



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY

5096/13

Paper 1 Multiple Choice

May/June 2010

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.

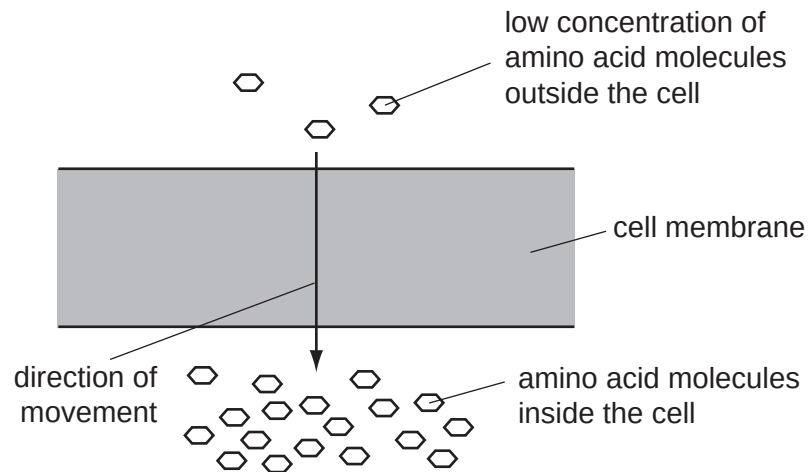


2

1 Which statement is correct for all insects?

- A They have an internal skeleton.
- B They have jointed limbs.
- C They have only three segments.
- D They reproduce asexually.

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



By which process are the amino acid molecules moving?

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

3 A unicellular organism causes disease, lacks a nucleus, but has a cell wall.

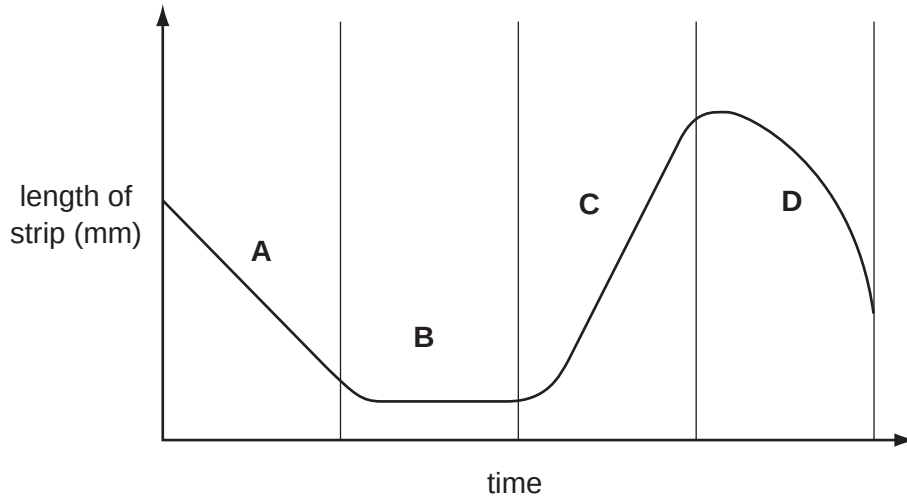
In which group should this organism be classified?

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

- 4 A raw potato strip was placed in solutions of different concentration. The length of the strip was measured regularly.

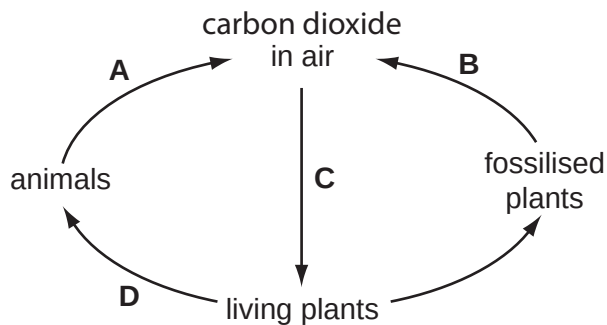
The graph shows the length of the potato strip in solutions of different concentration.

In which period of time was the potato strip in distilled water?



- 5 The diagram shows part of the carbon cycle.

Which process involves excretion?



- 6 Which two products of photosynthesis are essential for humans to live?

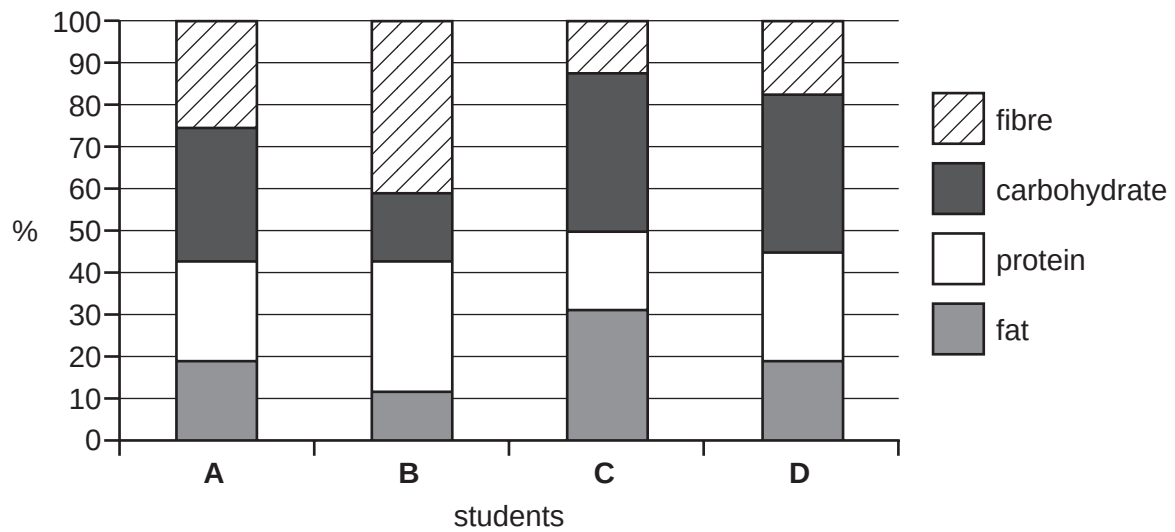
- A carbon dioxide and oxygen
- B food and water
- C oxygen and food
- D water and oxygen

7 Which is an example of good food hygiene?

- A keeping raw and cooked meat separate
- B leaving cooked meat uncovered
- C reheating cooked meat gently
- D storing cooked meat in a warm cupboard

8 The monthly food intake of four students was analysed and the percentages are shown on the graph.

Which student's diet puts them at greatest risk of coronary heart disease?



9 What is protein mainly used for in the body?

	energy source	growth and repair	stored in the body
A	no	yes	no
B	no	yes	yes
C	yes	no	no
D	yes	no	yes

10 The results of tests on a food are shown in the table.

Benedict's test result	biuret test result	iodine test result
orange colour	pale purple colour	yellow-brown colour

Which nutrients were present?

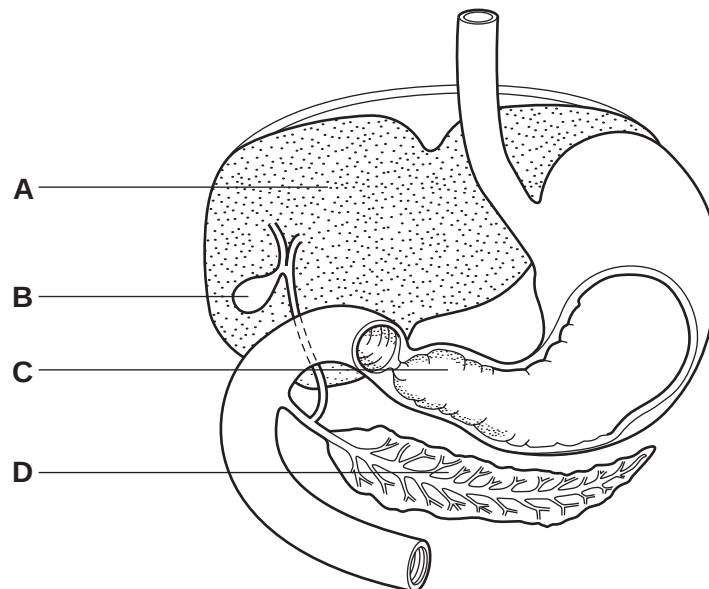
- A protein and reducing sugar, no starch
- B protein, no reducing sugar and no starch
- C protein, reducing sugar and starch
- D reducing sugar, no protein and no starch

11 Which process is an example of assimilation?

- A formation of carbon dioxide from glucose
- B formation of cell membranes using lipids
- C formation of sweat from blood plasma
- D formation of urea from amino acids

12 The diagram shows part of the digestive system.

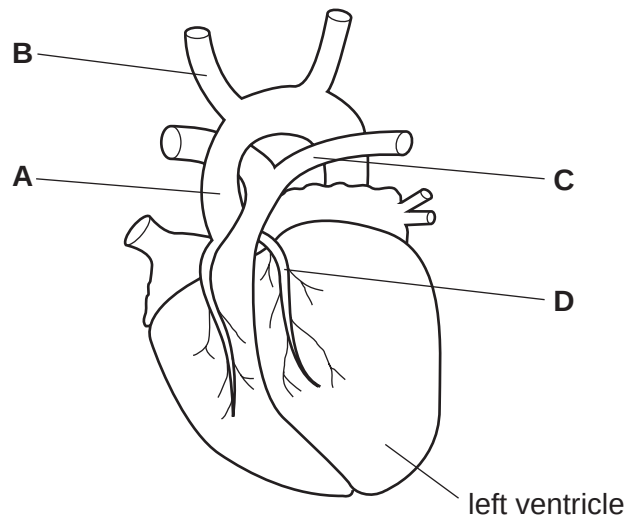
In which part is bile made?



- 13 What is released during the aerobic breakdown of glucose?
- A carbon dioxide and lactic acid
 - B lactic acid, energy and oxygen
 - C oxygen, energy and water
 - D water, carbon dioxide and energy
- 14 Which activity does **not** need mitochondria?
- A contraction of heart muscle
 - B diffusion of oxygen
 - C maintaining body temperature
 - D transmission of a nerve impulse
- 15 What is **not** a function of the bones of the skeleton?
- A cause movement by contraction
 - B produce red blood cells
 - C protect organs
 - D support muscles
- 16 Some athletes have very long limb bones.
- How may this **improve** their performance?
- A The bones give more attachment points for muscles.
 - B The bones provide longer levers to increase movement.
 - C The bones provide greater protection for the body.
 - D They have more bone marrow so they produce more white blood cells.
- 17 Which effect of cigarette tar on the respiratory system shows that it is a carcinogen?
- A It causes the alveoli to enlarge, forming air spaces in the lungs.
 - B It causes lung epithelial cells to keep on dividing by mitosis.
 - C It paralyses cilia and prevents them from wafting and moving mucus.
 - D It stimulates goblet cells to secrete more mucus than usual.

- 18** The diagram shows some blood vessels in an external view of the heart.

In which part does a blood clot form causing most heart attacks in obese people?



- 19** When the skin is cut, what happens to platelets in the blood?

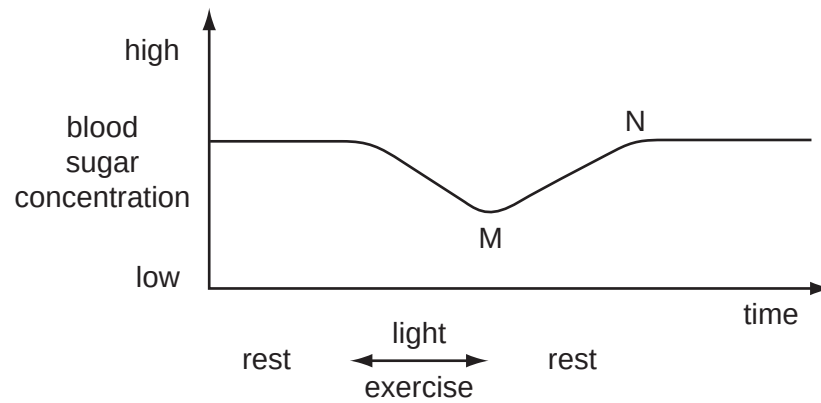
- A** They become sticky to prevent entry of bacteria.
- B** They cause chemical changes that produce fibrin threads.
- C** They form antibodies to destroy bacteria.
- D** They seal the wound by sticking together.

- 20** Blood leaving a part of the body contains little oxygen but a high concentration of carbon dioxide and urea.

Which part of the body is the blood leaving?

- A** ileum
- B** kidney
- C** left atrium
- D** liver

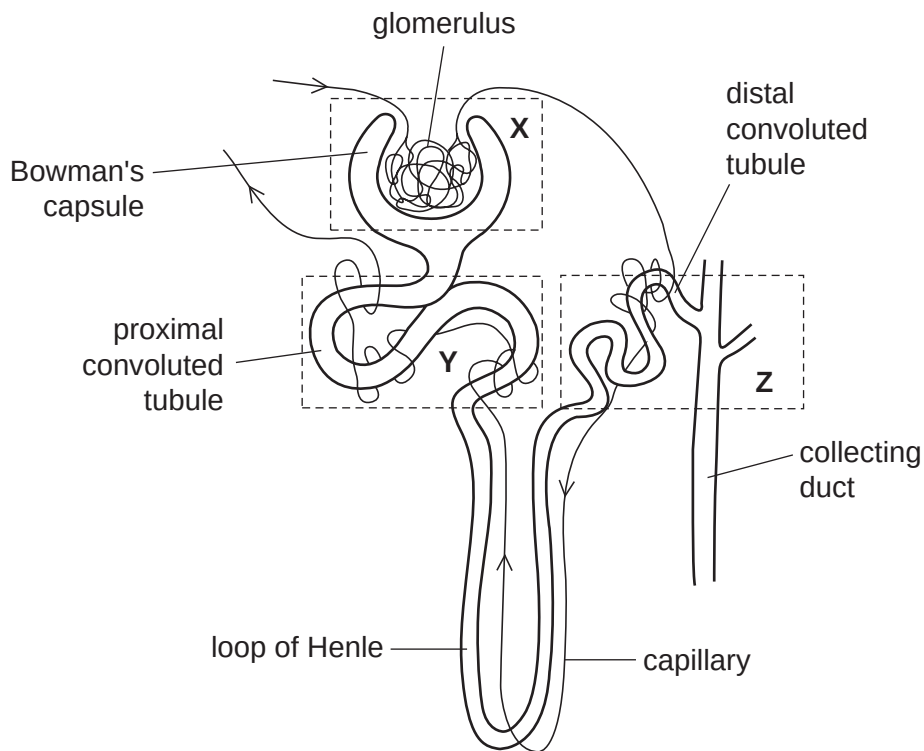
21 The graph shows the changes in blood sugar concentration during periods of rest and



Which secretion causes the change in blood sugar concentration between time M and N?

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

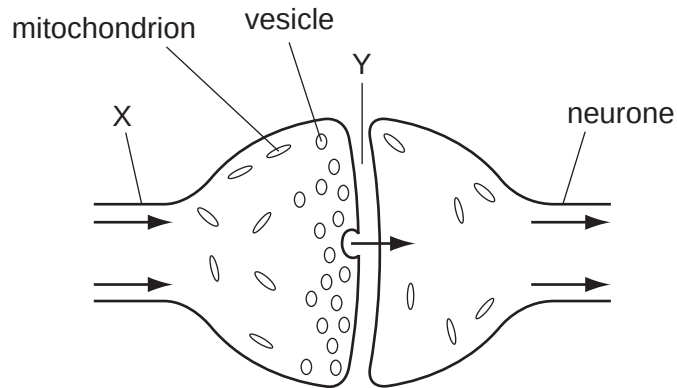
22 The diagram shows a nephron from a kidney.



What happens at **X**, **Y** and **Z**?

	X	Y	Z
A	filtration	reabsorption of water	reabsorption of glucose
B	filtration	selective reabsorption	reabsorption of water
C	reabsorption of water	filtration	selective reabsorption
D	reabsorption of water	selective reabsorption	filtration

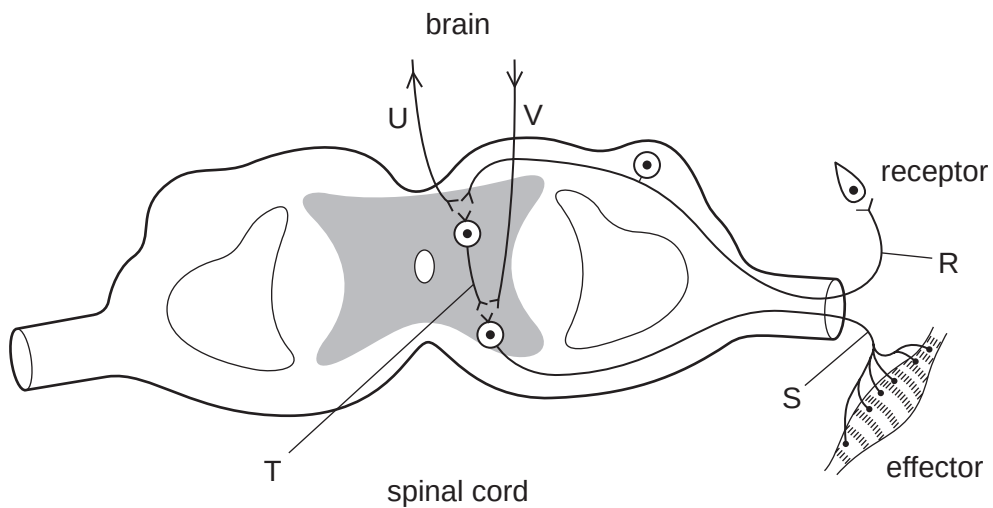
23 The diagram shows part of a very small structure in the nervous system.



What are parts X and Y?

	X	Y
A	motor neurone	synapse
B	motor neurone	synovial fluid
C	sensory neurone	synapse
D	sensory neurone	synovial fluid

24 The diagram shows some pathways along which nerve impulses may pass.



Which pathway is taken by an impulse to cause contraction of the effector muscle in response to a pin-prick?

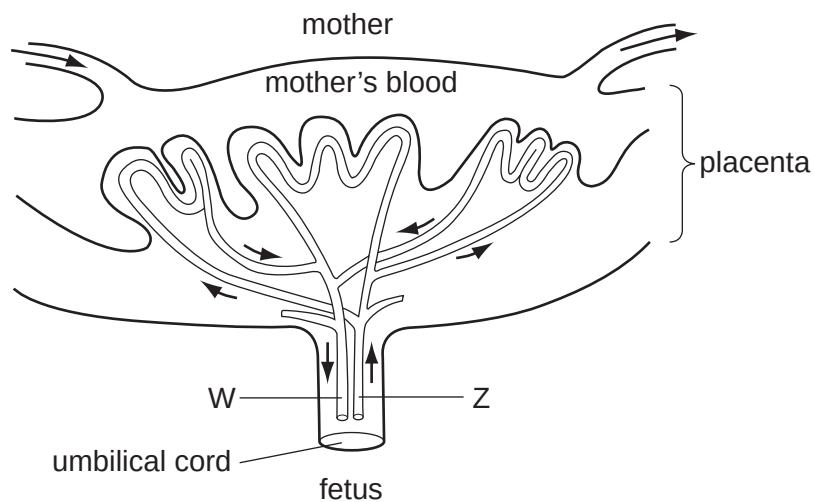
- A** S → T → R
- B** U → V → S
- C** R → T → S
- D** R → T → V → U → S

- 25 A patient suffers from panic, shaking, sweating and dilated pupils. There are secretions from the eyes and nose.

From what is the patient most likely to be suffering?

- A alcohol poisoning
- B schistosomiasis
- C heroin withdrawal
- D malaria

- 26 The diagram shows the placenta and umbilical cord.



How does the blood in W differ from that in Z?

	blood in W contains	blood in Z contains
A	less amino acids	more amino acids
B	less glucose	more glucose
C	less oxygen	more oxygen
D	less urea	more urea

27 The table describes two organs in the female reproductive system.

organ	description
1	a tube which carries the ovum from the ovary
2	an organ in which sperms are deposited

What are organs 1 and 2?

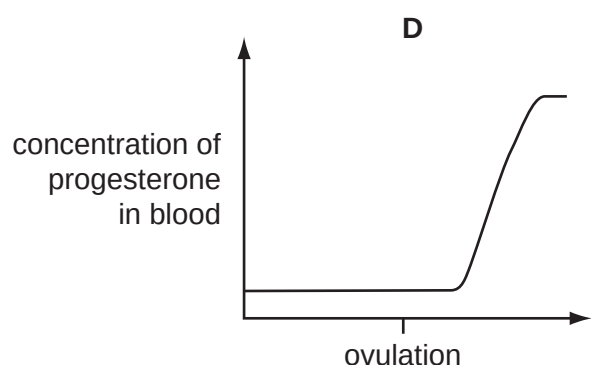
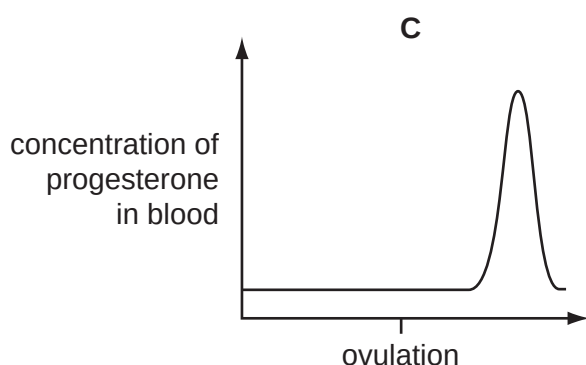
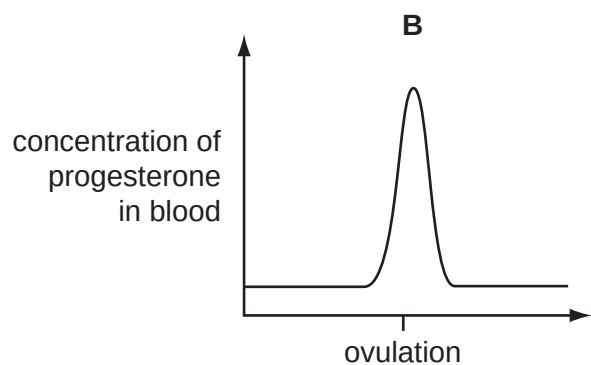
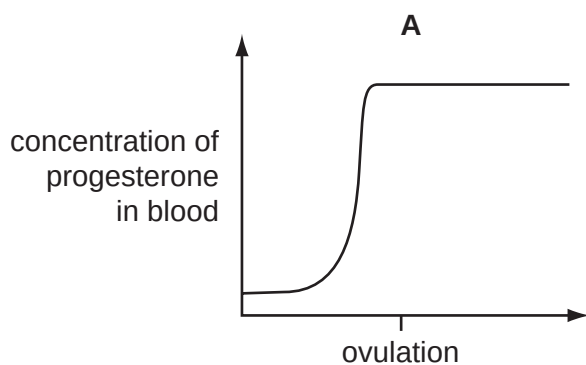
	1	2
A	cervix	uterus
B	oviduct	vagina
C	cervix	vagina
D	oviduct	uterus

28 Which chromosomes are present in an ovum?

- A** X only **B** Y only **C** XX **D** XY

29 The graphs show the concentration of progesterone in the blood of a female during a 28 day cycle.

Which graph shows the changes in concentration of progesterone if pregnancy occurs during the cycle?



30 The number of new reported cases of TB is increasing annually.

Which factors are leading to this increase in the occurrence of TB?

	bacteria becoming resistant to the drugs	HIV reduces the efficiency of a person's immune system	increased flooding increases the spread of bacteria	increase in population causing overcrowding in homes
A	✓	✓	✓	x
B	✓	✓	x	✓
C	✓	x	✓	✓
D	x	✓	✓	✓

31 Why is rickets an example of a deficiency disease?

- A** It can be the result of lack of vitamin D.
- B** It gets worse with time.
- C** It increases bone development.
- D** It occurs in children.

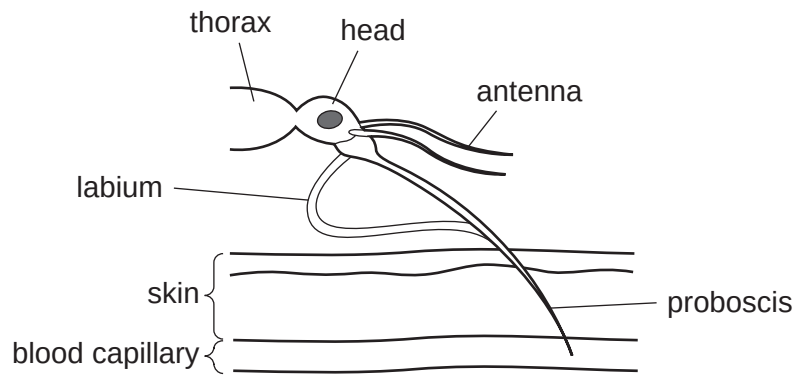
32 The following events occur during the life cycle of the malaria pathogen.

- 1 heat attracts the vector
- 2 high fever develops
- 3 pathogens released into the blood every 48 hours
- 4 vector feeds on the blood

What is the correct order of these events?

	first	————→	last
A	1	4	3 2
B	2	4	3 1
C	3	1	2 4
D	4	1	2 3

33 The diagram illustrates how a vector transmits a common tropical infection.



What is the pathogen and the vector?

	pathogen	vector
A	a bacterium	a housefly
B	a housefly	a bacterium
C	a mosquito	a protozoan
D	a protozoan	a mosquito

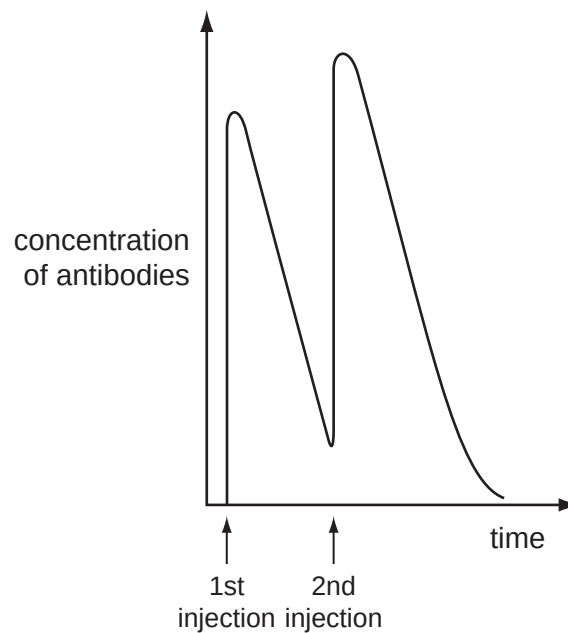
34 How does *Bacillus thuringiensis* stop the life cycle of the mosquito?

- A** The bacteria attack the larval intestine.
- B** The bacteria block the pupal breathing tubes.
- C** The bacteria feed on the mosquito eggs so they don't hatch into larvae.
- D** The bacteria interrupt the growth of the adults so they don't lay eggs.

35 Which action **cannot** help stop the life cycle of *Schistosoma mansoni*?

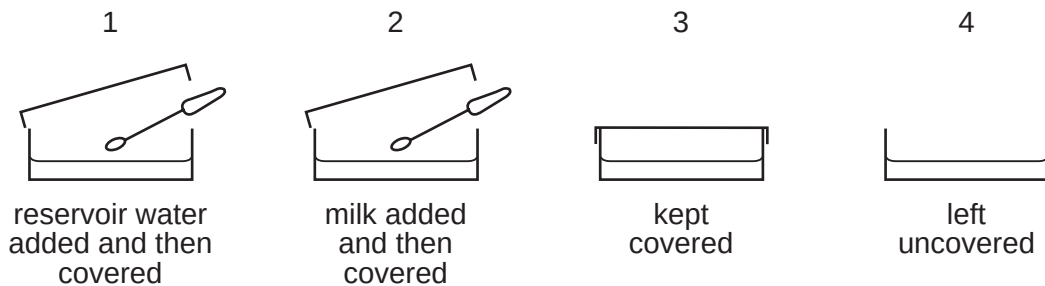
- A** avoiding skin contact with stagnant water
- B** covering the skin with antiseptic lotion
- C** improving land drainage
- D** proper disposal of faeces

- 36 The graph shows the effects on the concentration of antibodies in a person after two injections.



Which type of immunity does this person have?

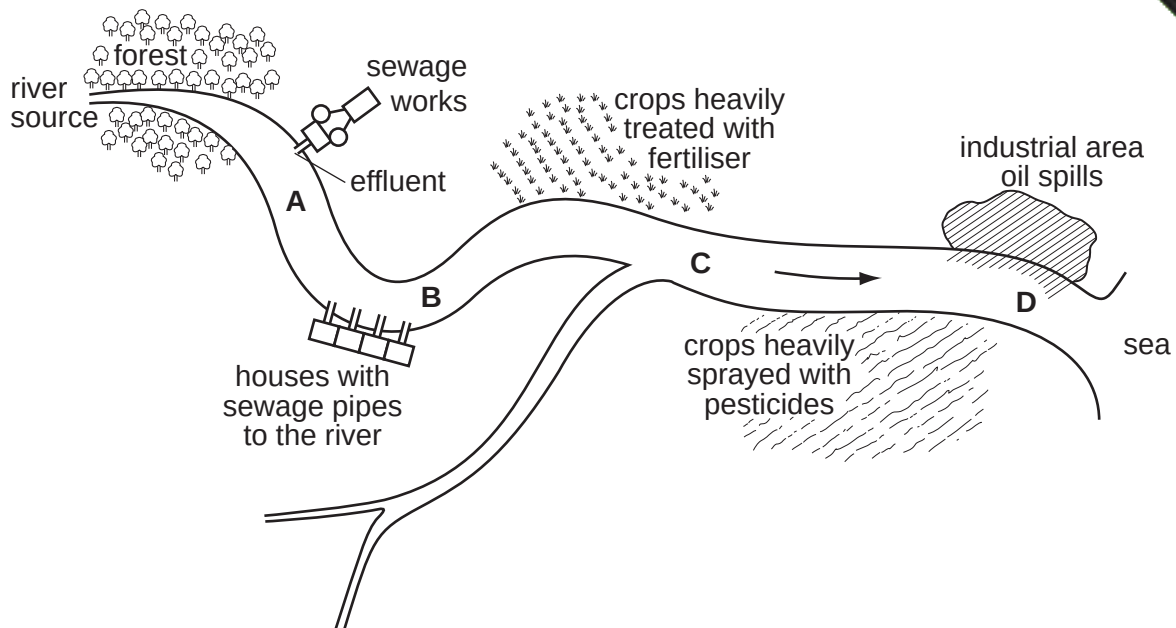
- A** active artificial immunity
 - B** active natural immunity
 - C** passive artificial immunity
 - D** passive natural immunity
- 37 Four sterile agar plates were treated as shown in the diagrams and incubated.



On which plates would colonies of bacteria grow?

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

- 38 If people drank the river water, where would there be the highest risk of them being infected with cholera?



- 39 In most sewage treatment methods, the solids are separated from the fluid part and both are treated separately.

Which row shows the microorganisms used in the treatments of these two parts of the sewage?

	fluid effluent treated using	solid sludge treated using
A	aerobic bacteria	aerobic bacteria
B	aerobic bacteria	anaerobic bacteria
C	anaerobic bacteria	aerobic bacteria
D	anaerobic bacteria	anaerobic bacteria

- 40 Why does covering a rubbish heap with a layer of dry soil help to reduce the number of houseflies?
- A** The larvae are unable to breathe.
- B** The soil prevents the rubbish from drying out.
- C** The pupae cannot move through the soil.
- D** The adults do not lay eggs on dry soil.