

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY

5096/01

Paper 1 Multiple Choice

October/November 2006

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 **16** printed pages.

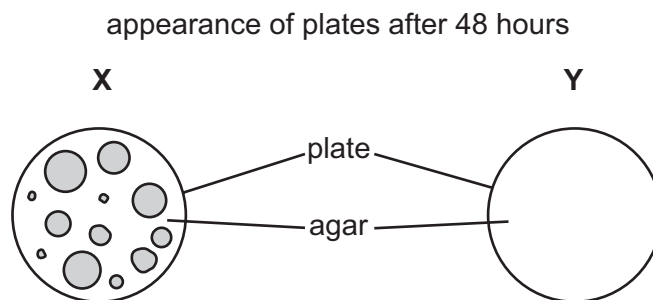


1 Which of the following is a characteristic of **all** living things?

- A breathing
- B feeding
- C locomotion
- D respiration

2 The diagram shows two agar plates, **X** and **Y**, after incubation at 28 °C for 48 hours.

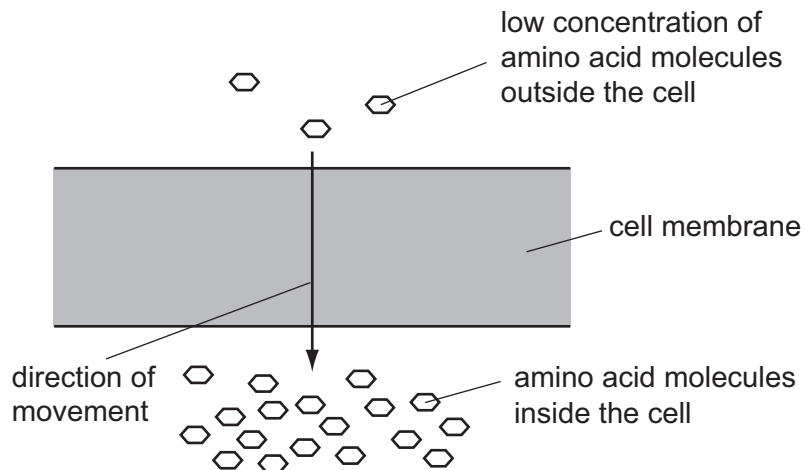
X has been inoculated with bacteria and **Y** with viruses.



Why is there a difference in the appearance of the plates?

- A The bacteria grow faster than the viruses.
 - B The bacteria do not have to compete with the viruses.
 - C The viruses cannot reproduce without cells.
 - D The viruses only grow below 28 °C.
- 3 Which parasite reproduces asexually and sexually, and has a life history involving two hosts?
- A *Anopheles*
 - B *Mycobacterium tuberculosis*
 - C *Schistosoma mansoni*
 - D *Tinea*

4 The diagram shows a highly magnified section of a cell membrane.

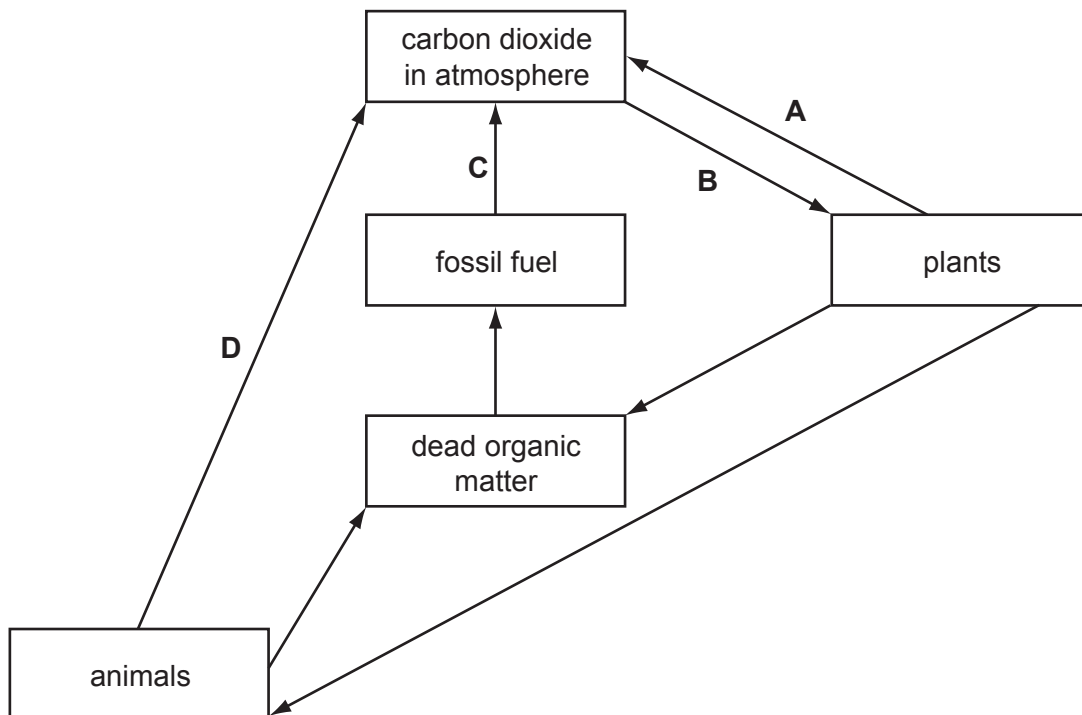


By which process are the molecules moving?

- A active transport
- B diffusion
- C osmosis
- D phagocytosis

5 The diagram shows a carbon cycle.

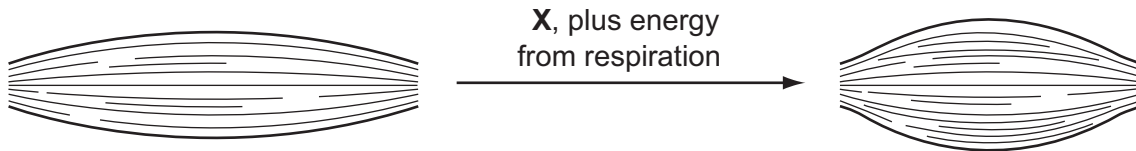
Which arrow shows a process which causes oxygen to enter the atmosphere?



6 A diet rich in vitamin D improves the health of a person with

- A anaemia.
- B constipation.
- C obesity.
- D rickets.

7 The diagram shows the working of a muscle.

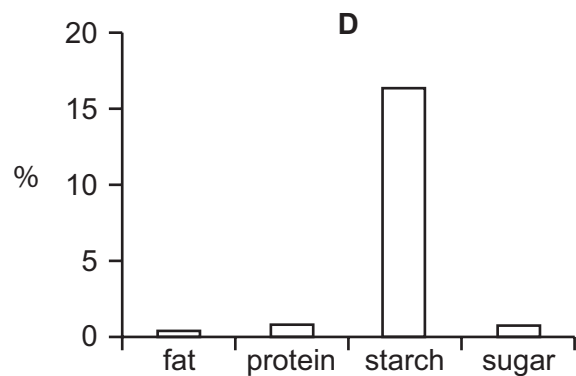
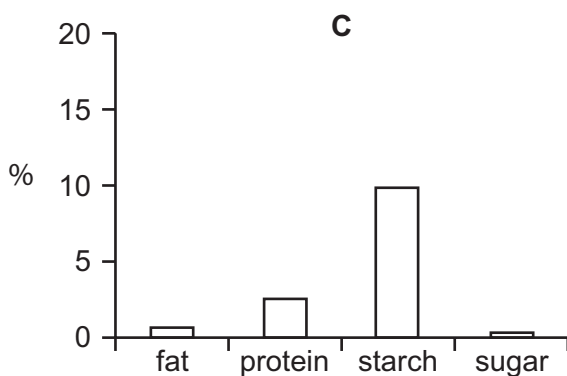
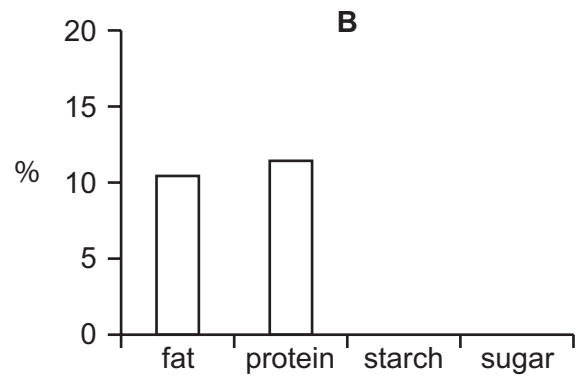
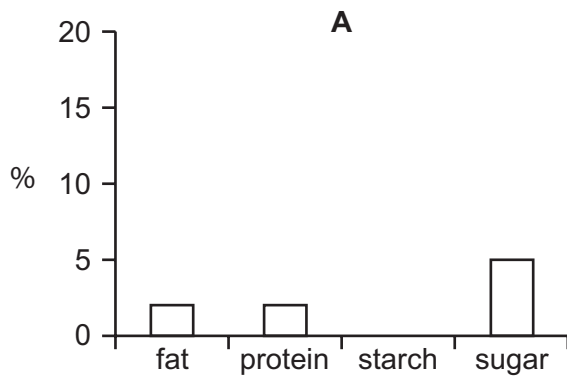


Which substance from the diet is X?

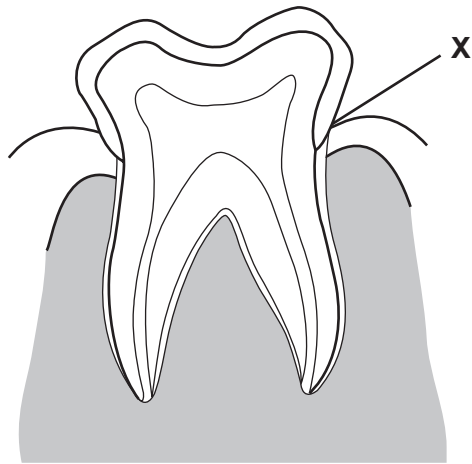
- A calcium ions
- B iron ions
- C vitamin C
- D vitamin D

8 The bar charts show the percentages (%) of fat, protein, starch and sugar in four foods.

Which food is milk?



- 9 The diagram shows a vertical section of a molar tooth.



Which results in damage at **X**?

- A Bacteria produce acids which dissolve **X**.
 - B Enzyme activity in saliva makes a hole in **X**.
 - C Bacteria feed on **X**.
 - D Sugar produces alkalis which dissolve **X**.
- 10 Four test-tubes, each containing 2 cm³ of starch suspension and 1 cm³ of amylase solution, were treated as shown in the table.

In which test-tube would starch be digested most rapidly?

test-tube	treatment
A	kept at 70 °C
B	1 cm ³ of hydrochloric acid added; kept at 45 °C
C	kept at 35 °C
D	contents boiled; 1 cm ³ of hydrochloric acid added; kept at 45 °C

11 1, 2 and 3 are definitions of types of egestion.

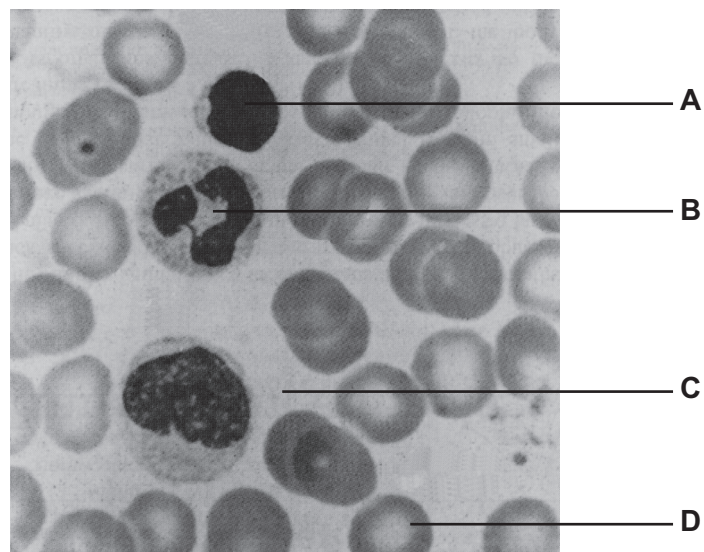
- 1 normal elimination of faeces from the rectum
- 2 frequent passage of watery stools
- 3 infrequent passage of hard stools

Which defines defecation, constipation and diarrhoea?

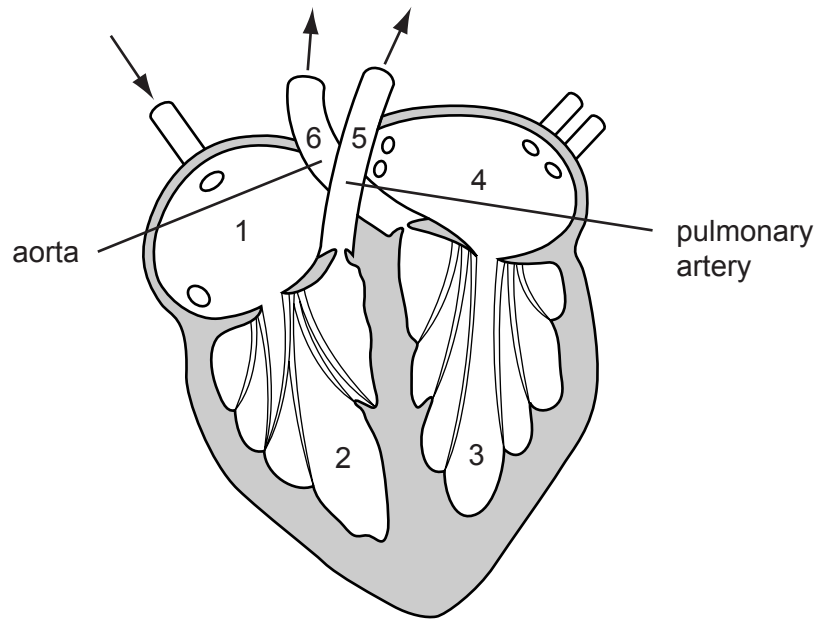
	defecation	constipation	diarrhoea
A	1	2	3
B	1	3	2
C	2	3	1
D	3	2	1

12 The diagram shows a photograph of blood as seen with a microscope.

Which part carries out phagocytosis?



13 The diagram shows a section through the heart.



What route does blood take from the right auricle (atrium), part 1, to the aorta, part 6?

- A 1 → 2 → 3 → 6
- B 1 → 2 → 5 → 3 → 4 → 6
- C 1 → 2 → 5 → 4 → 3 → 6
- D 1 → 4 → 3 → 6

14 What happens when an artery is cut?

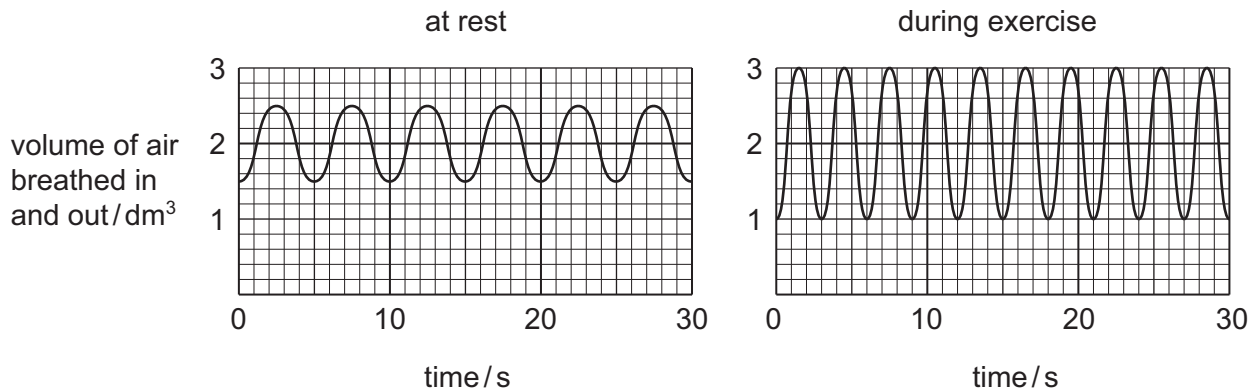
- A Blood clots immediately to stop the flow.
- B Blood flows out in a constant stream.
- C Blood escapes under pressure.
- D Blood flow is controlled by valves.

15 Three tests were carried out on expired and inspired air.

Which results would occur for the expired air?

	air bubbled through limewater for 1 minute	temperature of air in °C	time in seconds for a candle to be extinguished in the air
A	becomes cloudy	35	3
B	stays clear	35	20
C	becomes cloudy	28	20
D	stays clear	28	3

16 The graphs show the rate and depth of breathing of a student at rest and during exercise.



The ventilation rate = volume of air breathed in per breath \times the rate of breathing.

What is the student's ventilation rate at rest and during exercise?

	ventilation rate	
	at rest dm ³ /min	during exercise dm ³ /min
A	6	20
B	6	40
C	12	20
D	12	40

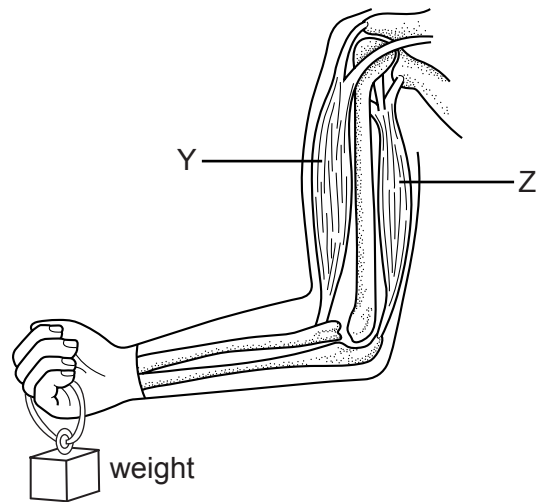
17 What is permanently changed by carbon monoxide in cigarette smoke?

- A collagen
- B fibrinogen
- C haemoglobin
- D insulin

18 How does cartilage differ from bone?

- A It contains proteins.
- B It is alive.
- C It is flexible.
- D It is made of calcium salts.

19 The diagram shows two muscles in the human arm.



What muscle actions are needed to lower and raise the weight?

	lower the weight		raise the weight	
	contract	relax	contract	relax
A	Z	Y	Z	Y
B	Y	Z	Y	Z
C	Z	Y	Y	Z
D	Y	Z	Z	Y

20 The table shows what happens to four substances as they pass through a healthy kidney.

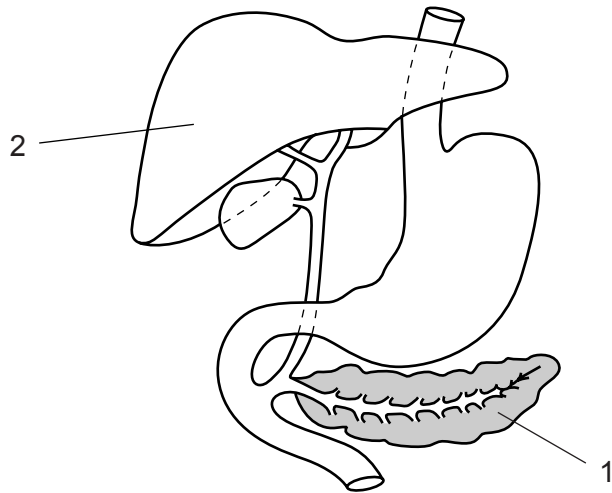
Which is glucose?

substance	filtered from blood	reabsorbed into blood	leaves the kidney in urine
A	yes	no	yes
B	no	no	yes
C	yes	yes	no
D	no	yes	no

21 What is the function of a synapse?

- A** to join together the bones of the skull
- B** to produce the contractions of the heart
- C** to reduce friction at a joint
- D** to transmit nerve impulses

22 The diagram shows part of the digestive system.



Which organ produces glucagon and in which organ does glucagon have its effect?

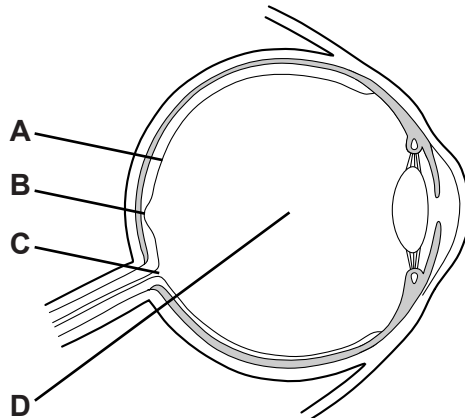
	glucagon produced in	glucagon has its effect on
A	1	1
B	1	2
C	2	1
D	2	2

23 A student draws a dot and a cross as shown.

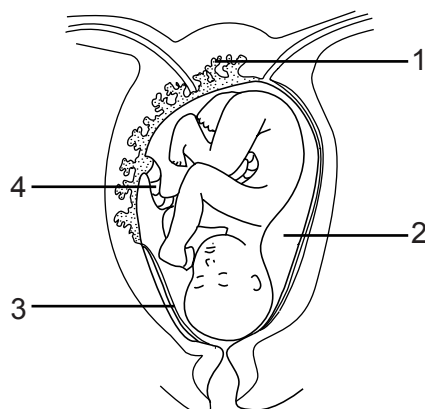


With his right eye closed, the student looks hard at the cross with his left eye. He brings the drawing towards him until the dot disappears.

On which point inside his eye does the image of the dot fall, when it disappears?



24 The diagram shows a fetus in the uterus.



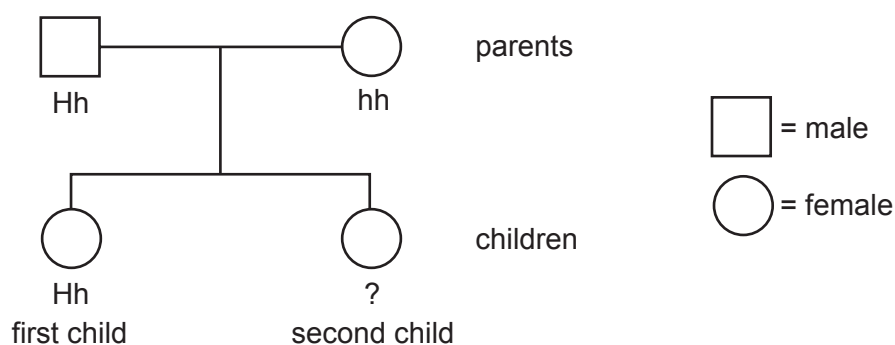
Which statement is true?

- A The part labelled 1 prevents nicotine and alcohol from diffusing to the fetus.
- B The part labelled 2 spreads pressure evenly around the fetus.
- C The part labelled 3 provides oxygen and nutrients for the fetus.
- D The part labelled 4 holds the fetus in place in the uterus.

25 How does the female oral contraceptive pill work?

- A It prevents sperm penetrating the ova.
- B It prevents the release of ova.
- C It stops implantation of the embryo.
- D It denatures enzymes in the sperm.

26 An inherited skin disease is caused by a dominant allele H. The diagram shows the inheritance of this disease in a family.



What is the probability that the second child will have this skin disease?

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

- 27 The table shows the total number of cases of diseases among long-serving prisoners over a seven year period in four prisons.

In which prison are there likely to have been the most drug addicts?

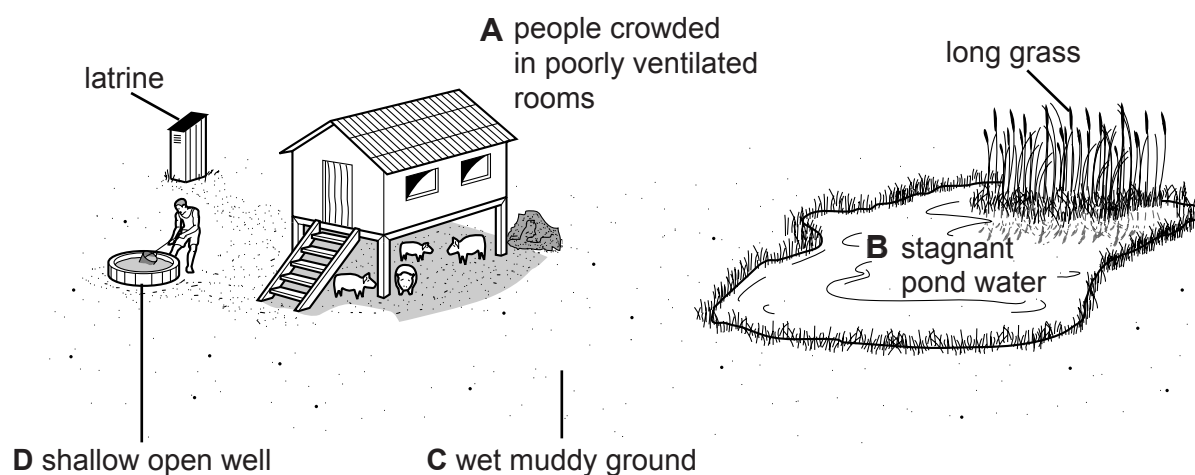
diseases	total number of cases of disease recorded			
	prison A	prison B	prison C	prison D
AIDS	0	2	25	4
coronary heart disease	5	28	9	8
cholera	6	0	0	22
lung cancer	2	29	12	9

- 28 What would be examined to confirm that a person is a typhoid carrier?

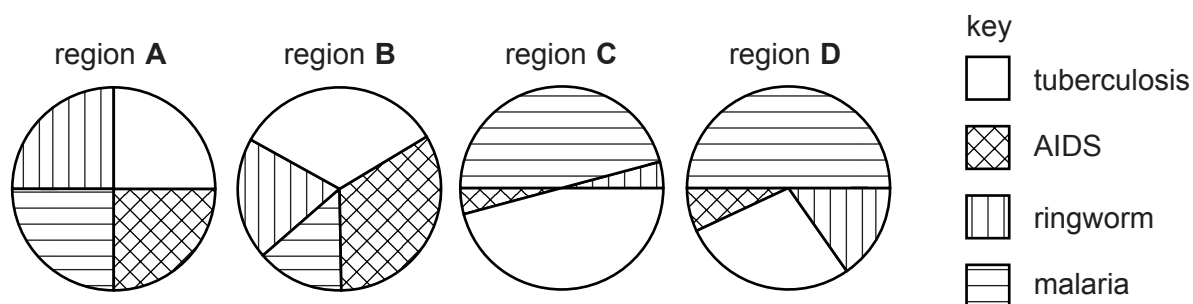
- A body temperature
- B faeces
- C pulse rate
- D urine

- 29 The diagram shows a house and its surrounding area.

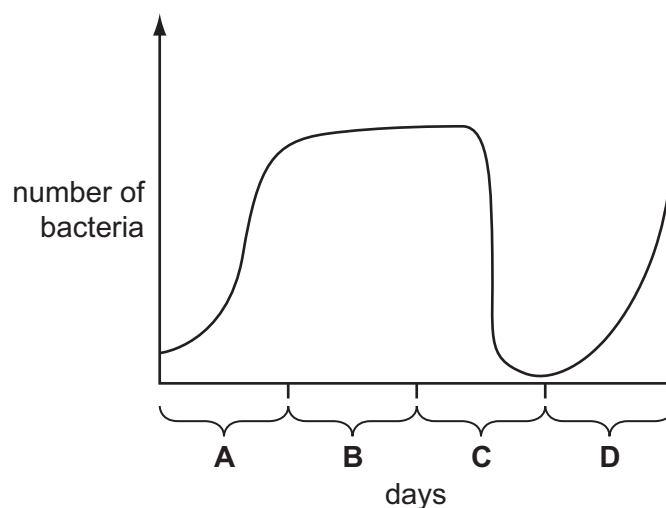
Which feature could cause the spread of cholera?



- 30 The pie charts show the percentage incidence of diseases in four similar regions of a country.
In which region would the use of insecticide most effectively reduce disease transmission?



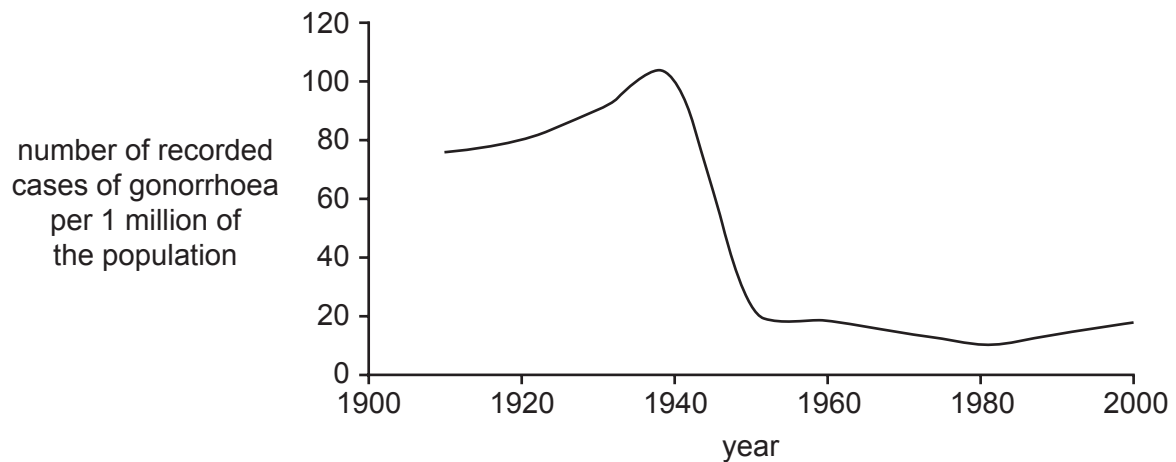
- 31 Which is a feature of **all** people with malaria?
- A They have a rash of small spots on the skin.
 - B They have been bitten by a male Anopheline mosquito.
 - C They have protozoa in their blood.
 - D They have two recessive alleles for malaria.
- 32 Schistosomiasis (bilharzia) is transmitted by snails.
Which would **increase** the numbers of snail vectors?
- A allowing paddy fields to dry out at intervals
 - B extending the irrigation channels in the area
 - C removing weeds from irrigation channels
 - D stocking ponds with different varieties of fish
- 33 The graph shows the number of bacteria in a bowl of soup kept for four days.
On which day was the soup boiled?



34 What are the effects of disinfectants?

	damage human tissue	inhibit bacteria reproduction, rather than killing them	kill bacteria	stimulate the immune system
A	yes	yes	no	yes
B	yes	no	yes	no
C	no	yes	no	no
D	no	no	yes	yes

35 The graph shows the incidence of gonorrhoea during the twentieth century.



What happened in 1940?

- A** Mass x-ray was used to diagnose gonorrhoea.
- B** Penicillin was used to treat gonorrhoea.
- C** Mass vaccination was used against gonorrhoea.
- D** Chlorine was used to kill gonorrhoea pathogens.

36 Which could **not** ever make a person immune to a disease?

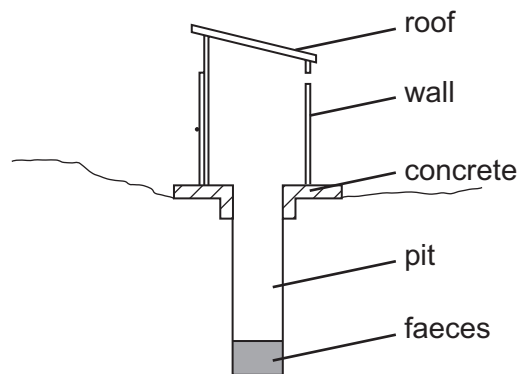
- A** being in close contact with someone who has the disease
- B** being injected with a harmless form of the pathogen that causes the disease
- C** having had the disease before
- D** treating wounds with antiseptics

37 During hot weather it is important to empty dustbins at least once every week.

How does this help reduce housefly populations?

- A Enzymes in housefly larvae are denatured by the high temperatures.
- B Houseflies pick up pathogenic bacteria on their feet in large numbers.
- C Housefly eggs take less than a week to hatch out and develop into more houseflies.
- D Housefly pupae feed on decaying matter in the bin and create unpleasant smells.

38 The diagram shows a section through a pit latrine.

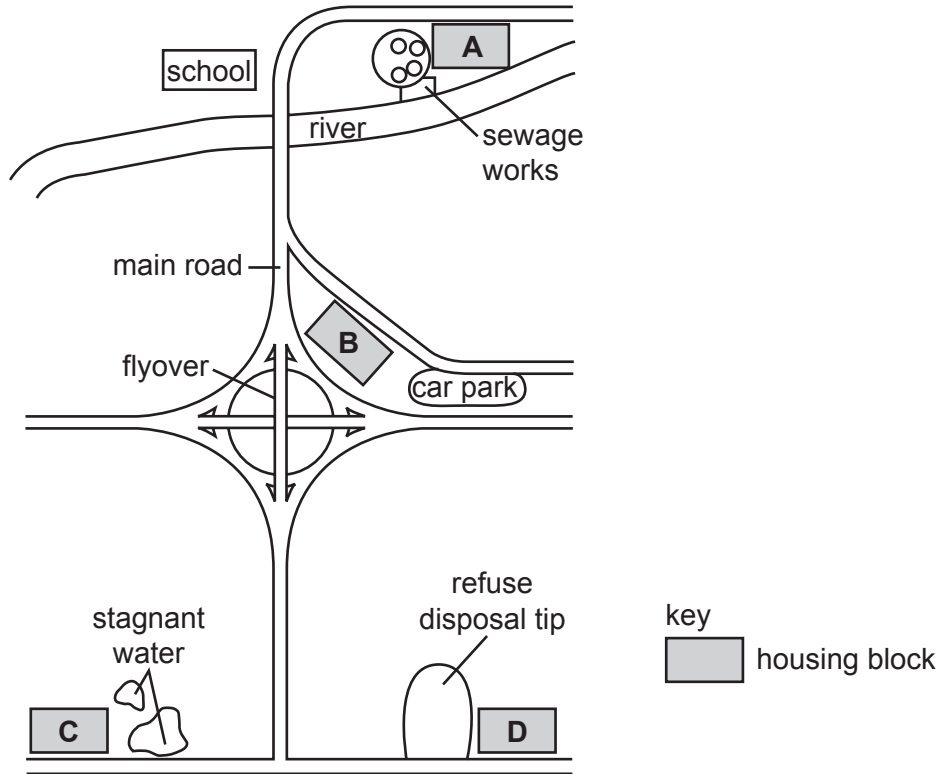


Why may the disposal of faeces in this latrine be a risk to health?

- A Flies can enter and leave the latrine.
 - B The latrine is in a hollow away from water.
 - C The concrete does not enclose the pit sides and base.
 - D Ventilation is poor so pathogens can be inhaled.
- 39 Why are microorganisms used in the treatment of sewage?
- A to absorb the inorganic chemicals from the sewage
 - B to destroy viruses in the sewage
 - C to ingest bacteria in the sewage
 - D to make nitrogenous waste harmless.

40 The map shows four large housing blocks and the school that young children attend. In tests given to the children attending the school, it is found that many children from one housing block suffer poor memory and low intelligence.

In which housing block are these children mostly likely to live?



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