



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**HUMAN AND SOCIAL BIOLOGY**

**5096/12**

Paper 1 Multiple Choice

**October/November 2012**

**1 hour**

Additional Materials: Multiple Choice Answer Sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

\* 3 3 6 7 5 7 9 3 6 4 \*

**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.

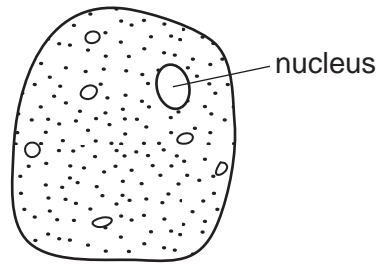
**Read the instructions on the Answer Sheet very carefully.**

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 diagram shows a cell as seen using a microscope.



Which type of cell does the diagram show?

- A bacterial cell
  - B liver cell
  - C plant cell
  - D red blood cell
- 2 What are the chemicals used in the process of photosynthesis?
- A carbon dioxide and water
  - B light and carbon dioxide
  - C oxygen and sugar
  - D water and oxygen
- 3 A unicellular organism takes in oxygen and releases carbon dioxide, providing the energy to divide into two cells that increase in size. Each cell can form outgrowths that flow around a prey it has detected and engulf it.

Which characteristics of living organisms are illustrated by these activities?

- A all of them except irritability (sensitivity)
- B all of them except movement
- C all of them except nutrition
- D all of them

4 A student studied six unicellular organisms with a microscope.

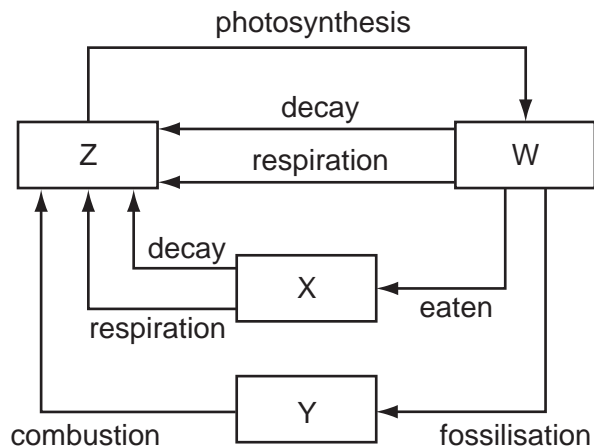
The table records **only** the observations the student was able to make.

organism	parts of cell seen by the student					
	cell membrane	cell wall	nucleus	cytoplasm	DNA	nuclear membrane
1	yes	yes				yes
2			yes	yes	yes	
3	yes			yes	yes	
4	yes		yes			yes
5		yes	yes			yes
6		yes		yes	yes	

Which two organisms could be bacteria?

- A** 1 and 5      **B** 2 and 6      **C** 3 and 6      **D** 4 and 5

5 The diagram shows the carbon cycle.



What does Z represent?

- A** animals  
**B** carbon dioxide  
**C** oxygen  
**D** plants

- 6 A hospital laboratory was sent four liquids by a medical team. The results of tests on these liquids are shown in the table.

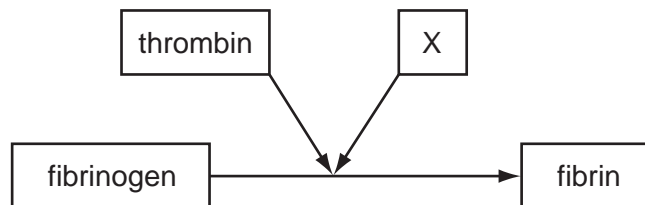
Which liquid is likely to be urine from a person with diabetes?

	results of tests			
	iodine test	Benedict's test	biuret test	urea test
<b>A</b>	blue/black	blue	pale blue	positive
<b>B</b>	blue/black	orange/red	lilac	negative
<b>C</b>	brown	blue	lilac	negative
<b>D</b>	brown	orange/red	pale blue	positive

- 7 Which food provides the most energy per gram?

- A beans
- B beef
- C cheese
- D milk

- 8 The diagram represents some of the substances involved in forming a blood clot.



Which substance in the diet is X?

- A calcium
  - B fibre
  - C iron
  - D vitamin D
- 9 Which child is likely to be malnourished because of a lack of vitamin C in the diet?

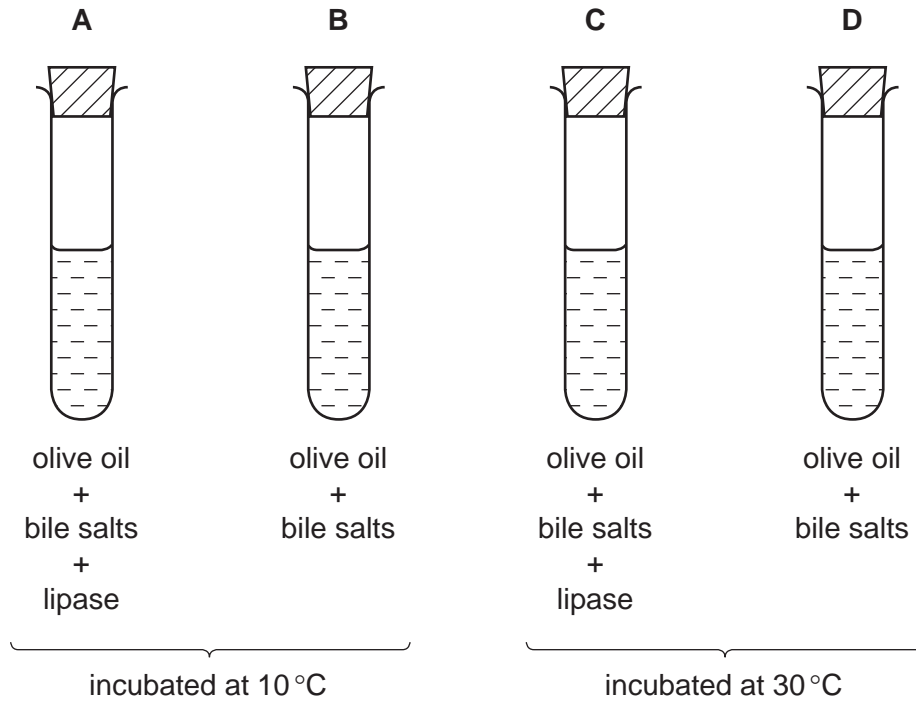
A child having

- A a lack of red blood cells.
- B distorted leg bones.
- C poor blood clotting.
- D slow healing of wounds.

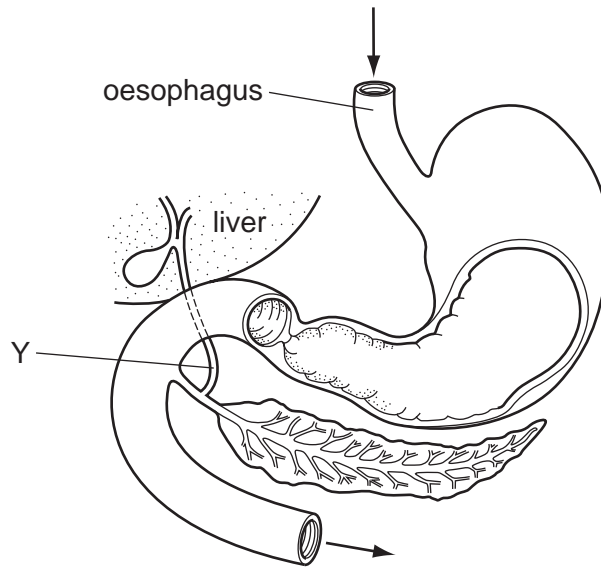
10 The contents of four test-tubes were set up and incubated at temperatures as shown in the diagram.

A few drops of bromothymol blue indicator were added to each tube. This indicator is blue in alkalis and yellow in acids.

In which test-tube would the blue indicator turn yellow first?



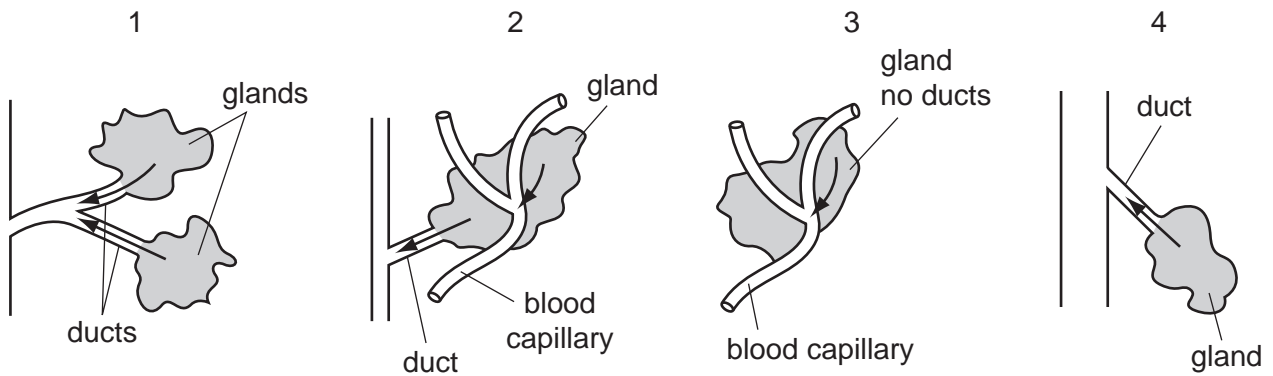
11 The diagram shows part of the alimentary canal and associated organs.



What will be the effect of a blockage in tube Y?

- A Amylase will not be produced.
- B Fat will not be emulsified.
- C Insulin injections will be needed.
- D Protein digestion will stop.

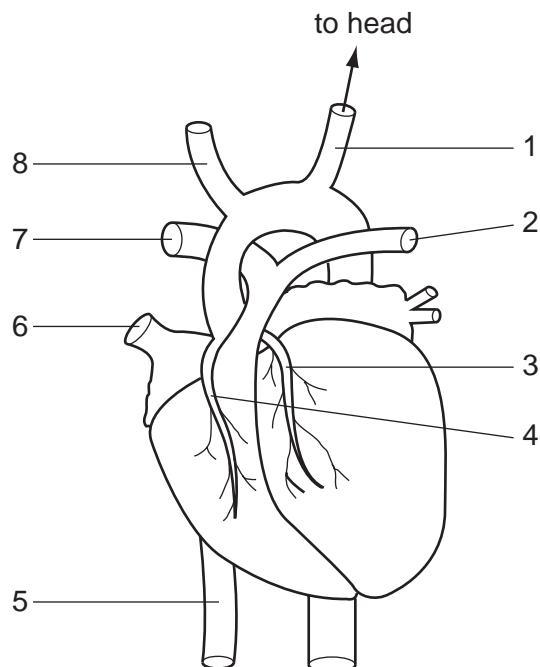
- 12 The diagram shows the basic plan of four types of glands. The arrows show how their secretions pass from them into other parts of the body.



In which type of gland would secretions of saliva, sebum, insulin and oestrogen be produced?

	saliva	sebum	insulin	oestrogen
A	1	4	2	3
B	2	1	4	3
C	3	2	4	1
D	4	1	3	2

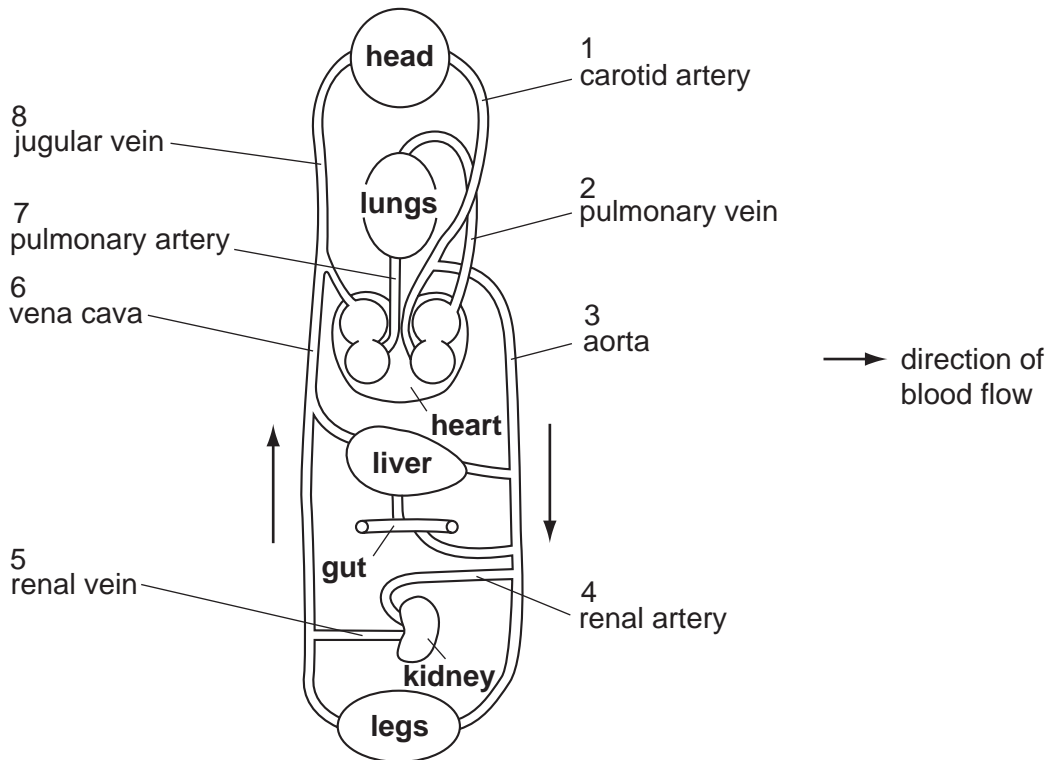
- 13 The diagram shows the external structure of the heart.



In which two vessels would a deposit of cholesterol increase the likelihood of coronary thrombosis?

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

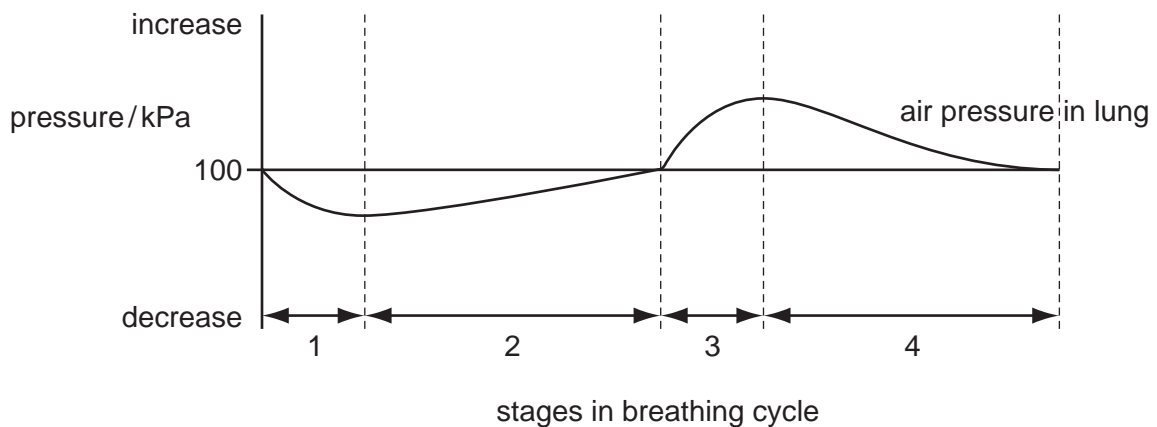
- 14 The diagram represents a simplified arrangement of the main blood vessels supplying various organs.



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

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

- 15 The graph shows changes in the air pressure in the lungs during breathing.

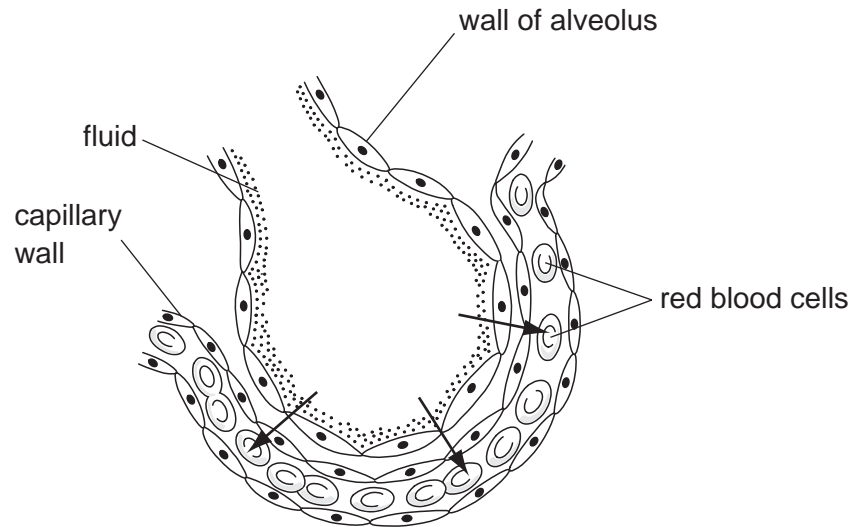


During which of the stages in breathing does expiration occur?

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



16 The diagram shows a section through an alveolus and a blood capillary.



What is diffusing in the direction shown by the arrows?

- A carbon dioxide down a concentration gradient
- B lymph against a concentration gradient
- C oxygen down a concentration gradient
- D water molecules against a concentration gradient

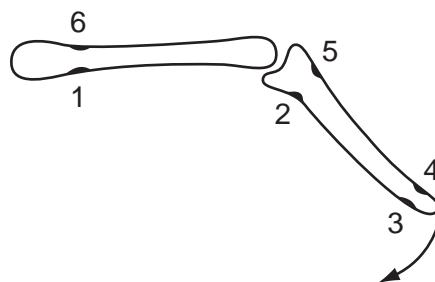
17 The list shows stages used in mouth-to-mouth resuscitation used to restart breathing in a casualty.

- 1 Place lips around casualty's mouth.
- 2 Blow into casualty's mouth until the chest rises.
- 3 Pinch nose with thumb and forefinger.
- 4 Lift chin to tilt casualty's head backwards.
- 5 Inhale a deep breath.

In which order should the stages be carried out?

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

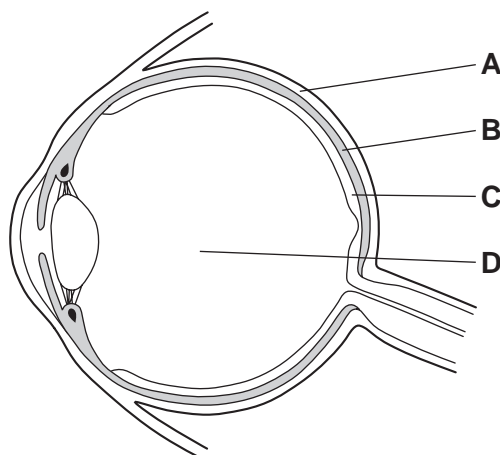
- 18 The diagram shows two bones as they are arranged in a limb.



Between which two points would a muscle be attached to move the lower limb in the direction of the arrow?

- A 1 and 2      B 2 and 3      C 4 and 6      D 5 and 6
- 19 The diagram shows a horizontal section through the eye.

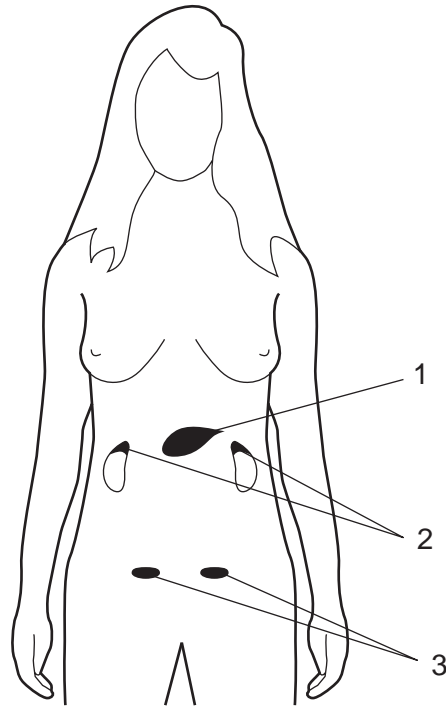
Which is the choroid?



- 20 Which shows the state of the circular and radial iris muscles and the ciliary muscles in the eye, when viewing the action described in the table?

	viewing action	circular iris muscles	radial iris muscles	ciliary muscles
<b>A</b>	a distant object in bright light	relaxed	contracted	contracted
<b>B</b>	a distant object in dim light	contracted	relaxed	relaxed
<b>C</b>	a near object in bright light	contracted	relaxed	contracted
<b>D</b>	a near object in dim light	relaxed	contracted	relaxed

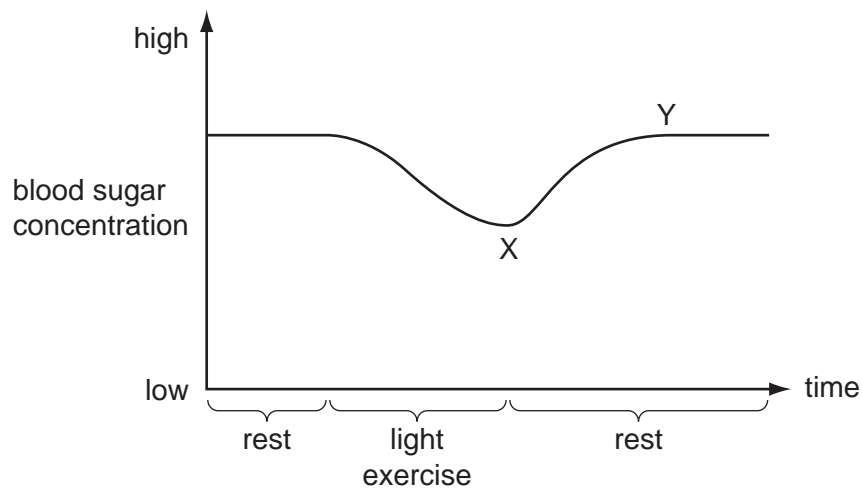
21 The diagram shows the position of three types of gland in the body.



Which glands secrete adrenaline, glucagon and oestrogen?

	adrenaline	glucagon	oestrogen
<b>A</b>	1	2	3
<b>B</b>	2	3	1
<b>C</b>	2	1	3
<b>D</b>	3	1	2

- 22 The graph shows the changes in blood sugar concentration during periods of rest and light exercise.

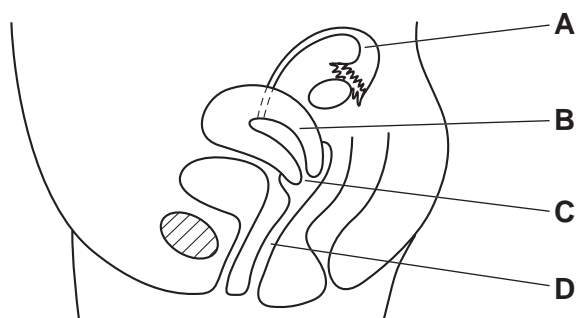


What causes the change in blood sugar level between X and Y?

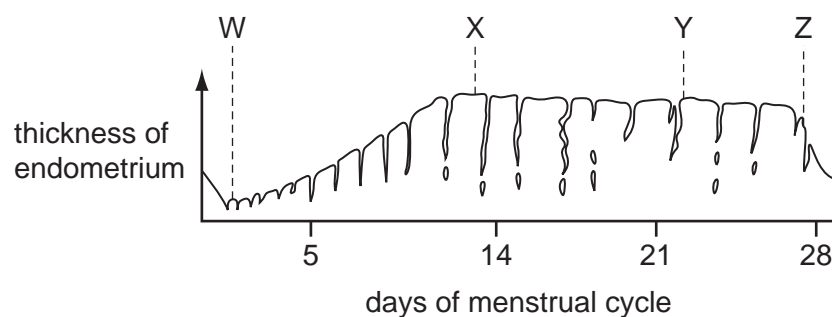
- A glucagon released by the liver
  - B glucose released by the liver
  - C glycogen released by the pancreas
  - D insulin released by the pancreas
- 23 In a reflex arc, what is the correct pathway of impulses?
- A receptor → intermediate neurone → sensory neurone → motor neurone → effector
  - B receptor → motor neurone → intermediate neurone → sensory neurone → effector
  - C receptor → sensory neurone → intermediate neurone → motor neurone → effector
  - D sensory neurone → receptor → motor neurone → intermediate neurone → effector
- 24 What is the first effect of drinking alcohol?
- A Liver cells degenerate.
  - B The blood vessels of the skin constrict.
  - C The body temperature rises several degrees.
  - D The rate of transmission of impulses slows down.

25 The diagram shows a side view through the female reproductive system.

Which part is the oviduct?



26 The graph shows the changes in the thickness of the lining of the uterus during a menstrual cycle.



At which points are the concentrations of oestrogen and progesterone in the blood at their highest?

	oestrogen	progesterone
<b>A</b>	W	X
<b>B</b>	X	Y
<b>C</b>	Y	Z
<b>D</b>	Z	W

27 What is the **most** reliable way of preventing pregnancy?

- A** cap
- B** condom (sheath)
- C** rhythm (safe period)
- D** sterilisation

28 Cystic fibrosis is a disease caused by a recessive allele and is an example of monohybrid inheritance.

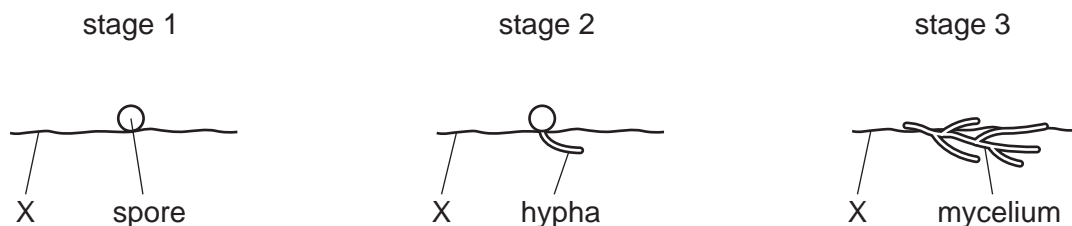
Which proportion of children born to a mother who is heterozygous for cystic fibrosis and a father with cystic fibrosis will inherit the condition?

- A one quarter
- B half
- C two thirds
- D three quarters

29 What does the term 'degenerative disease' mean?

- A It gradually gets worse with increasing obesity.
- B It involves a gradual breakdown of tissues that stop working properly.
- C It is caused by a lack of exercise.
- D It is only associated with getting older.

30 The diagram shows stages in a pathogen affecting a part of the body, X.

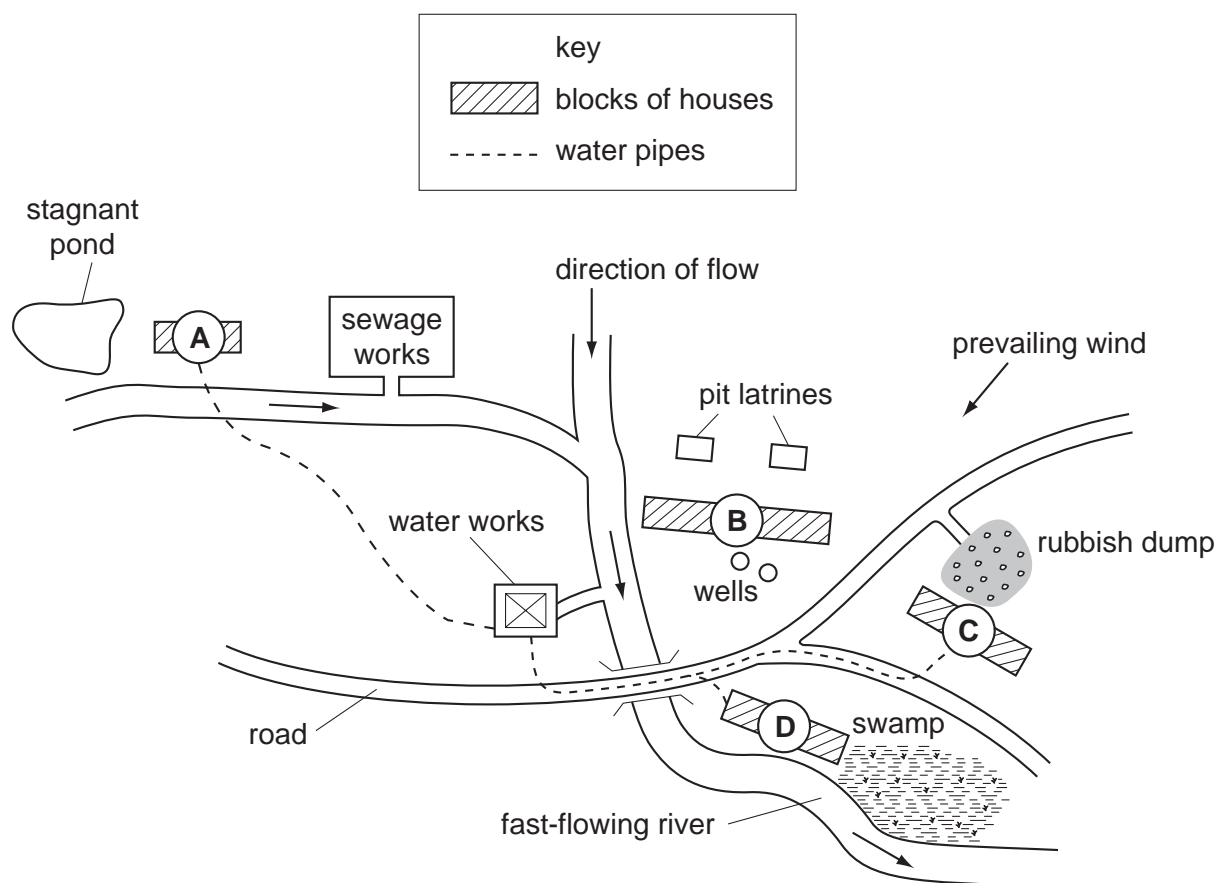


Which part of the body, labelled X, is affected by the pathogen and what is the name of the disease?

	part of body X	disease
<b>A</b>	lung	tuberculosis
<b>B</b>	lymphocyte	AIDS
<b>C</b>	muscle	athlete's foot
<b>D</b>	skin	ringworm

31 The map shows a small town.

In which block of houses would an outbreak of cholera be most likely to occur?



32 Why can spraying oil on stagnant water help reduce the spread of malaria?

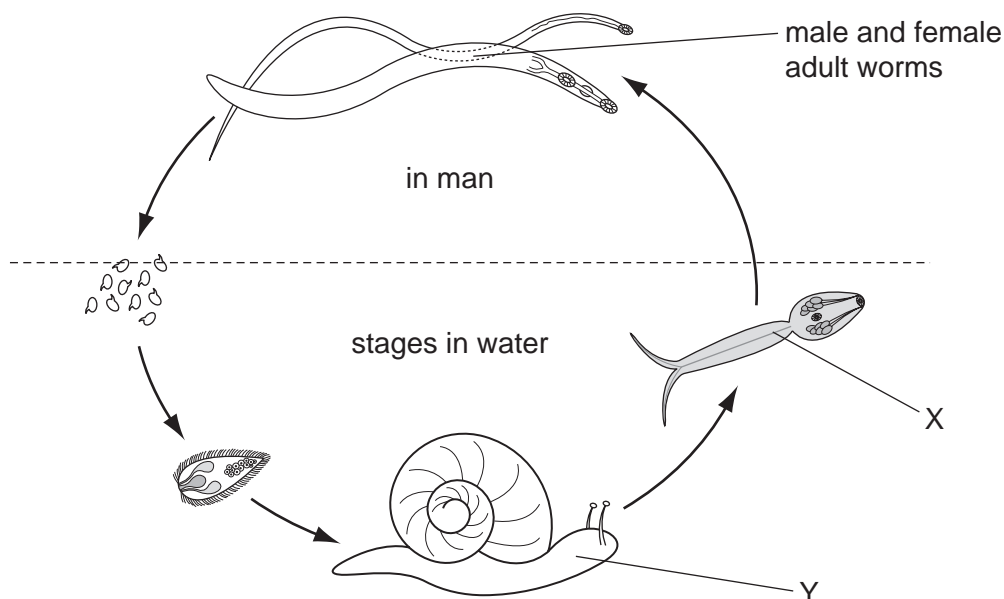
- A Oil is poisonous to adult mosquitoes settling on water.
- B Oil on water destroys the food of the mosquito larvae and they starve.
- C Oil prevents the mosquito larvae from breathing in water.
- D Oil prevents adult mosquitoes laying their eggs on water.

33 An athlete, who has suffered from malaria two months earlier, leads for most of the race, but then he slows and finishes last.

How has the malaria affected his performance?

- A Anti-malarial drugs have raised his body temperature.
- B His fever and sweating have caused high salt loss.
- C The oxygen-carrying capacity of his blood has been reduced.
- D *Plasmodium* has increased salt levels in his blood.

34 The diagram shows the life cycle of *Schistosoma* (causing bilharzia).



What is the secondary host and how may it be controlled?

	secondary host	method of control
<b>A</b>	X	avoid skin contact with infected water
<b>B</b>	X	ingest worm killing drugs
<b>C</b>	Y	proper disposal of faeces
<b>D</b>	Y	stock water with carnivorous fish

35 Which method of control would **not** be effective against the spread of gonorrhoea?

- A** avoiding sexual intercourse with many people
- B** treatment of infected people with antibiotics
- C** using condoms during sexual intercourse
- D** using sterile needles when drug addicts inject

36 Which statement applies to all bacterial cells?

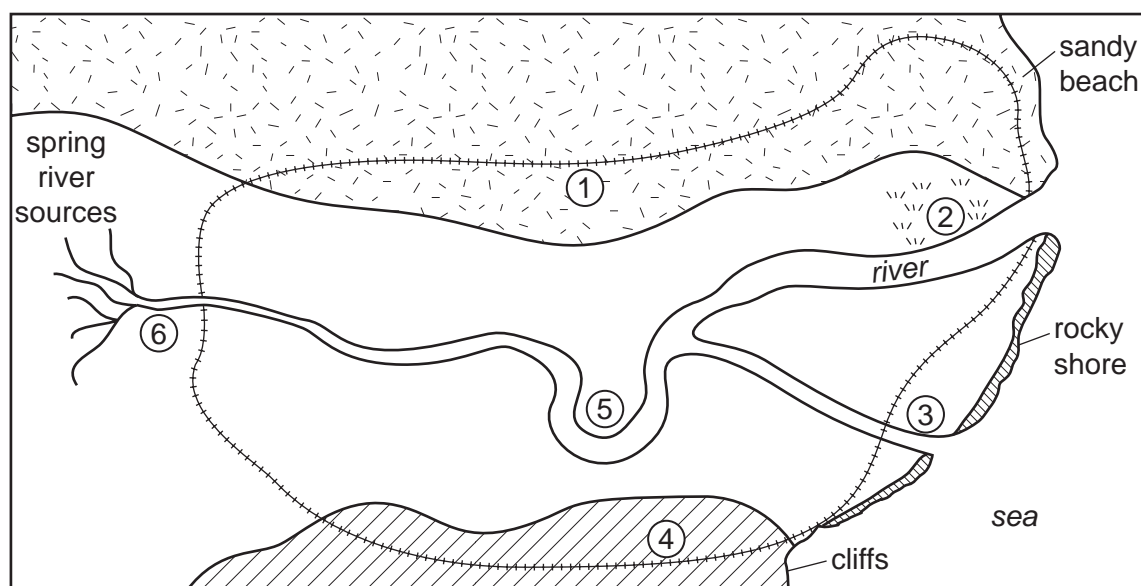
- A** They are destroyed by antibiotics.
- B** They are parasites.
- C** They cause diseases.
- D** They have a nucleus.



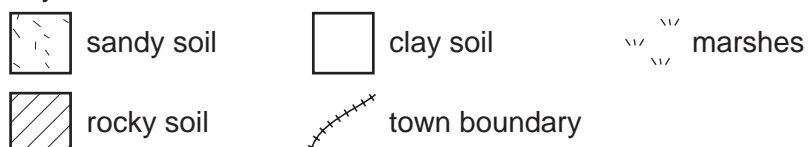
37 What is an advantage of passive immunity?

- A It gives immediate protection.
- B It lasts longer than active immunity.
- C It makes antibodies more slowly.
- D It makes the white cells produce antibodies.

38 The diagram shows the map of a small town. Most of the area has houses in need of a supply of fresh water and either pit latrines or disposal pipes to a sewage works.



key



What would be the best location for pit latrines, a sewage works and a water works?

	pit latrines	sewage works	water works
<b>A</b>	1	3	6
<b>B</b>	1	6	3
<b>C</b>	4	2	5
<b>D</b>	4	2	6

39 How does boiling river water make it safe for drinking?

- A Bacteria and parasites present are killed in the water.
- B Boiling dehydrates bacteria and spores present in the water.
- C Boiling removes dissolved oxygen from the water.
- D Boiling removes harmful chemicals from the water.

40 Events 1 to 4 occur when fertilisers such as nitrates and phosphates are washed into lakes from farmland.

- 1 massive growth of algae near the surface of the lake
- 2 aquatic animals die because of anaerobic conditions
- 3 light cut off from aquatic plants which die
- 4 plants decomposed by bacteria that respire and use up oxygen in the water

What is the order of these events?

	first $\longrightarrow$ last			
<b>A</b>	1	2	3	4
<b>B</b>	4	2	1	3
<b>C</b>	1	3	4	2
<b>D</b>	3	4	1	2



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