UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY **5096/13**

Paper 1 Multiple Choice **May/June 2012**

1 hour

Additional Materials: Multiple Choice Answer Booklet
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 **16** printed pages.

1 How does a car differ from an organism?

A The car does not excrete any waste.

B The car does not release energy for its movement.

C The car does not reproduce during its manufacture.

D The car does not use fuel as a source of energy.

2 Which features in the table are present in flatworms and in fungi?

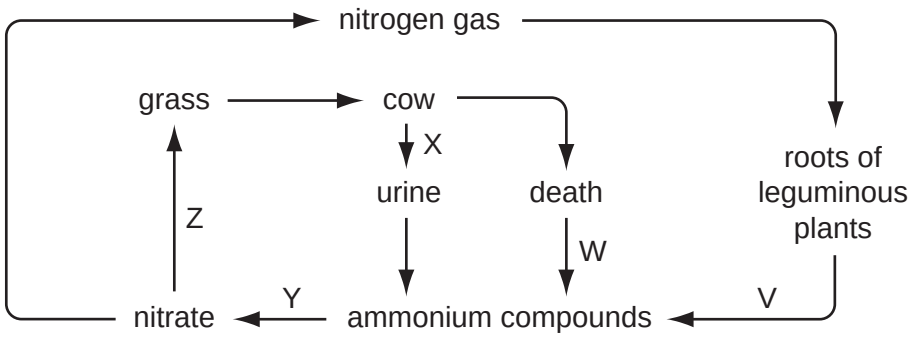
	flatworms	fungi
A	are multicellular	have an exoskeleton
B	are unicellular	have hyphae
C	have an exoskeleton	have a mycelium
D	reproduce both sexually and asexually	are multicellular

3 The table shows some features of four types of organisms.

Which organism's features are correctly shown?

	organisms	features			
		cytoplasm	cell wall	hyphae	nucleus
A	bacteria	present	absent	absent	absent
B	fungi	present	present	present	absent
C	protozoa	present	absent	absent	present
D	viruses	absent	present	present	absent

4 The diagram shows a simple form of the nitrogen cycle.



At which stages do bacteria play an important part in the cycle?

A V, W and Y

B V, X and Z

C W, X and Y

D X, Y and Z

5 By which process are complex molecules produced from simple molecules?

A digestion

B ingestion

C photosynthesis

D respiration

6 Which type of nutrient is most likely to be lost when food is cooked for too long?

A carbohydrates

B fats

C proteins

D vitamins

[Turn over

7 Four substances were tested for glucose using Benedict's reagent and for protein using the biuret reagents.

The table shows the results.

Which substance contains both glucose and protein?

	Benedict's	biuret
A	blue	blue
B	blue	purple
C	orange	blue
D	orange	purple

8 Which is a use for nutrients in the diet?

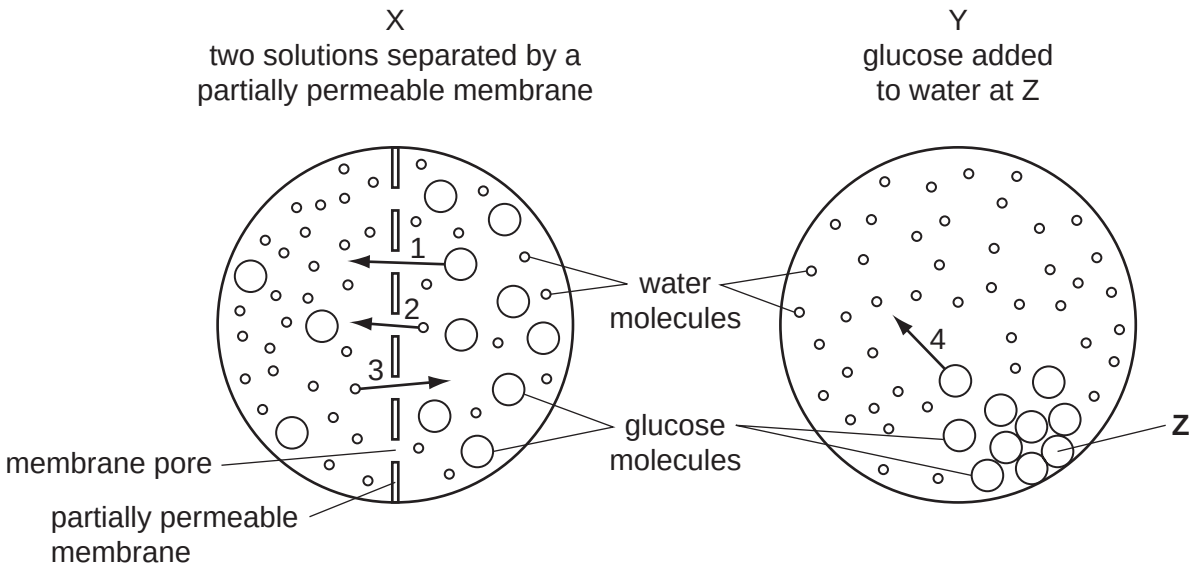
A Carbohydrates dissolve vitamin D.

B Carbohydrates provide roughage (fibre).

C Fats form insulin.

D Proteins form glycogen.

9 The diagrams show molecules of glucose and water in solutions X and Y.



Which two arrows correctly show the direction of movement of **most** water and glucose molecules?

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

10 Which reaction is catalysed by amylase?

A starch → glucose

B starch → glycogen

C starch → maltose

D starch → sucrose

11 The diagram shows a vertical section through a tooth.

Which structure is shaded on the diagram?

A bone

B dentine

C enamel

D pulp

12 Which products of digestion are all assimilated by a muscle fibre?

	amino acids	calcium ions	glucose
A	yes	yes	yes
B	yes		yes
C		yes	
D	yes		yes

[Turn over

13 Which path is taken by air breathed out of the lungs?

A alveoli → bronchi → bronchioles → trachea

B alveoli → bronchioles → bronchi → trachea

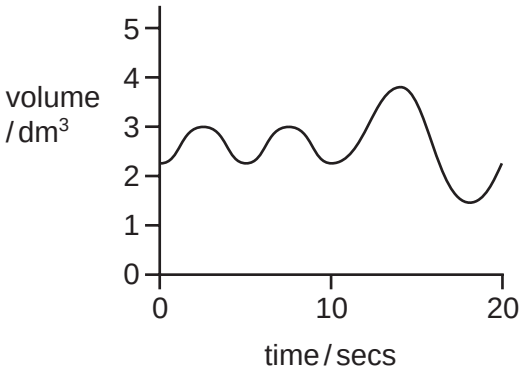
C trachea → bronchi → bronchioles → alveoli

D trachea → bronchioles → bronchi → alveoli

14 The graphs show the air flow into the lungs of four people at rest, followed by each person taking one deep breath to measure their vital capacity.

Which person will be the shortest in height and have the smallest body mass?

A



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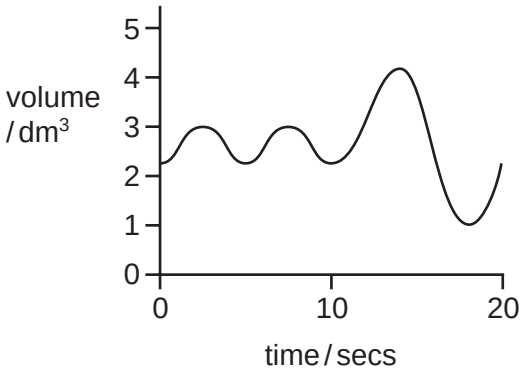

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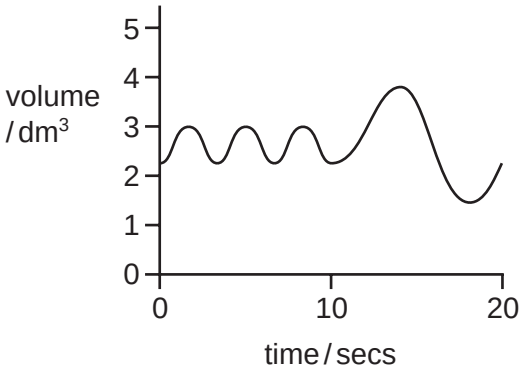

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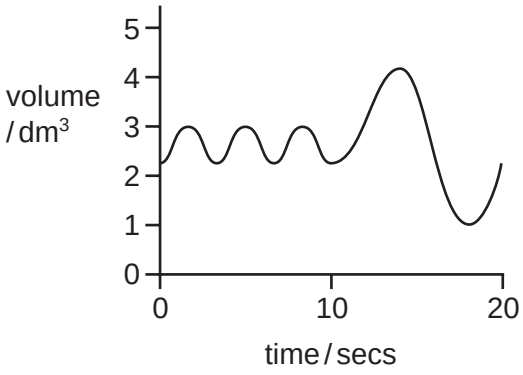


15 From which organ does the body lose water, but **not** sodium chloride?

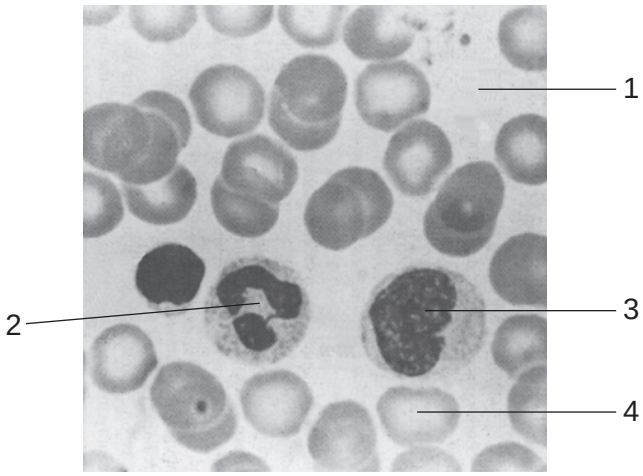
A colon

B kidneys

C lungs

D skin

16 The diagram shows a photograph of parts of the blood as seen with a light microscope.



Which two parts transport carbon dioxide?

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

17 When blood clots, the following events all take place.

1 a network of fibres is formed

2 fibrinogen is changed to fibrin

3 platelets encounter torn tissue

4 red blood cells and platelets are trapped

What is the correct order of these events?

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

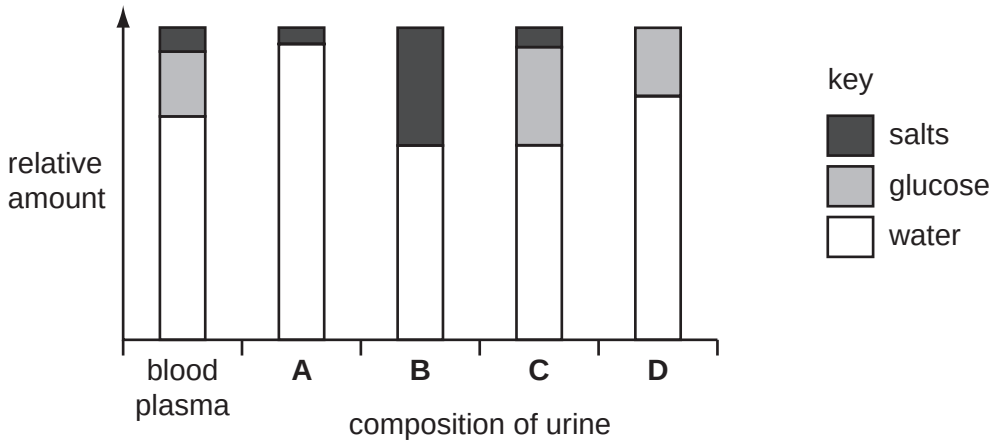
B $1 \rightarrow 3 \rightarrow 4 \rightarrow 2$

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

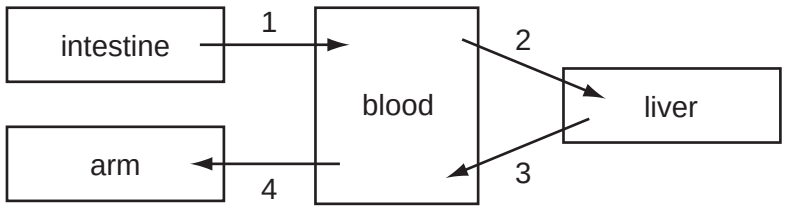
D $3 \rightarrow 2 \rightarrow 1 \rightarrow 4$

18 The composition of blood plasma and urine of a healthy girl was compared.

Which bar shows her urine sample?



19 The arrows on the diagram show the movement of glucose between the blood and certain organs.



Which two movements of glucose will occur when a person has not eaten for some time?

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

20 Which best describes the structure of bone?

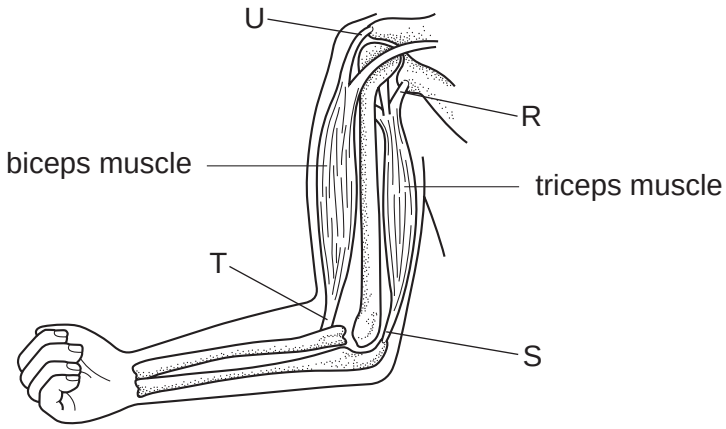
A Collagen fibres in a matrix of rigid calcium phosphate with living cells.

B Collagen and yellow elastic fibres in a flexible matrix of calcium phosphate.

C Dead tissue forming a hard, rigid matrix embedded with calcium salts.

D Living cells surrounded by a flexible matrix embedded with calcium salts.

21 The diagram shows the bones of the arm, with the points of muscle attachment labelled R, S, T and U.



What are origin and insertion points of the muscle used to bend the arm at the elbow?

	origin	insertion
A	R	S
B	R	T
C	U	S
D	U	T

22 Which condition is caused by long term, excessive consumption of alcohol?

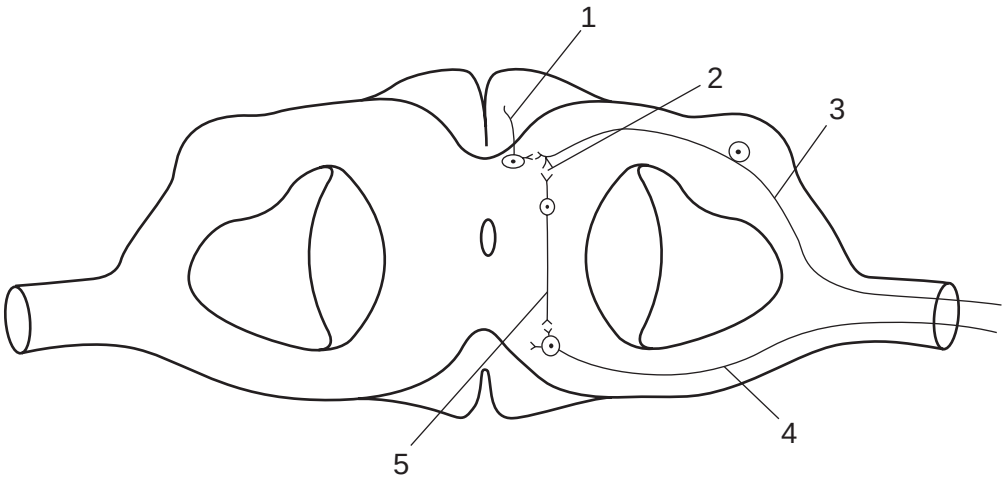
A bilharzia

B cirrhosis

C rickets

D sickle cell anaemia

23 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 → 2

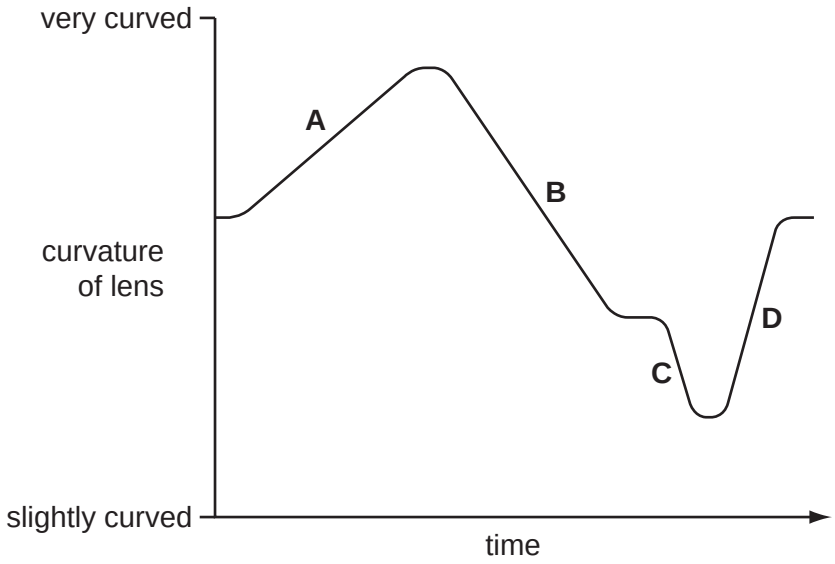
B 1 → 2 → 5 → 4

C 3 → 2 → 5 → 4

D 4 → 5 → 2 → 3

24 The graph shows changes in the curvature of the lens in a person's eye as they watch an insect flying around.

During which change of curvature of the lens is the insect flying away from the person at its fastest?



25 What is the most important function of the amniotic fluid during pregnancy?

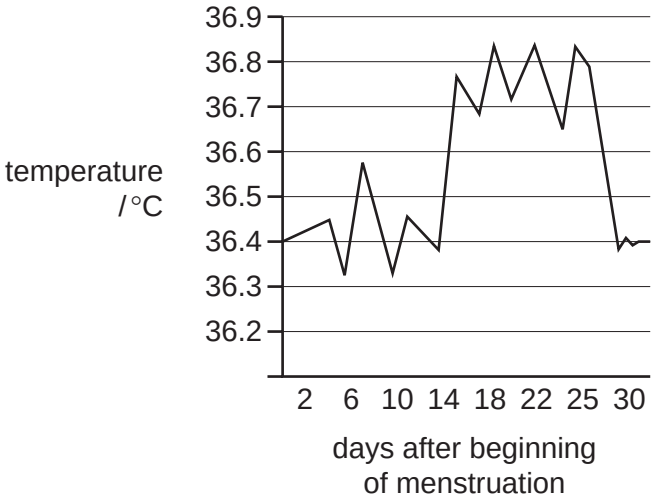
A It allows space for the growth of the fetus.

B It enables the fetus to get rid of waste products.

C It protects the fetus by ensuring an even distribution of pressure.

D It provides nutrients for the growth of the fetus.

26 The graph shows the temperature changes in a woman during her menstrual cycle.



What does the change in temperature on day 14 show?

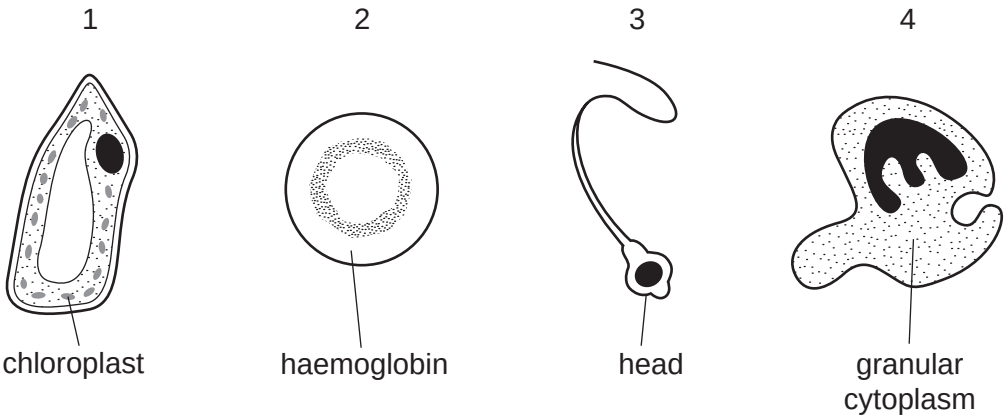
A a high level of oestrogen in the bloodstream

B the beginning of menstrual bleeding

C the fertilisation of an ovum in the oviduct

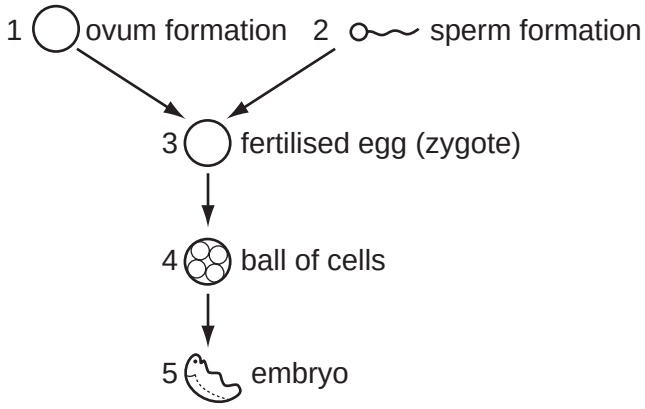
D the release of an ovum from the ovary

27 Which two cells lack the normal full (diploid) number of chromosomes as found in most other cells?



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

28 The diagram represents some stages of reproduction.



Which two stages contain cells with the half the number of chromosomes as in the liver cell?

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

29 What is a feature of the organism that causes ringworm?

A It can pass through the bloodstream to infect elsewhere.

B It is killed by fungi killing ointments.

C It produces antibodies causing severe itching.

D Washing with water removes it from the skin.

30 Which organisms cause the diseases shown?

	malaria	schistosomiasis	influenza
A	mosquito	flatworm	virus
B	mosquito	snail	bacterium
C	protozoan	flatworm	virus
D	protozoan	snail	bacterium

31 Which is a degenerative disorder?

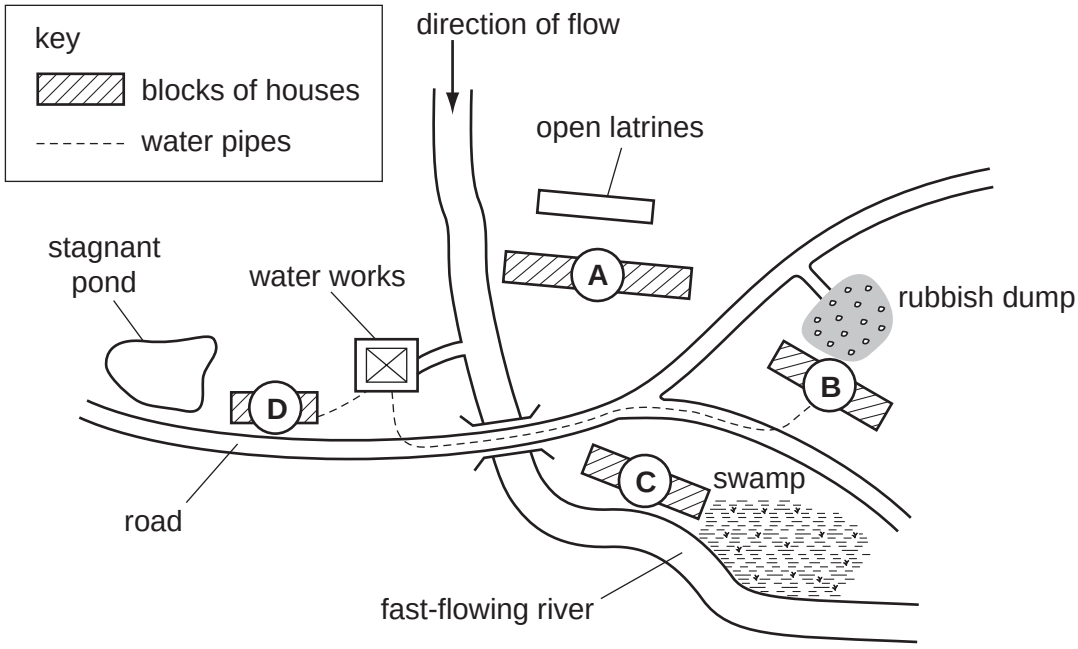
A coronary heart disease

B ringworm

C sickle cell anaemia

D tuberculosis

32 In which block of houses are people **most** likely to become infected with typhoid?



33 What is controlled by spraying a chemical that kills snails, around stagnant water?

A malarial infections

B ringworm infections

C schistosomiasis infections

D typhoid infections

34 Which are methods used to reduce the spread of cholera and influenza?

	cholera	influenza
A	boil drinking water	vaccination
B	chlorinate drinking water	destroy houseflies
C	properly ventilated rooms	X-ray diagnosis
D	vaccination	chlorinate drinking water

35 What is the best definition of an antibiotic?

A chemicals made by bacteria that kill fungi

B chemicals made by fungi that kill bacteria

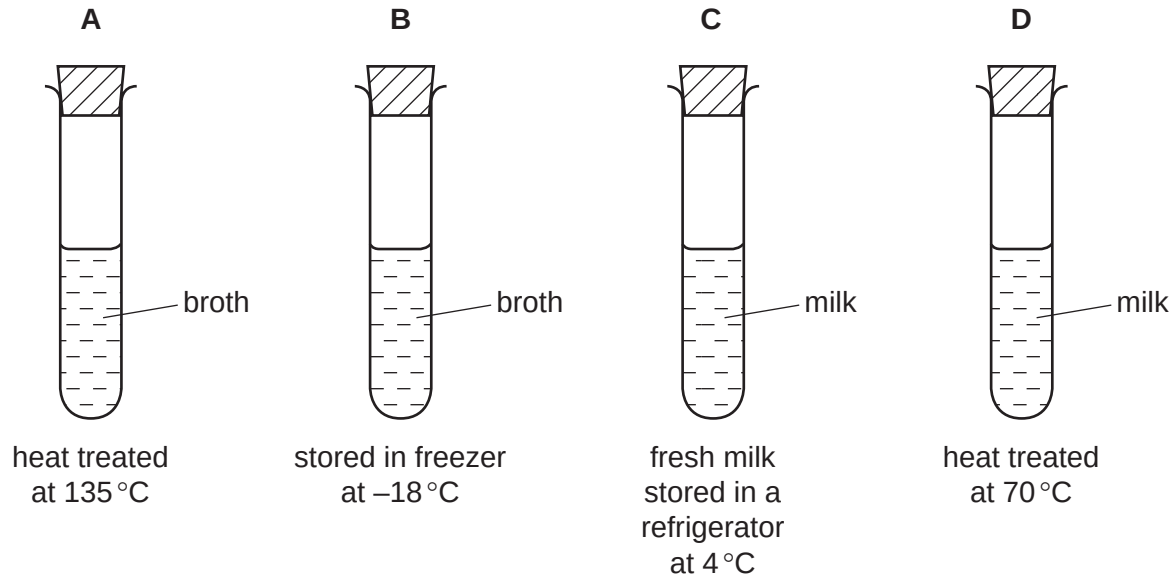
C chemicals made by microorganisms that help boost the immune system

D chemicals made by microorganisms that kill or stop the growth of some pathogens

[Turn over

36 The diagram shows how two samples of milk and two samples of broth were initially treated. After treatment, they were all left standing in a warm room for six hours.

Which sample will contain the **lowest** concentration of bacteria at the end of the six hours?

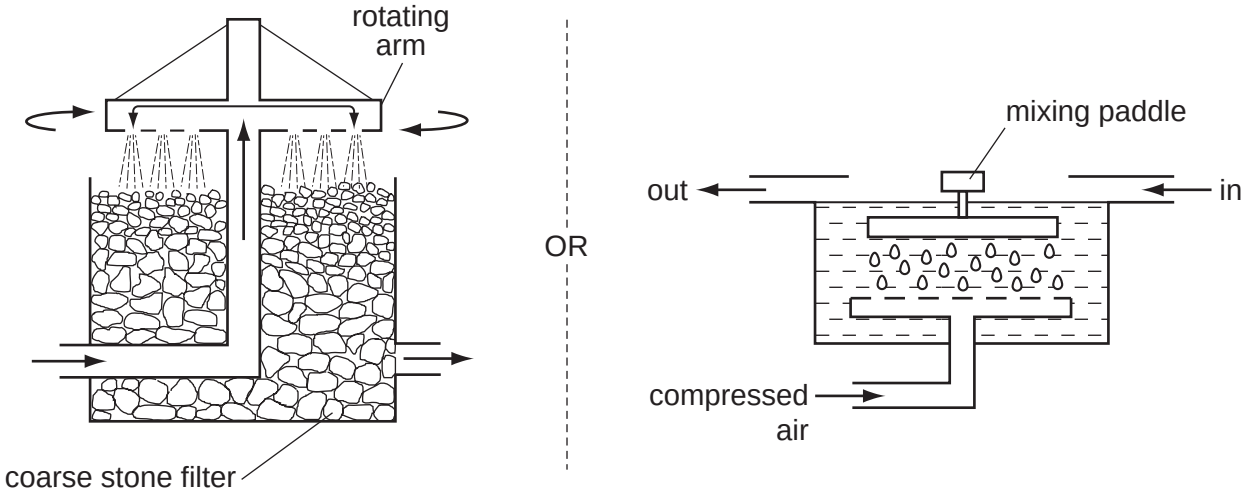


37 Which shows the type of immunity gained?

	from antibodies in breast milk	from an injection of tetanus antibodies	immunity to measles after an infection
A	artificial passive	natural passive	natural active
B	artificial passive	natural passive	artificial active
C	natural passive	artificial passive	artificial active
D	natural passive	artificial passive	natural active

38 The diagram shows sections through two structures, one of which you should have studied.

Both diagrams are concerned with either water purification or sewage disposal.



Where would the structure you have studied be found and what is its function?

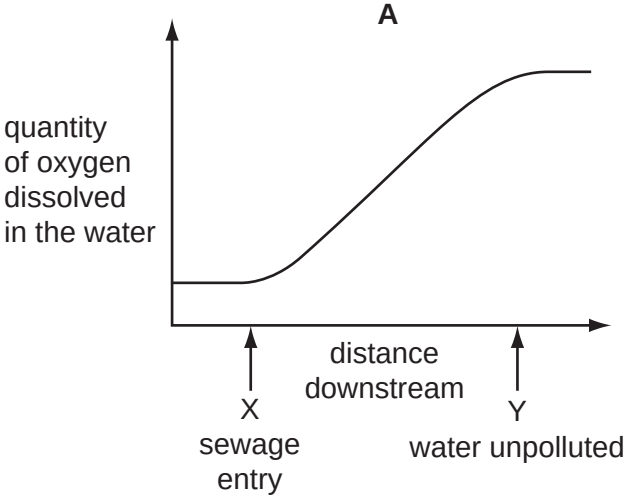
	where found	function
A	sewage works before the sedimentation tank	anaerobic bacterial decomposition
B	sewage works after the sedimentation tank	aerobic bacterial decomposition
C	water works before the coagulating tank	anaerobic bacterial decomposition
D	water works after the coagulating tank	aerobic bacterial decomposition

[Turn over

39 Freshwater from a spring is polluted by the entry of raw domestic sewage at point X. The water becomes unpolluted further down stream at point Y.

Which graph shows the amount of oxygen in the water?

A



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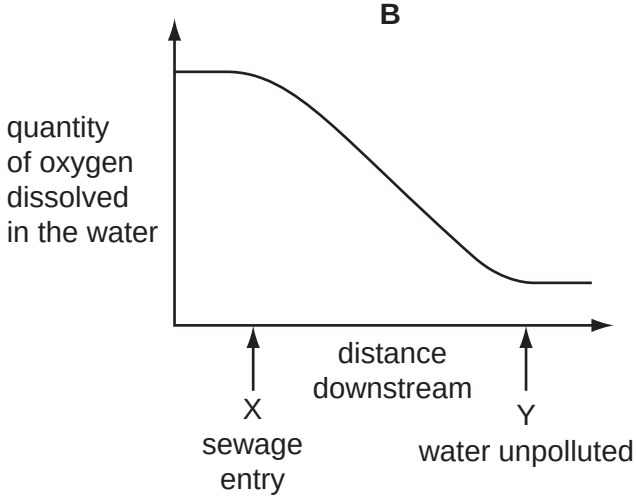

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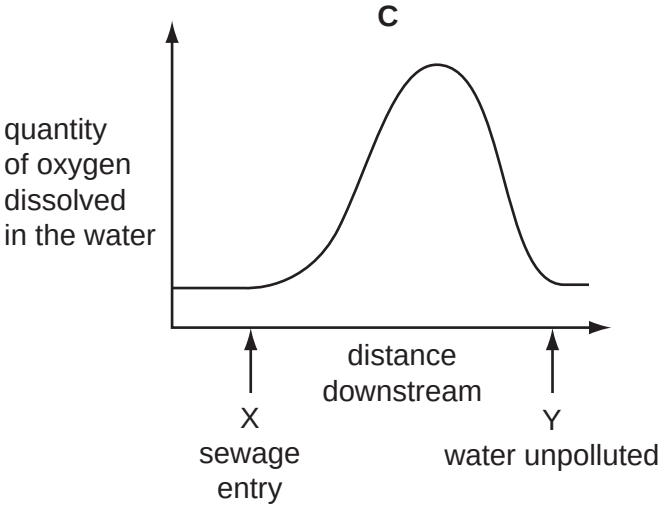

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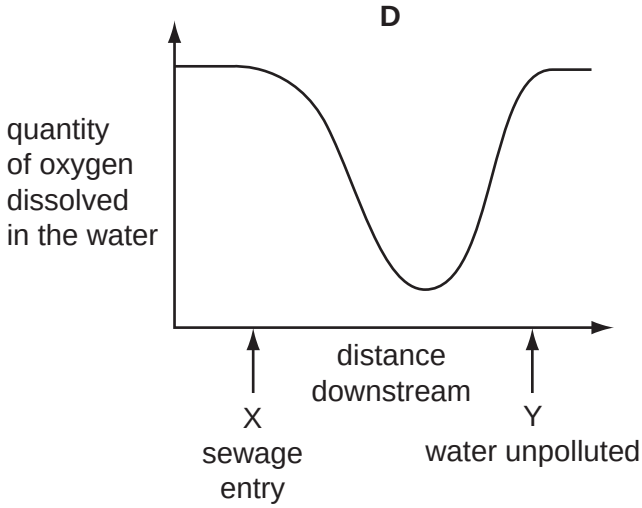

40 Why can a deep pit latrine in porous soil be used for many years without becoming full?

A Bacteria digest the solid waste so that it can soak away.

B Disinfectant poured into the pit destroys pathogens.

C Porous soil prevents water and bacteria reaching the faeces.

D The contents keep drying out and turning solid.