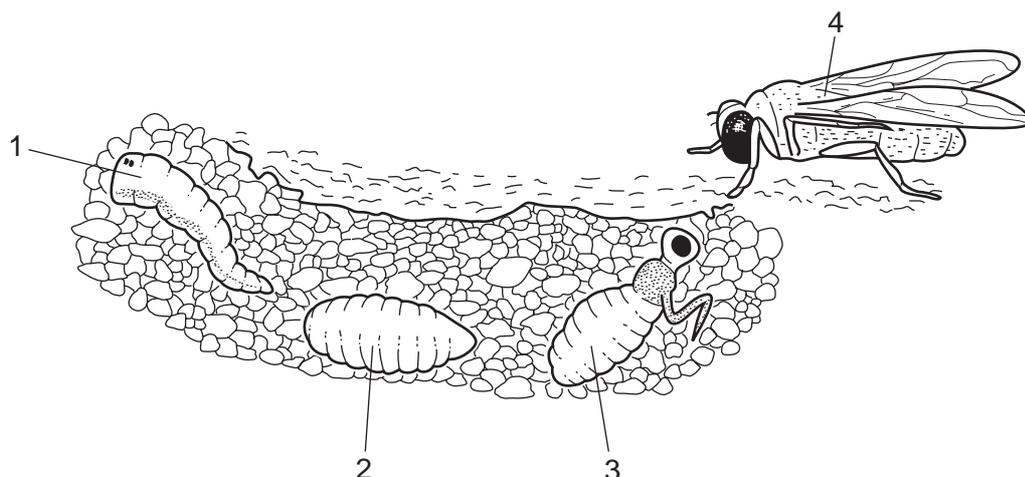
33 Which diagram shows the type of organism that is commonly killed by an antibiotic?



34 What are the effects of antiseptics?

	inhibit bacterial reproduction	damage human tissues	stimulate the immune system	kill bacteria
A	yes	no	no	yes
B	yes	yes	no	yes
C	no	no	no	yes
D	no	yes	yes	no

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 A three day old baby will have naturally acquired immunity to some diseases.

How is this immunity acquired?

	by the fetus across the placenta	by the injection of antibodies	by the baby from mother's milk
A	yes	yes	yes
B	yes	yes	no
C	yes	no	yes
D	no	yes	yes

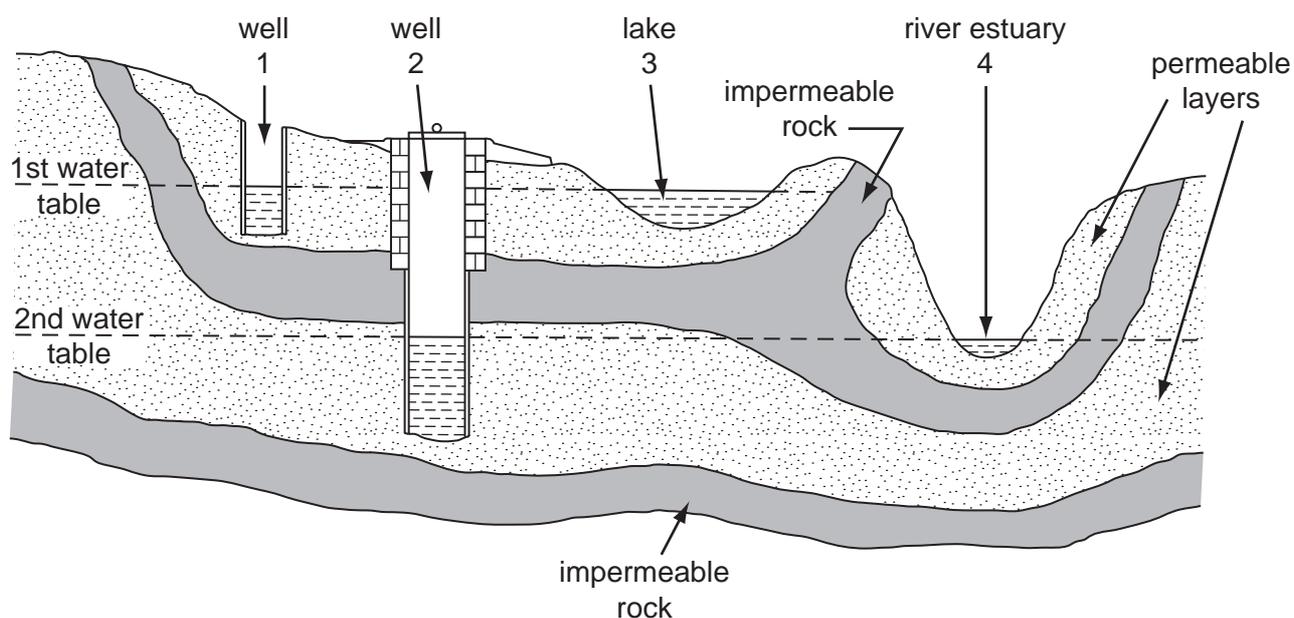
37 When constructing a pit latrine, what is the best material to line the pit?

- A concrete
- B iron
- C soil
- D wood

38 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

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

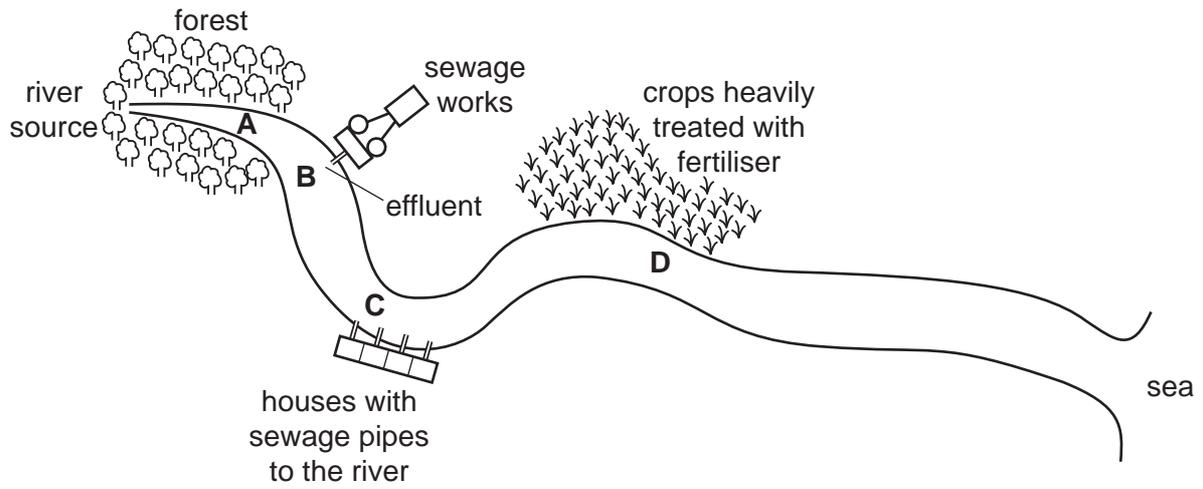


Which shows the order from safest to least safe water to drink?

	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

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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