

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY

5096/01

Paper 1 Multiple Choice

May/June 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.

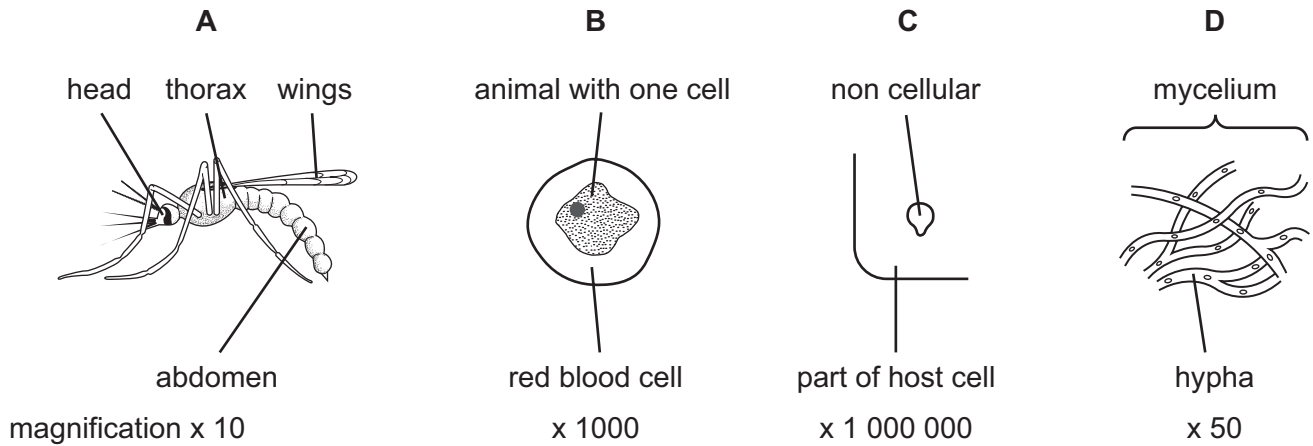
Any rough working should be done in this booklet.

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



1 The diagrams show four types of organisms.

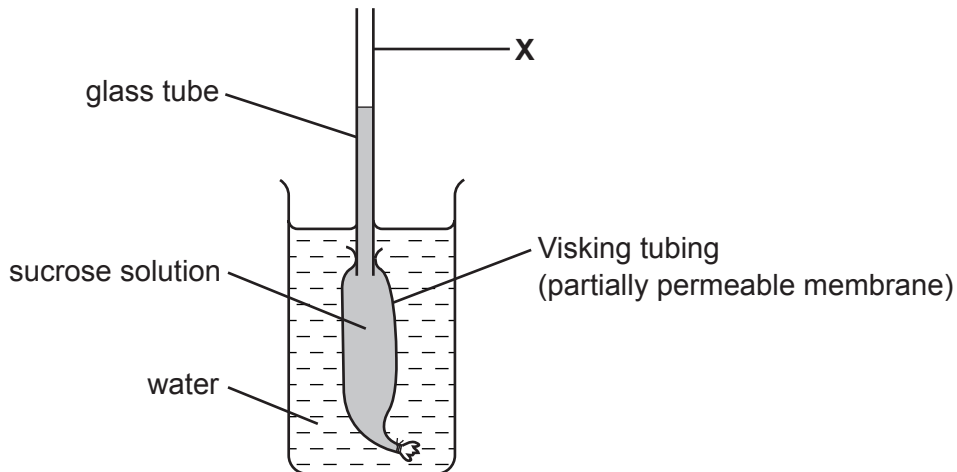
Which causes athlete's foot?



2 Which process **makes** and which process **removes** a product of metabolism?

| | product of metabolism | |
|----------|-----------------------|-------------|
| | makes | removes |
| A | defecation | egestion |
| B | egestion | respiration |
| C | nutrition | defecation |
| D | respiration | excretion |

3 The apparatus in the diagram was set up and allowed to stand.



After one hour, the level of the solution had risen to X.

What caused the level to rise?

- A Atmospheric pressure forced the liquid up.
 - B The sucrose solution became more concentrated.
 - C The Visking tubing contracted.
 - D Water entered the Visking tubing.
- 4 What do humans depend upon plants to make?
- A carbohydrate, oxygen and protein
 - B carbohydrate, protein and nitrogen
 - C carbohydrate, oxygen and water
 - D oxygen, nitrogen and water
- 5 Which nutrient is present in **all** of the substances: amylase, haemoglobin and insulin?
- A fatty acids
 - B iron
 - C protein
 - D vitamin D

6 What is the best food to help a patient recover from wounds which are slow in healing?

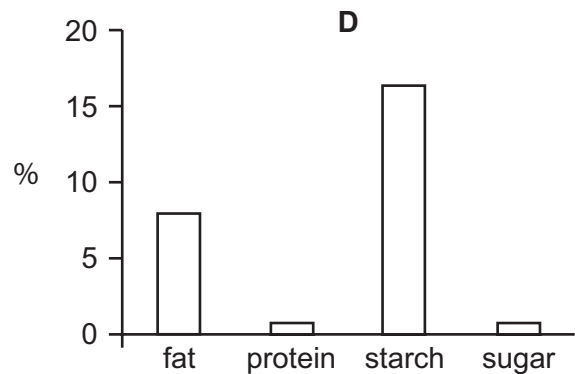
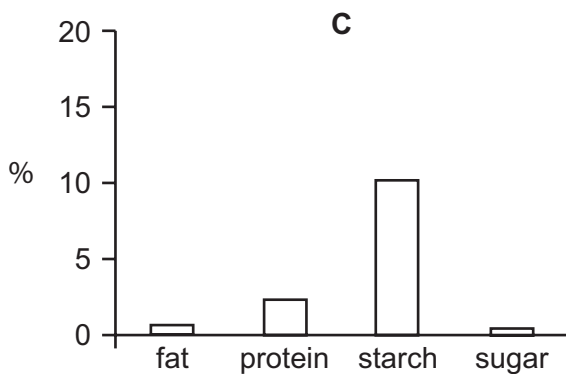
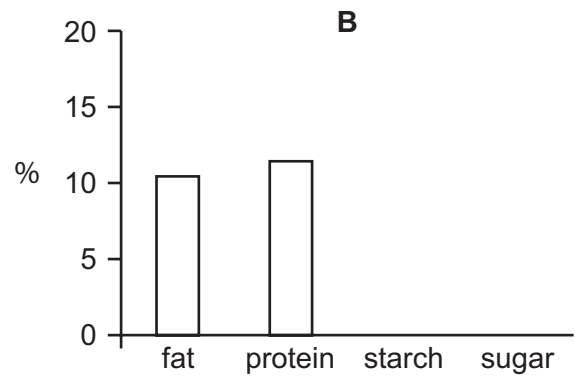
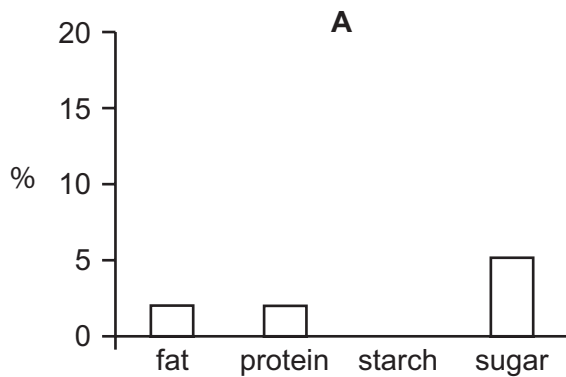
- A butter
- B eggs
- C fish
- D oranges

7 What does the water present in digestive juices hydrolyse?

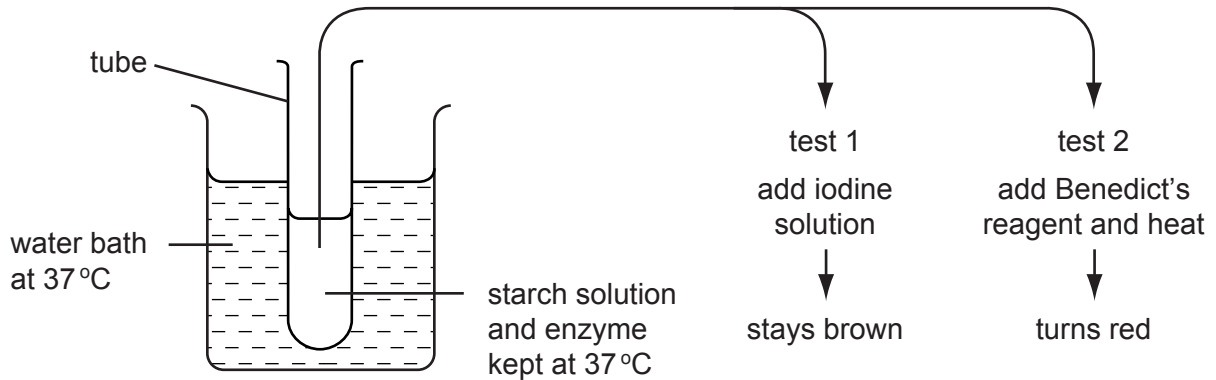
- A calcium and protein
- B protein and starch
- C starch and vitamin C
- D vitamin C and calcium

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

Which food is egg?



- 9 What applies to **all** the processes: digestion, respiration and protein synthesis?
- A** All are biochemical reactions that require enzymes.
- B** All involve breaking large molecules into smaller molecules.
- C** All only occur in animal cells.
- D** All release energy to produce ATP.
- 10 The diagram shows an experiment to investigate the action of an enzyme on starch. After two hours samples were taken and tested.



What has happened in the tube after the two hours?

- A** No reducing sugar is present.
- B** Starch has been hydrolysed to maltose.
- C** Starch remains at the same concentration.
- D** The enzyme has been denatured.
- 11 The table gives numbers for named substrates, enzymes and products.

| | substrate | | enzyme | | products |
|---|-----------|---|----------|---|--------------------------|
| 1 | fat | 4 | lipase | 7 | amino acids |
| 2 | starch | 5 | protease | 8 | fatty acids and glycerol |
| 3 | protein | 6 | amylase | 9 | reducing sugars |

Which numbers show a complete digestive process?

| | substrate | enzyme | products |
|----------|-----------|--------|----------|
| A | 1 | 5 | 7 |
| B | 2 | 6 | 9 |
| C | 3 | 5 | 8 |
| D | 3 | 4 | 7 |

12 Which conditions are needed for a blood clot to form when you cut yourself?

| | calcium ions | damaged platelets | fibrinogen | white blood cells |
|----------|--------------|-------------------|------------|-------------------|
| A | ✓ | ✓ | x | ✓ |
| B | ✓ | ✓ | ✓ | x |
| C | x | ✓ | ✓ | x |
| D | x | x | ✓ | ✓ |

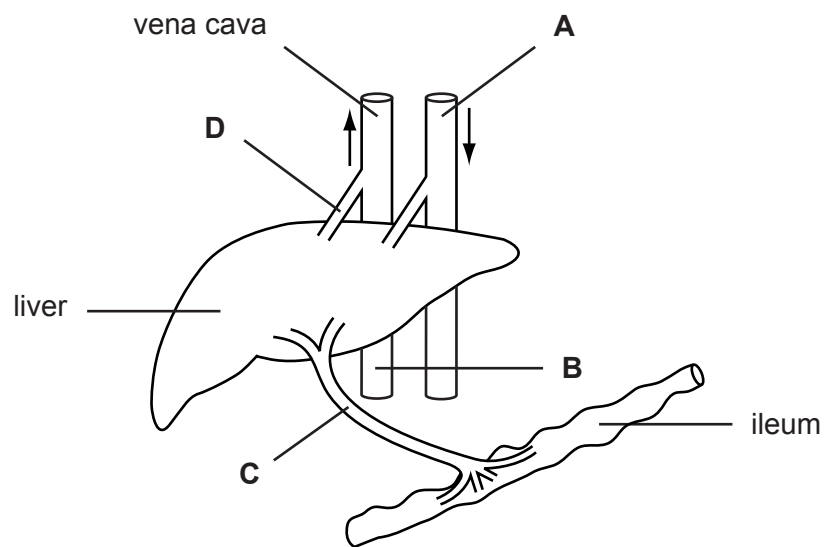
key

✓ substance present

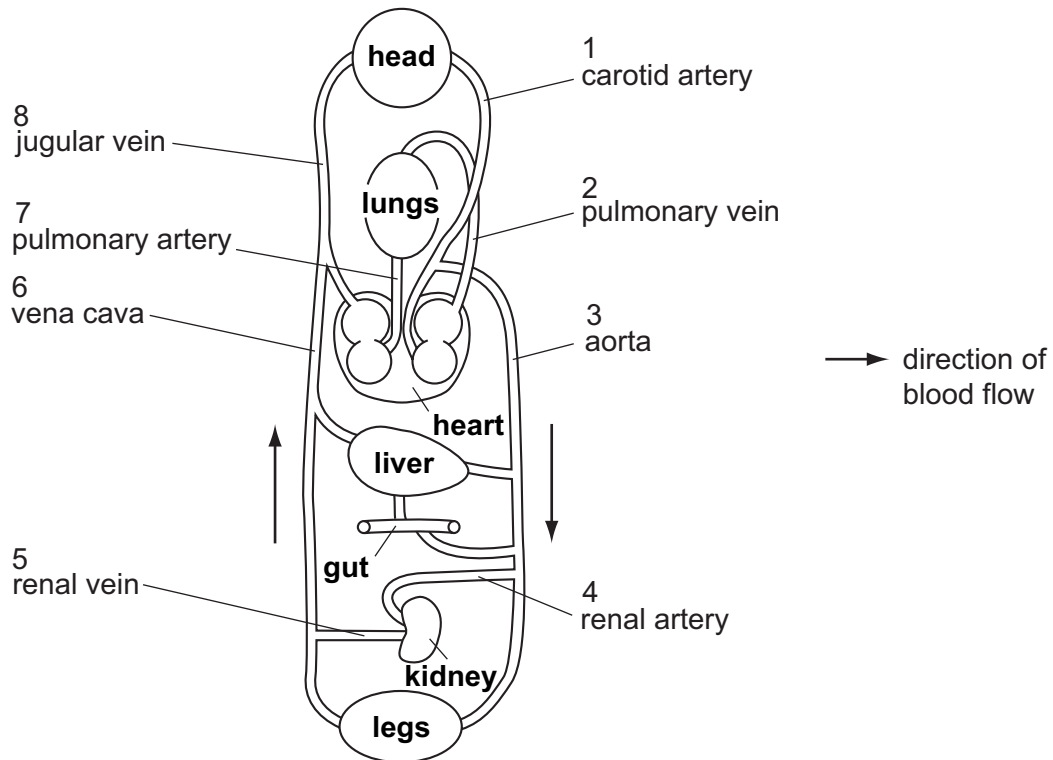
x substance absent

13 The diagram shows the blood supply of the liver.

Which blood vessel would have the highest concentration of glucose after 24 hours without food?



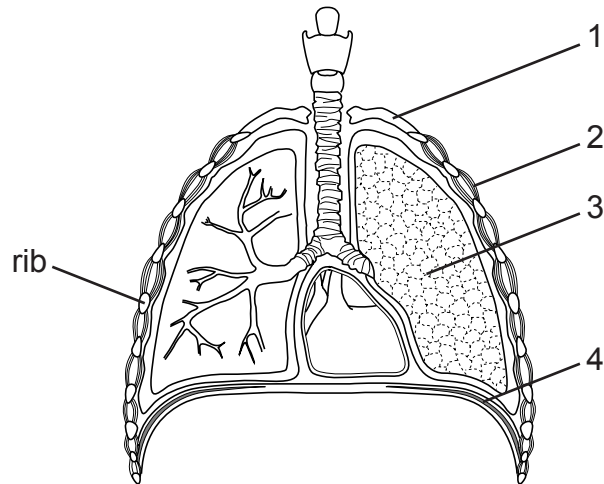
- 14 The diagram represents a simplified arrangement of the main blood vessels supplying various organs.



Which path (shown by the numbers of the blood vessels passed) would a red blood cell take when travelling from the kidney to the head?

- A 4 to 3 to 1
- B 5 to 6 to 8
- C 4 to 3 to 2 to 7 to 8
- D 5 to 6 to 7 to 2 to 1

15 The diagram shows a section through the thorax, showing the structures used when breathing.

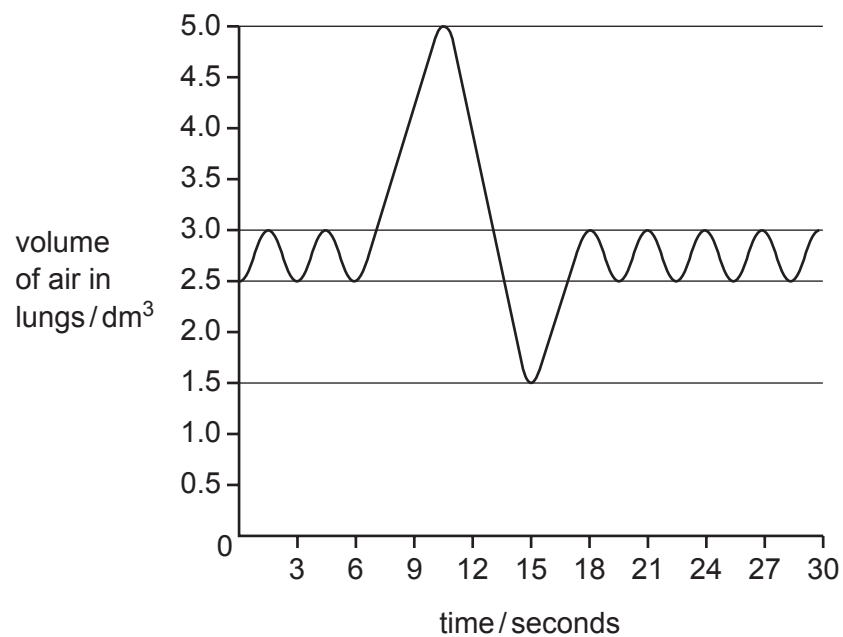


Which two structures contract when breathing in?

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

16 The breathing of a person was measured at rest, breathing in and out as deeply as possible once and then at rest again.

The diagram shows the changes of the volume of air in the lungs.



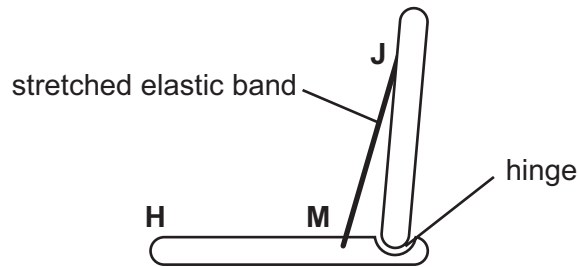
What is the vital capacity of this person?

- A 0.5 dm^3 B 1.5 dm^3 C 3.5 dm^3 D 5.0 dm^3

17 Which cell is likely to contain the largest number of mitochondria?

- A a bone cell
- B a muscle cell
- C an ovum
- D a red blood cell

18 The diagram shows a model of a muscle and bones at a joint.



The elastic band attached at **J** and **M** represents a muscle.

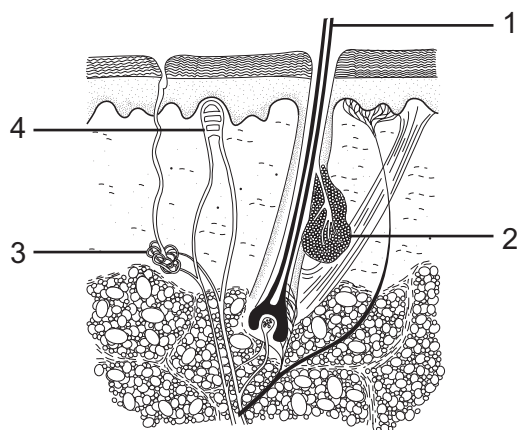
When the elastic band shortens, what is the distance moved and the speed of movement at both **M** and at **H**?

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

19 Which type of fibres are found in ligaments and tendons?

| | ligament | tendon |
|----------|----------|----------|
| A | collagen | collagen |
| B | collagen | elastin |
| C | elastin | collagen |
| D | elastin | elastin |

20 The diagram shows a section through the skin.



What happens during vigorous exercise?

- A Part 1 is pulled over the skin surface.
- B The secretions from part 2 increase.
- C The secretions from part 3 decrease.
- D The vessels of part 4 dilate.

21 A person is digging on a hot day without drinking.

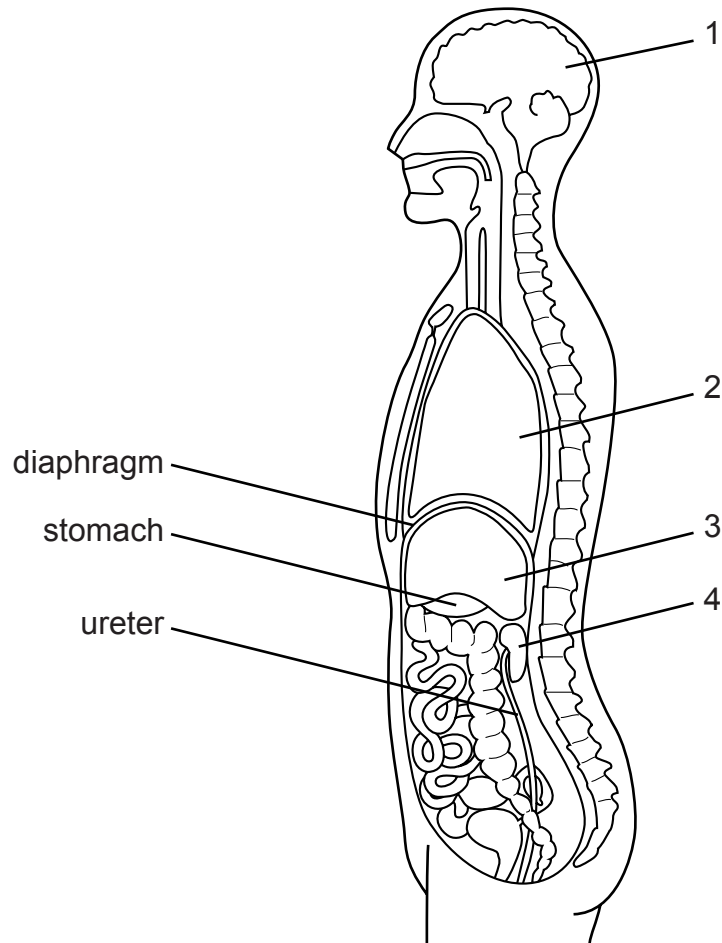
What effect will this have on the release of ADH (antidiuretic hormone) and the reabsorption of water in the body?

| | release of ADH | reabsorption of water |
|---|----------------|-----------------------|
| A | decreases | decreases |
| B | decreases | increases |
| C | increases | decreases |
| D | increases | increases |

22 Compared to a hormone a nerve impulse generally has

| | a long lasting response | a widespread response | a fast response | a chemical messenger |
|---|-------------------------|-----------------------|-----------------|----------------------|
| A | yes | no | yes | no |
| B | no | no | yes | no |
| C | yes | yes | no | yes |
| D | no | yes | no | yes |

23 The diagram shows some organs in side view.



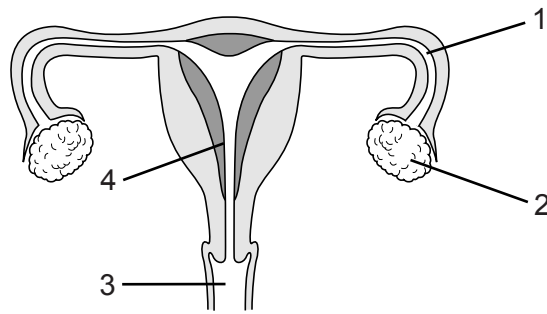
Which two organs are usually damaged in a patient suffering from the long-term effects of drinking too much alcohol?

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

24 What may happen to a heroin addict a few hours after the drug is withdrawn?

- A** Desire for the drug is reduced.
- B** There is an increased feeling of well-being.
- C** Tolerance to the drug increases.
- D** Vomiting, sweating and cramp occur.

25 The diagram shows part of the female reproductive system.



What are the usual locations for fertilisation and implantation?

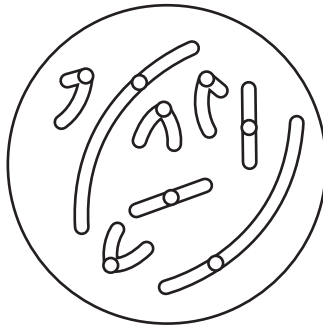
| | fertilisation | implantation |
|----------|---------------|--------------|
| A | 1 | 3 |
| B | 2 | 4 |
| C | 1 | 4 |
| D | 2 | 3 |

26 In an experiment, amino acids containing radioactive nitrogen were taken in by living cells.

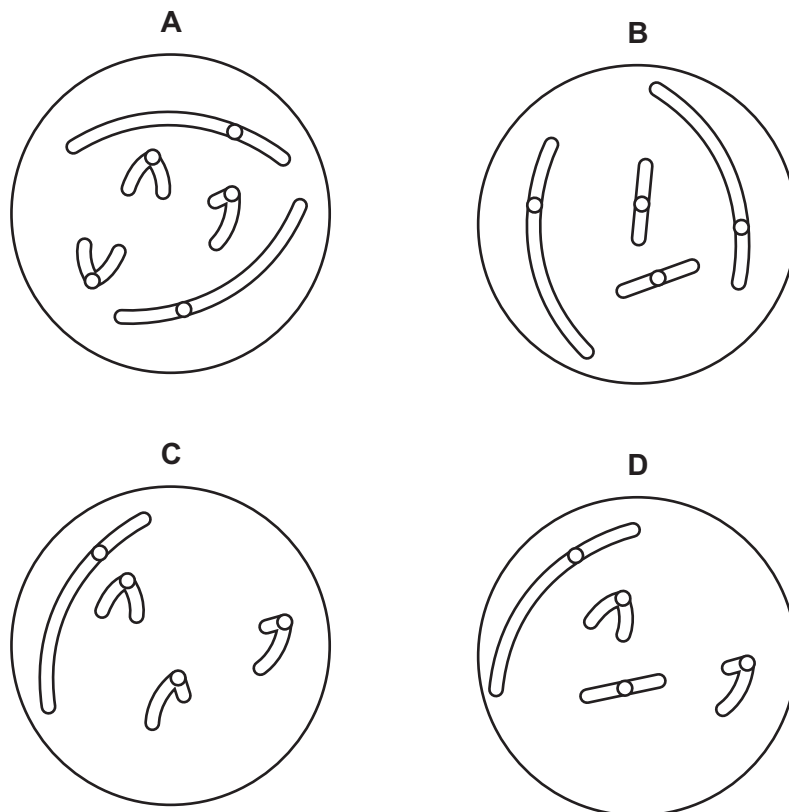
Which compound formed in the cells would be radioactive?

- A** glucose
- B** glycogen
- C** protein
- D** starch

27 The diagram shows the chromosomes in a cell about to undergo meiosis.



Which diagram shows the chromosomes of a gamete formed from this cell?



28 What will increase the spread of a disease by droplet infection?

- A inadequate disposal of faeces
- B low humidity in the environment
- C overcrowded rooms
- D washing food in contaminated water

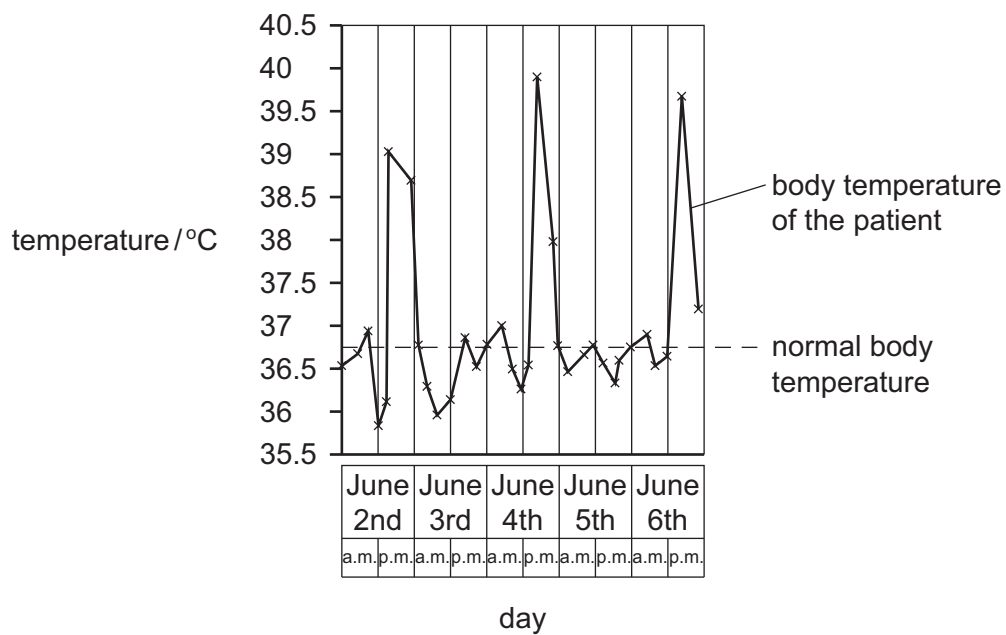
29 What would a doctor test faeces for to confirm that a patient is suffering from typhoid?

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

30 Which would **not** be useful in a campaign to control tuberculosis?

- A improved ventilation of housing
- B chlorination of drinking water
- C BCG vaccination
- D isolation of tuberculosis patients

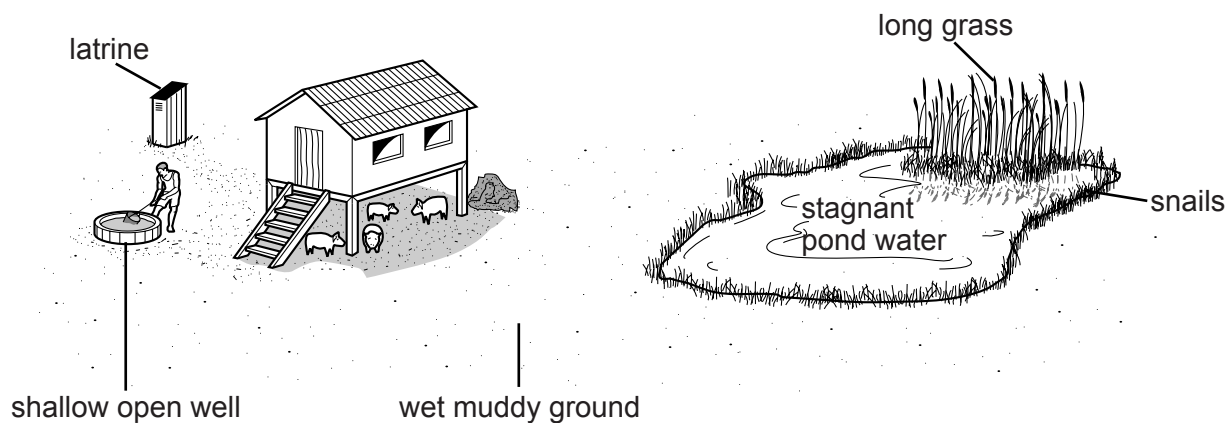
31 The graph shows the body temperature of a patient.



From which disease is this patient most likely to be suffering?

- A cholera
- B influenza
- C malaria
- D schistosomiasis

32 The diagram shows the surroundings of a house in the tropics.



Which diseases are the people who are living there at most risk from as a result of the surroundings?

| | | | |
|----------|---------|--------------|-----------------|
| A | cholera | malaria | tuberculosis |
| B | cholera | typhoid | influenza |
| C | typhoid | tuberculosis | schistosomiasis |
| D | typhoid | malaria | schistosomiasis |

33 The table shows a number of diseases and the organisms which cause them.

| disease | organism |
|--------------|-----------|
| malaria | protozoan |
| AIDS | virus |
| tuberculosis | bacterium |
| influenza | virus |
| ringworm | fungus |
| gonorrhoea | bacterium |

Which diseases are most likely to be controlled by antibiotics?

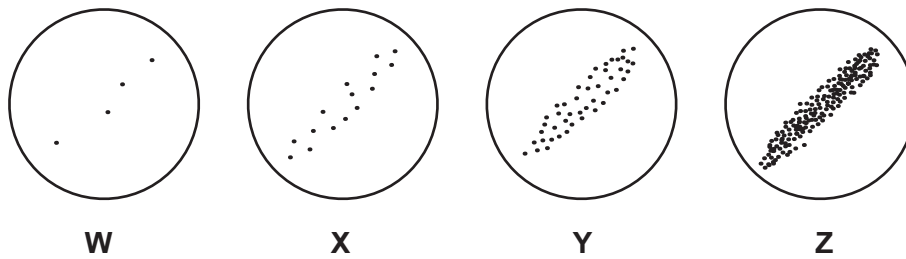
- A** AIDS and influenza
- B** gonorrhoea and AIDS
- C** gonorrhoea and tuberculosis
- D** ringworm and malaria

34 After defecating, four students, **W**, **X**, **Y** and **Z**, treated their hands as follows.

1. did not wash hands
2. washed hands without soap
3. washed hands in normal soap
4. washed hands in antiseptic soap

Each student then dragged a finger across the surface of a sterile agar plate.

The diagrams show the plates after incubation for 24 hours.

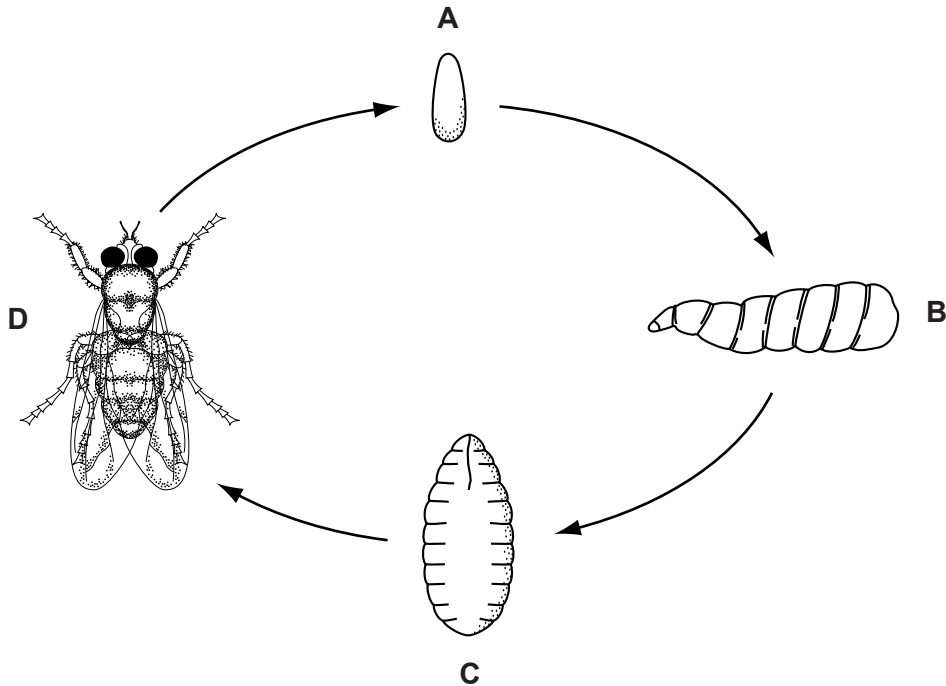


Which plate shows the bacterial growth from fingers treated as shown in the table below?

| | 1. did not wash hands | 2. washed hands without soap | 3. washed hands in normal soap | 4. washed hands in antiseptic soap |
|----------|-----------------------|------------------------------|--------------------------------|------------------------------------|
| A | W | X | Y | Z |
| B | W | X | Z | Y |
| C | Z | Y | X | W |
| D | Z | Y | W | X |

35 The diagram shows the stages in the life cycle of a house fly.

Which stage causes bacterial contamination of food?



36 What type of immunity is gained by a person who receives serum containing antibodies?

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

37 Compacting and pressing down domestic refuse is done to reduce the entry of

- A air.
- B houseflies.
- C mosquitoes.
- D rats.

38 What is the order of the stages for the large-scale treatment of water to produce drinking water?

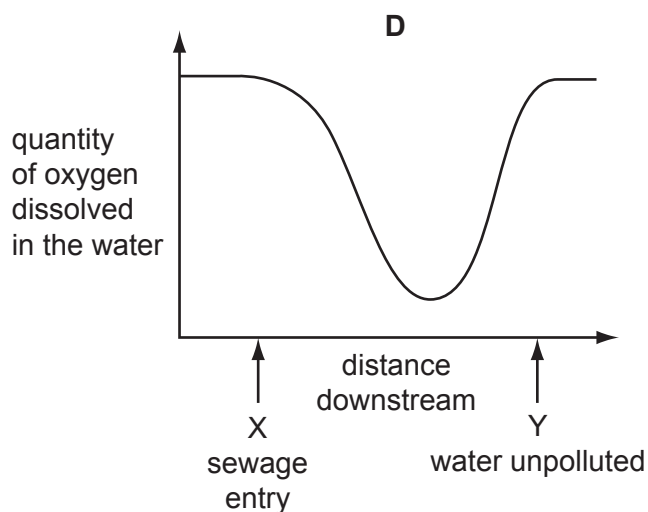
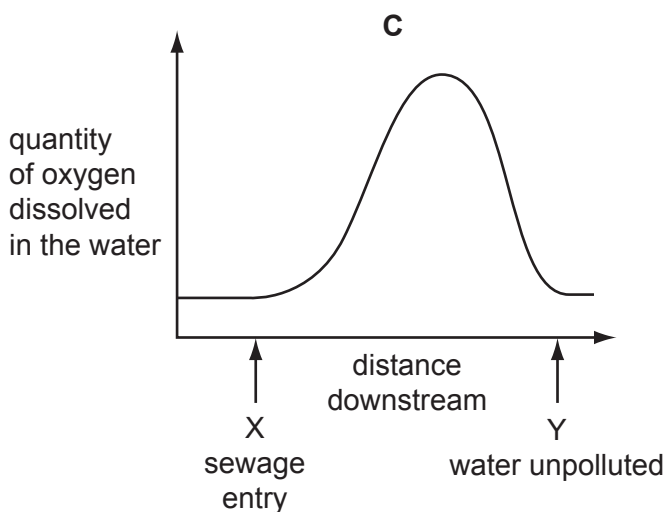
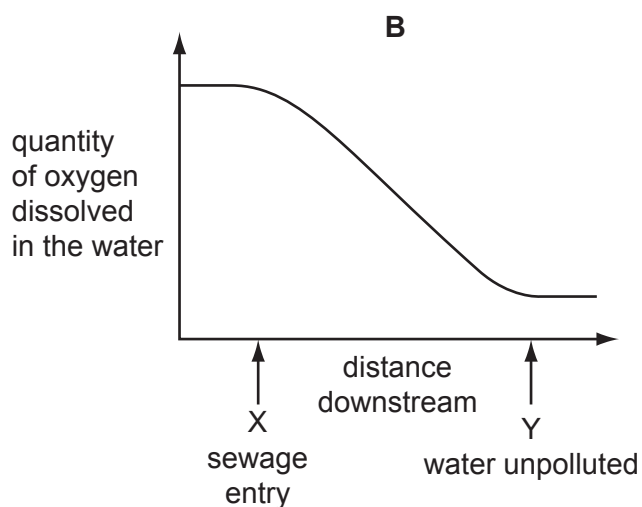
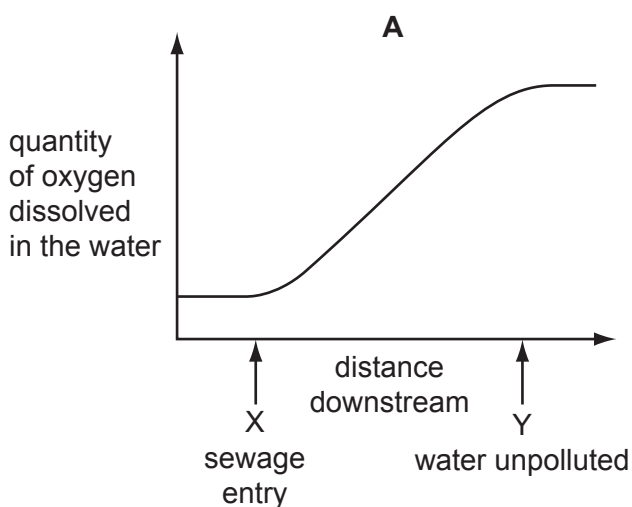
- A river water → chlorination → filter → settlement tank → storage tank
- B river water → coarse grid → settlement tank → filter → chlorination
- C river water → settlement tank → coarse grid → filter → chlorination
- D river water → settlement tank → filter → coarse grid → storage tank

39 Which method of disposing of human sewage best prevents the spread of disease?

- A releasing sewage into the sea
- B siting pit latrines near rivers
- C using aerobic microorganisms
- D using sewage as fertiliser

40 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?



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