

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY

5096/01

Paper 1 Multiple Choice

May/June 2004

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 **17** printed pages and **3** blank pages.



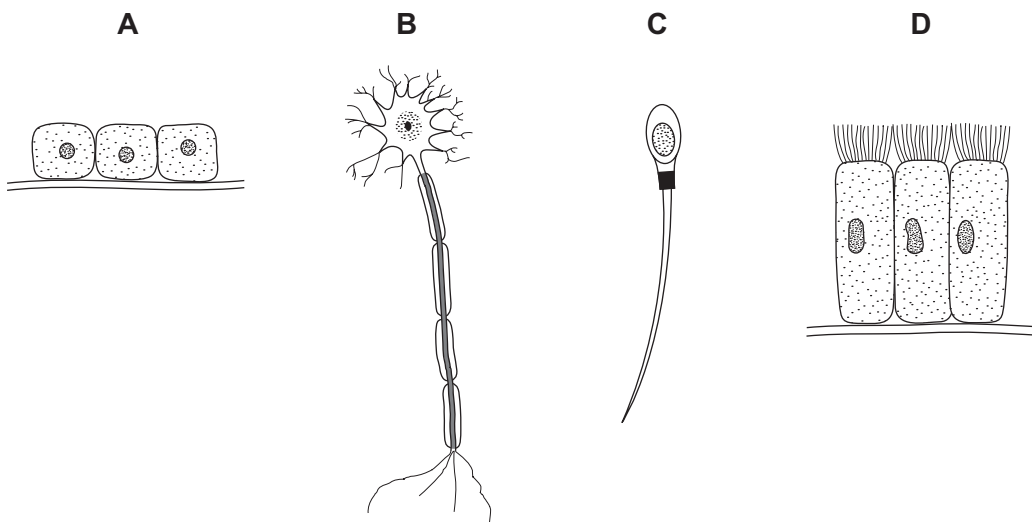
- 1 The waste products of metabolism are removed from the body.

Which of the characteristics of living organisms is this?

- A excretion
- B nutrition
- C reproduction
- D respiration

- 2 The diagrams show four different types of cells.

Which type of cell has half the number of chromosomes found in body cells?

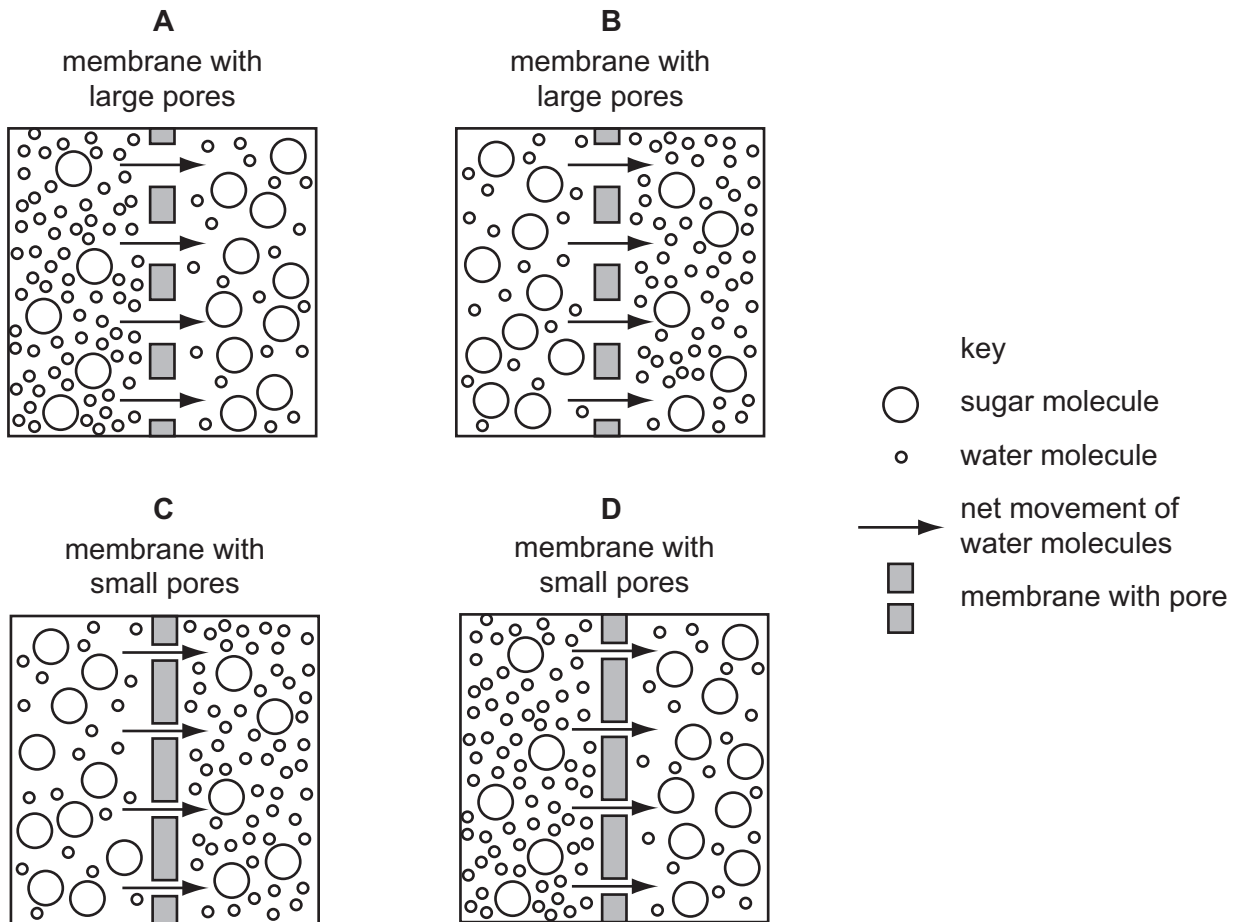


- 3 Where can a virus develop and reproduce?

- A in decayed fruit
- B in fresh milk
- C in human cells
- D in meat soup

4 Each of the diagrams shows two solutions separated by a membrane.

Which diagram shows osmosis occurring?



5 The diagram shows the passage of energy through some organisms.



What is the source of the energy?

- A** carbon dioxide
- B** the soil
- C** the Sun
- D** water

- 6 The table shows the results of three tests on a liquid food.

	test	result
1	iodine solution added	colour change from yellow / brown to blue / black
2	biuret reagent added	colour remains blue
3	dropped on filter paper and dried	translucent mark (light spot)

What does the food contain?

- A** fat and protein
B fat and starch
C protein and reducing sugar
D protein and starch
- 7 In the table below, which nutrient is correctly linked to its use?

	nutrient	use
A	fat	to prevent anaemia
B	protein	to make insulin
C	starch	to make amylase
D	sugar	to prevent rickets

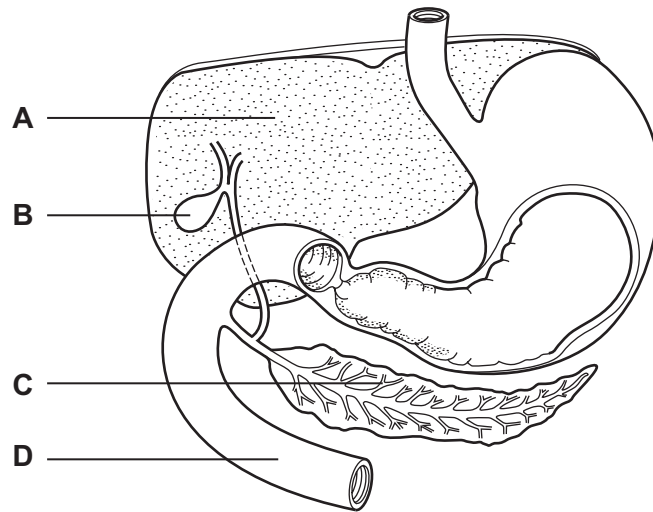
- 8 The table shows the mass of some nutrients in equal quantities of four different foods.

Which food would be best for the development of strong bones and teeth?

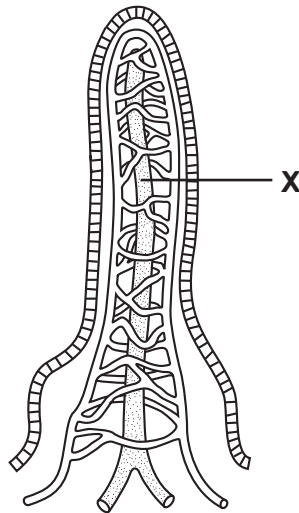
food	calcium /g	iron /g	vitamin C /mg	vitamin D /mg
A	4.5	0.1	0.0	1.5
B	0.1	0.8	20.0	0.8
C	4.8	0.1	10.0	0.0
D	0.2	0.5	1.0	1.8

9 The diagram shows a part of the digestive system.

In which structure is bile made?



10 The diagram shows a section through a villus from the small intestine.



What is absorbed into the structure labelled X?

- A amino acids
- B glucose
- C glycerol and fatty acids
- D mineral salts and water

11 Litmus paper is red in acid solutions and blue in alkaline solutions.

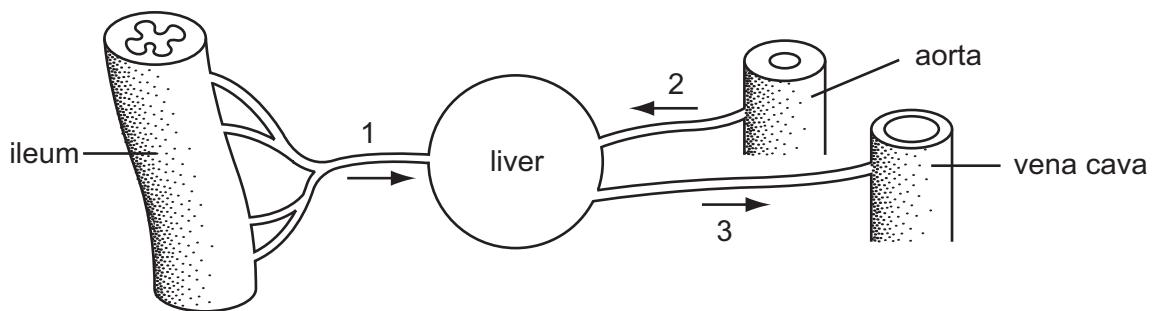
Which part of the alimentary canal has secretions that would change litmus paper from blue to red?

- A colon
- B duodenum
- C ileum
- D stomach

12 What is the function of lymphocytes?

- A to carry carbon dioxide
- B to convert fibrinogen to fibrin
- C to produce antibodies
- D to produce lymph

13 The diagram shows the blood supply of the liver.

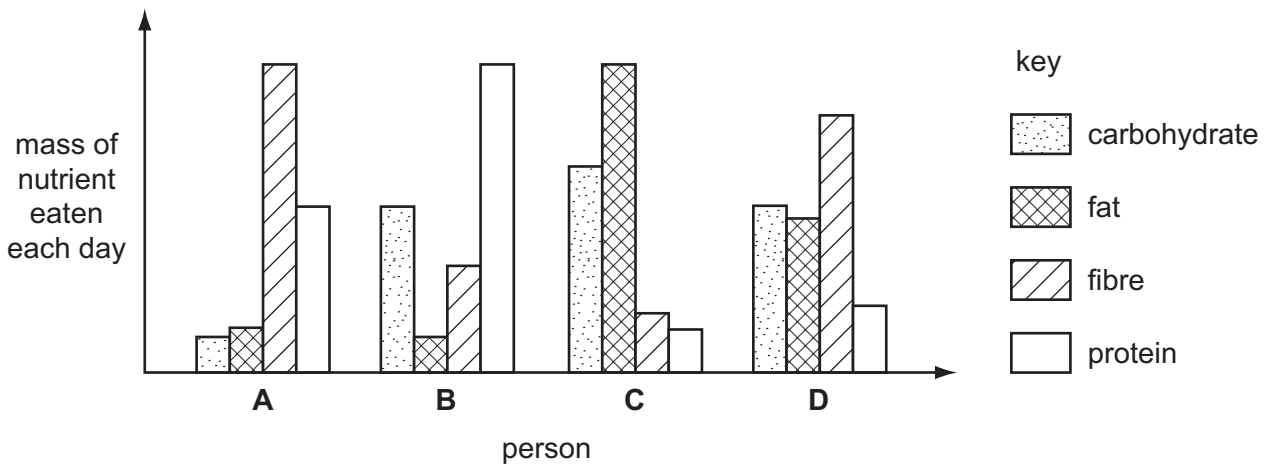


What are blood vessels 1, 2 and 3?

	1	2	3
A	hepatic artery	hepatic portal vein	hepatic vein
B	hepatic artery	hepatic vein	hepatic portal vein
C	hepatic portal vein	hepatic artery	hepatic vein
D	hepatic portal vein	hepatic vein	hepatic artery

- 14 The bar chart shows the mass of carbohydrate, fat, fibre and protein eaten by four people each day.

Which person has the diet that would increase the risk of coronary heart disease the most?

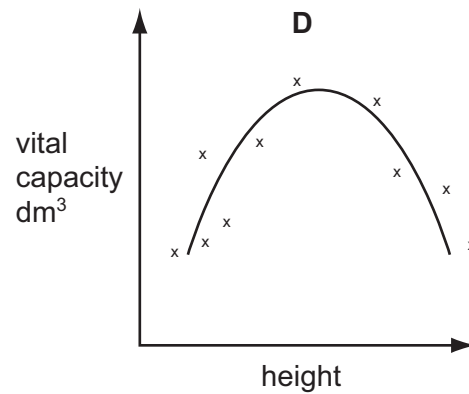
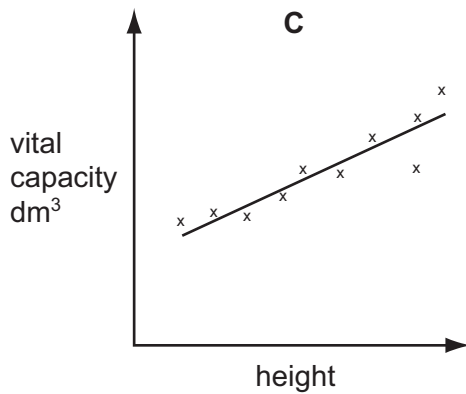
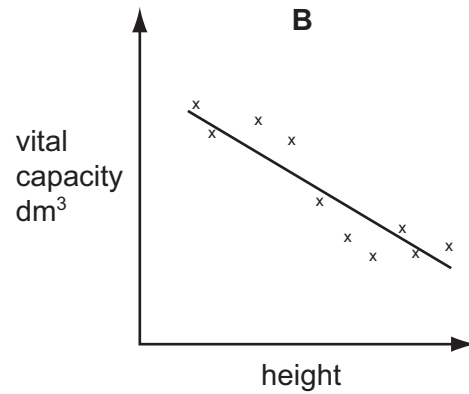
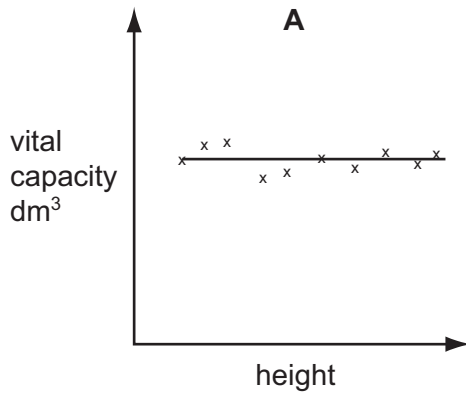


- 15 Which describes breathing?

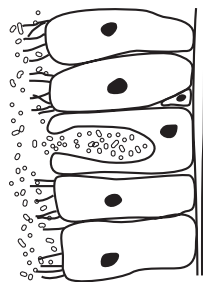
- A The movement of air into and out of the lungs.
- B The release of carbon dioxide in the alveoli.
- C The release of energy from substances in living cells.
- D The uptake of oxygen in the alveoli.

16 A group of ten fit and active 18-year-old men had their height and vital capacity measured.

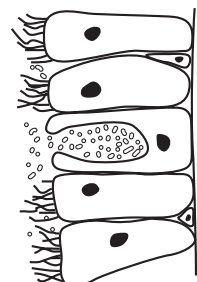
Which graph shows the likely relationship between height and vital capacity?



17 The diagrams show the epithelium lining a bronchiole of a smoker and of a non-smoker.



smoker



non-smoker

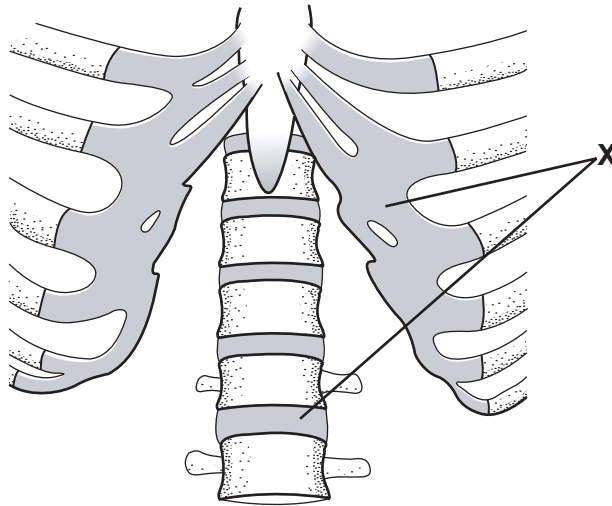
Why does mucus drain down into the smoker's lungs?

- A a non-smoker has more active mucus secretion
- B a smoker has fewer cilia on the epithelial cells
- C epithelial cells divide more in a non-smoker
- D the cells burst in the bronchiole of a smoker

18 Which part of bone makes it hard and rigid?

- A calcium phosphate
- B collagen fibres
- C living cells
- D yellow elastin

19 The diagram shows part of the thorax from the front.

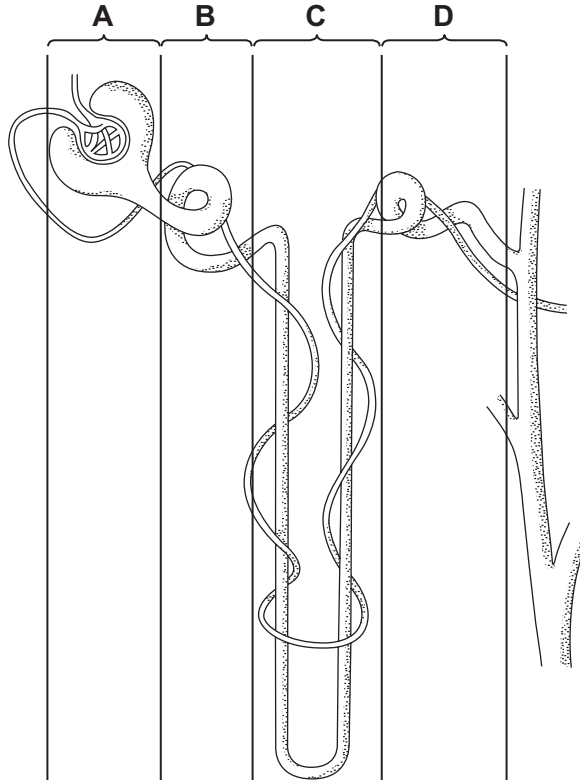


What is the tissue at X?

- A bone
 - B cartilage
 - C ligament
 - D tendon
- 20 Which is part of a process of homeostasis?
- A contraction of circular muscles during peristalsis
 - B focusing of eye on a distant object
 - C secretion of digestive enzymes
 - D vasoconstriction of arterioles in the skin

21 The diagram shows a kidney tubule (nephron) and associated blood vessels.

In which region does a high blood pressure cause fluid to pass out of the blood capillaries?



22 The diagram shows horizontal sections through the front of an eye focused on objects at different distances.



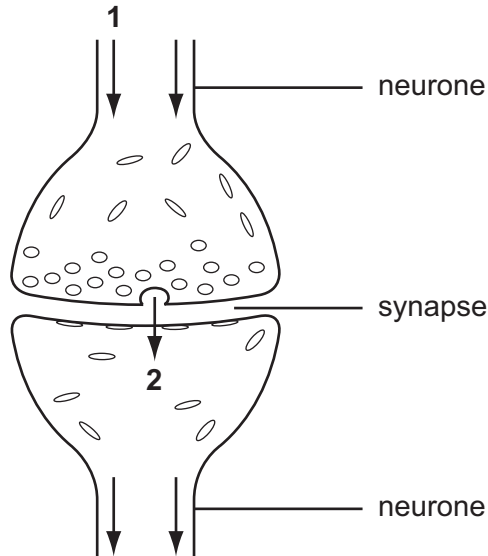
What is the condition of the ciliary muscles, suspensory ligaments and lens when focused on a distant object?

	ciliary muscles	suspensory ligaments	lens shape
A	contracted	loose	fat
B	contracted	tight	fat
C	relaxed	loose	thin
D	relaxed	tight	thin

23 Between which structures does a motor neurone transmit impulses?

- A from a muscle to an intermediate neurone
- B from an intermediate neurone to a sensory neurone
- C from the skin to the spinal cord
- D from the spinal cord to a muscle

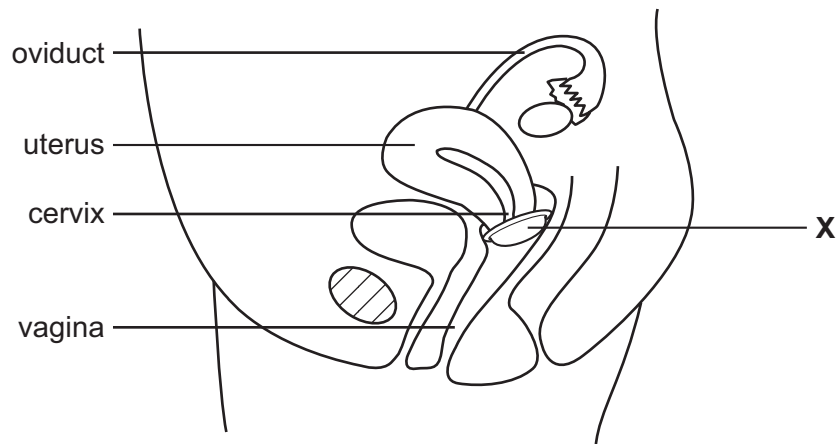
24 The diagram shows the working of a synapse between two neurones.



What do arrows **1** and **2** represent?

	1	2
A	chemical transmitter	slow acting hormone
B	chemical transmitter	chemical transmitter
C	nerve impulse	chemical transmitter
D	nerve impulse	slow acting hormone

- 25 The diagram shows a section of the female reproductive system with a method of birth control at X.



What is the method of birth control shown and how does it act?

	birth control method	action
A	cap (diaphragm)	stops implantation
B	cap (diaphragm)	prevents sperm from entering the uterus
C	intrauterine device (IUD/loop/coil)	stops implantation
D	intrauterine device (IUD/loop/coil)	prevents sperm from entering the uterus

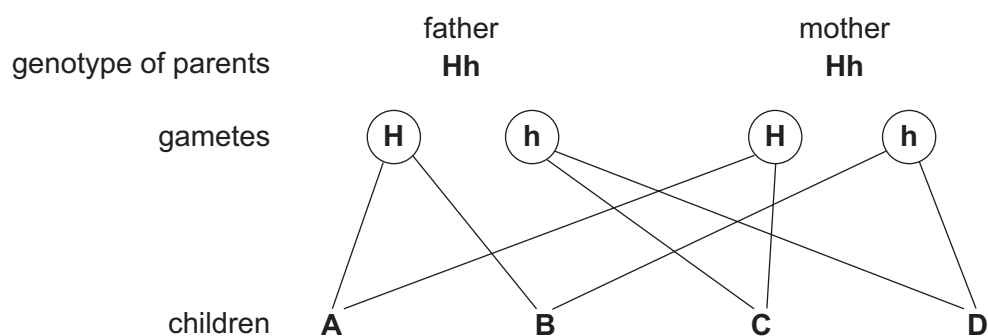
- 26 Where are most proteins made?

- A** chromosomes
- B** mitochondria
- C** nucleus
- D** ribosomes

- 27 The diagram shows the inheritance of sickle cell anaemia in a family. The allele for normal haemoglobin is represented by **H** and the allele for defective haemoglobin by **h**.

A homozygous person carries a pair of identical alleles. A heterozygous person carries a pair of alleles that are not identical.

Which child is homozygous recessive?



- 28 Which diseases result from the causes **X**, **Y** and **Z**?

	X cells reproduce faster	Y arteries become blocked	Z too much sugar and starch in the diet
A	coronary heart disease	obesity	lung cancer
B	lung cancer	coronary heart disease	obesity
C	lung cancer	obesity	rickets
D	rickets	coronary heart disease	lung cancer

- 29 Which disease is caused directly by a pathogen?

- A** coronary heart disease
- B** influenza
- C** lung cancer
- D** sickle cell anaemia

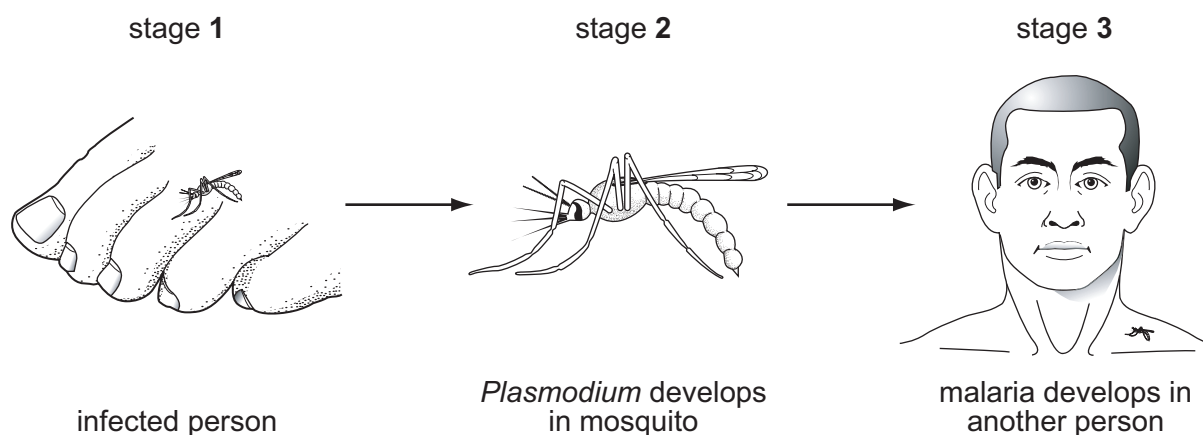
- 30 How is typhoid fever usually spread?

- A** by a bite from an insect vector
- B** by breathing droplets containing the pathogens
- C** by coming into contact with an infected person
- D** by people handling food

31 Why is a cholera patient given injections of salt solution?

- A to help prevent dehydration of the body
- B to increase antibody production
- C to prevent the cholera bacteria from multiplying
- D to remove the cholera bacteria from the intestines

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



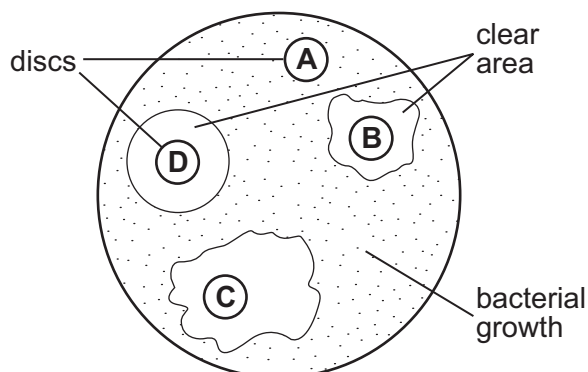
Which methods of control will help to reduce the spread of malaria at stages 1, 2 and 3?

	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	antibiotic
C	sleeping under a mosquito net	insecticide spray	taking an anti-malarial drug
D	oil on water	antibiotic	insecticide spray

- 33 A petri dish containing agar is inoculated with microorganisms from an infected person. Four discs, each containing a different antibiotic, were placed on the agar.

The diagram shows the appearance after 18 hours incubation.

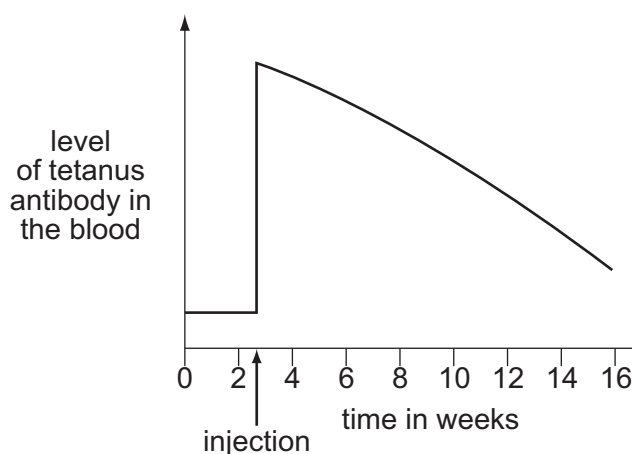
Which antibiotic will **not** cure the infection?



- 34 Why is food cooked at high temperatures?

- A to emulsify fats
- B to increase enzyme activity
- C to kill bacteria
- D to neutralise acids

- 35 A person was given an injection to produce immunity to tetanus. The graph shows the level of antibody in the blood.



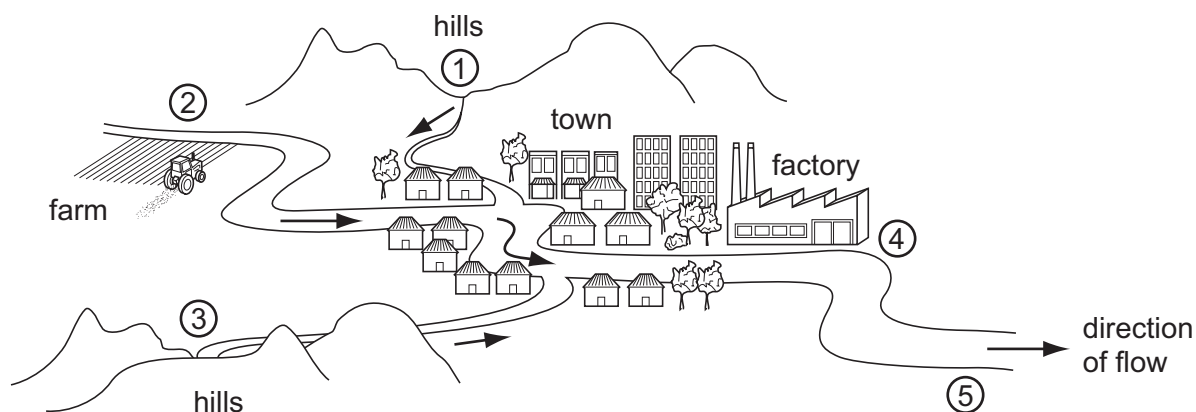
Which type of immunity was given by the injection?

- A active, artificial
- B active, natural
- C passive, artificial
- D passive, natural

36 What was a reason for the success of the WHO (World Health Organisation) in being able to eliminate smallpox?

- A Many people became naturally immune.
- B The causative agent was a virus.
- C The response to antibiotics was positive.
- D The virus can only reproduce in humans.

37 The diagram shows streams flowing through a small town.



Which sites are the most suitable for taking drinking water and for discharging sewage?

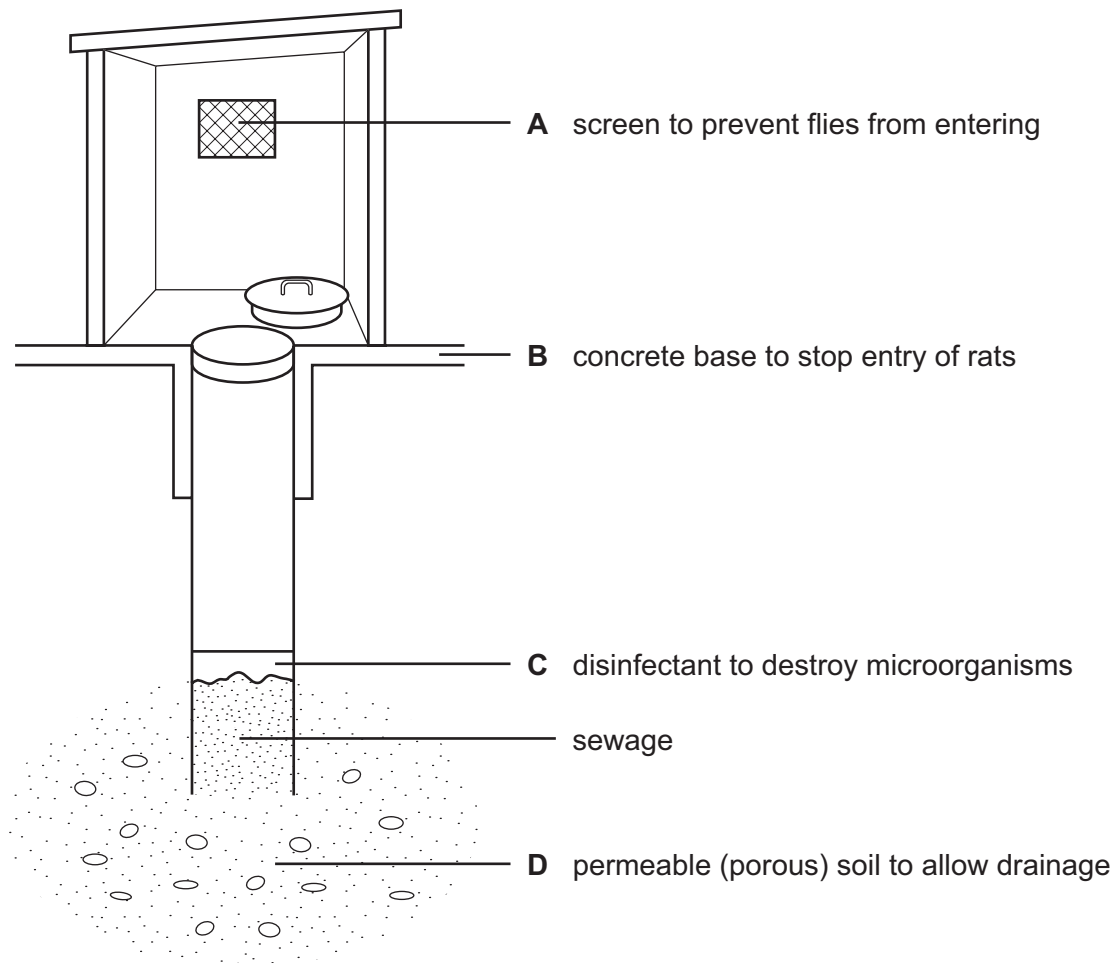
	taking water	discharging sewage
A	1	5
B	2	4
C	3	2
D	5	1

38 Which three chemicals in car exhaust fumes would be harmful to humans?

- A carbon dioxide hydrogen nitrogen dioxide
- B nitrogen lead carbon dioxide
- C nitrogen dioxide lead carbon monoxide
- D sulphur dioxide nitrogen carbon dioxide

39 The diagram shows a pit latrine.

What prevents the latrine from working properly?



40 When untreated sewage is released into a river, an increase in the number of bacteria results in the death of other organisms.

How do the bacteria cause these deaths?

- A** Bacteria prevent gaseous exchange in fish.
- B** Bacteria prevent light reaching green plants.
- C** Bacteria produce methane.
- D** Bacteria reduce oxygen levels.

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