

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**HUMAN AND SOCIAL BIOLOGY**

**5096/01**

Paper 1 Multiple Choice

October/November 2005

**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.**

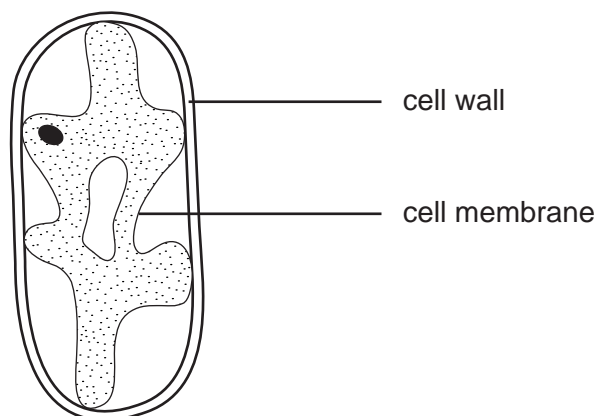
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

This document consists of **16** printed pages.



- 1 Which process produces all the waste products excreted by the body?
- A defecation
  - B egestion
  - C metabolism
  - D nutrition
- 2 How does a virus differ from a bacterium?
- A A virus can be spread by droplet infection.
  - B A virus contains nucleic acid.
  - C A virus has no nucleus.
  - D A virus reproduces only in living organisms.
- 3 A blood sample is taken from a person with a fever. The sample contains unicellular animals that reproduce by fission.
- What are these animals?
- A *Anopheles*
  - B *Plasmodium*
  - C *Schistosoma*
  - D *Tinea*
- 4 The diagram shows a plant cell after it has been placed in a concentrated sugar solution for 20 minutes.



Which process has made the cell membrane separate from the cell wall?

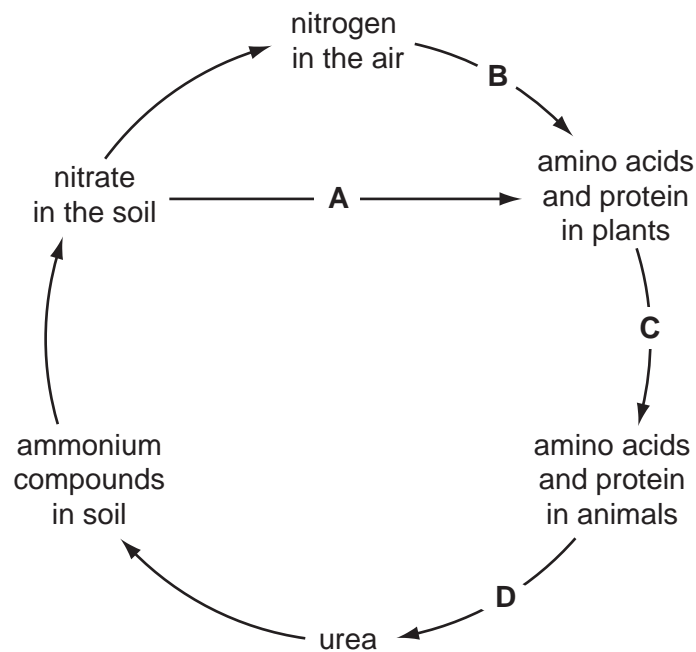
- A active transport
- B evaporation
- C osmosis
- D respiration

5 What is made during photosynthesis?

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

6 The diagram shows the nitrogen cycle.

Which change is brought about by bacteria?



7 The results of three food tests on a cereal are shown in the table.

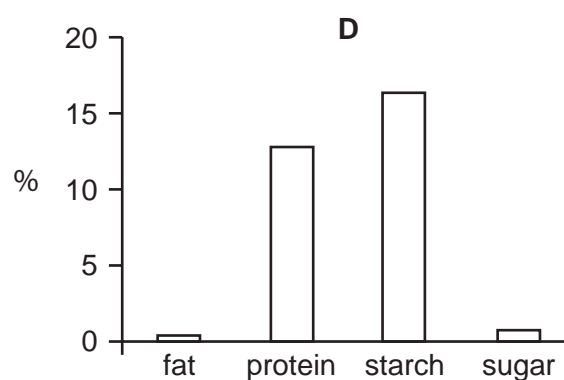
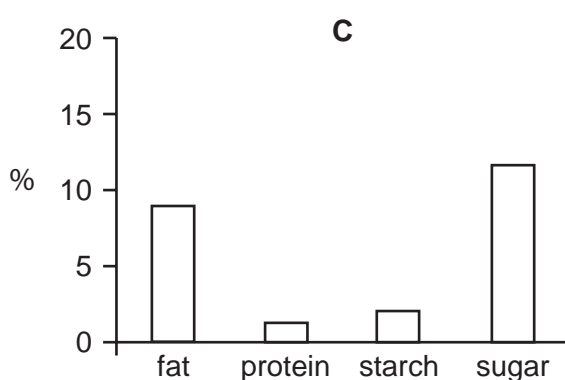
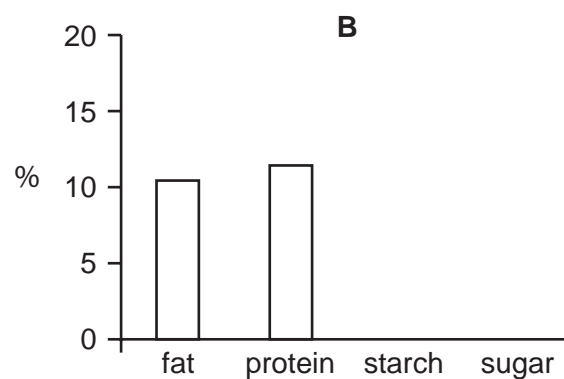
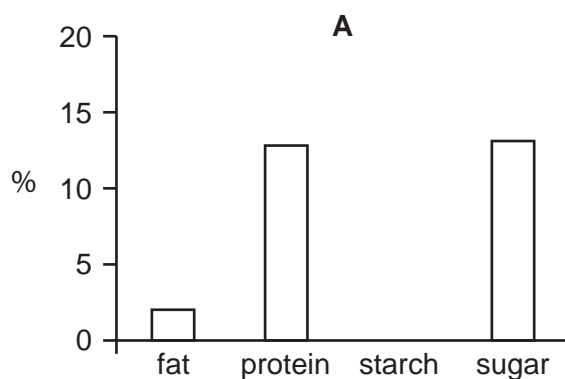
test	colour result of test
Benedict's	pale blue
iodine solution	blue-black
Biuret	pale purple

Which nutrients are present in the cereal?

- A reducing sugar and fat
- B reducing sugar and protein
- C starch and fat
- D starch and protein

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

Which food would be best for the formation of cell membranes?



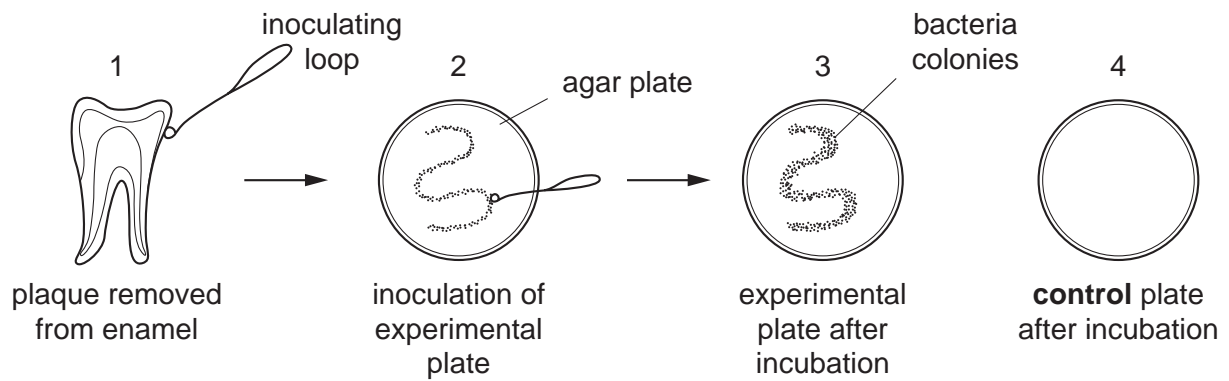
- 9 Which vitamin and mineral are necessary for bone formation?

	vitamin	mineral
<b>A</b>	C	calcium
<b>B</b>	C	iron
<b>C</b>	D	calcium
<b>D</b>	D	iron

- 10 Which nutrient should a pregnant woman increase in her diet for the purpose indicated?

	nutrient	purpose
<b>A</b>	calcium	for brain growth
<b>B</b>	fat	to lubricate joints
<b>C</b>	iron	to make haemoglobin
<b>D</b>	sugars	to build more muscle

11 The diagram shows an experiment to demonstrate the presence of bacteria on teeth.

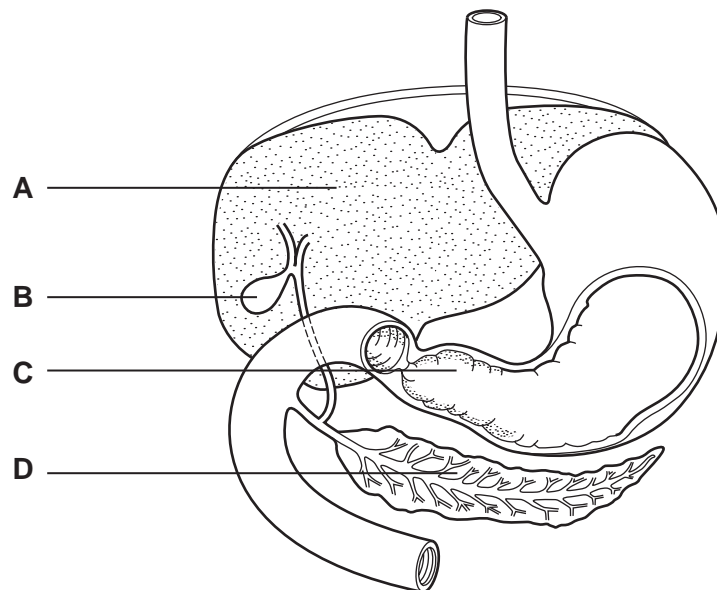


What is the reason for the results shown on plate 4?

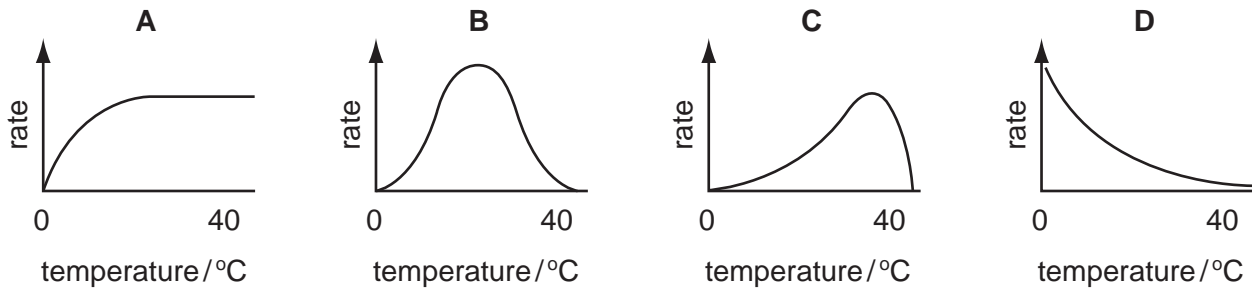
- A Spores from bacteria entered from the air during inoculation.
- B The agar used to make the plates was properly sterilised.
- C Too little plaque was taken on to the loop and inoculated.
- D The plaque contained too few bacteria to grow and be seen clearly.

12 The diagram shows part of the digestive system.

In which part is bile made?



- 13 Which graph shows how temperature affects the rate of the digestion of starch by the enzyme amylase?

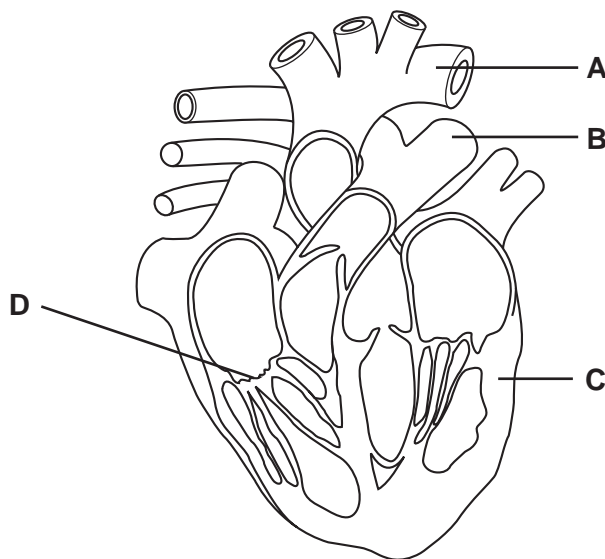


- 14 Which statement about veins is correct?

- A They carry blood away from the heart.
- B They all carry deoxygenated blood.
- C They have valves to prevent backflow.
- D They have thick muscular walls.

- 15 The diagram shows a vertical section of the heart.

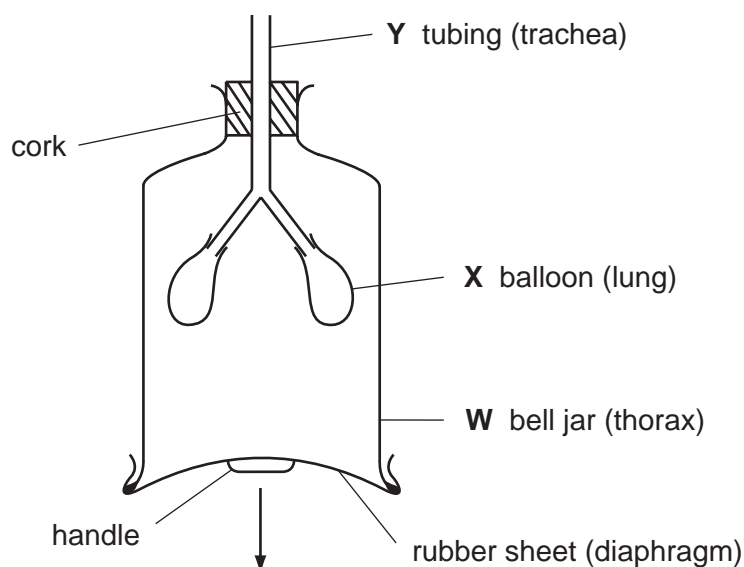
Which labelled part will be damaged first by a heart attack?



- 16 What is the function of lymph?

- A to bathe the tissues in fluid
- B to carry antibodies to infected tissues
- C to carry food and oxygen to the tissues
- D to remove waste from tissues

- 17 The diagram shows the apparatus that can be used to demonstrate some of the movements during breathing.



The handle is pulled down moving the rubber sheet in the direction of the arrow.

What happens to the air pressure in **W**, the volume of **X** and the direction of air flow in **Y**?

	air pressure in <b>W</b>	volume of <b>X</b>	direction of air flow in <b>Y</b>
<b>A</b>	increases	increases	passes out
<b>B</b>	increases	decreases	passes in
<b>C</b>	decreases	increases	passes in
<b>D</b>	decreases	decreases	passes out

- 18 Which route does oxygen take as it diffuses from the air in the lungs to haemoglobin in the blood?

	first <span style="margin-left: 50px;">→</span> last
<b>A</b>	mucus → wall of alveolus → plasma → red cell membrane
<b>B</b>	mucus → wall of alveolus → red cell membrane → plasma
<b>C</b>	wall of alveolus → mucus → plasma → red cell membrane
<b>D</b>	wall of alveolus → mucus → red cell membrane → plasma

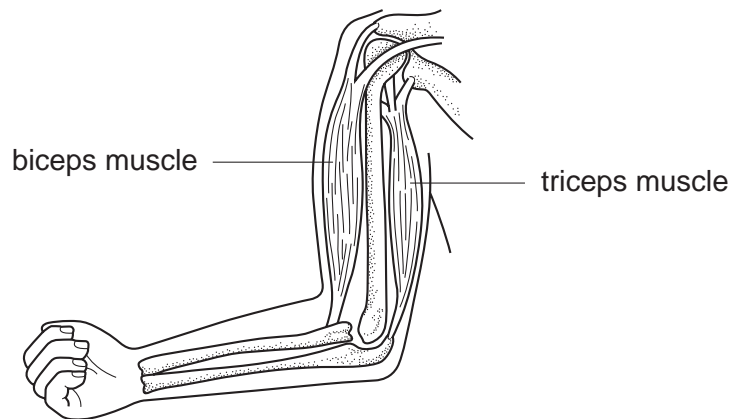
- 19 In which cell part is energy transferred during respiration?

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

20 What describes the actions of a hinge joint and a ball and socket joint?

	hinge joint	ball and socket joint
<b>A</b>	movement in all planes	movement in one plane only
<b>B</b>	movement in one plane only	movement in all planes
<b>C</b>	movement in one plane only	movement in one plane only
<b>D</b>	movement in two planes only	movement in all planes

21 The diagram shows bones and muscles of the arm.



What is the correct set of events when movement occurs at the elbow joint?

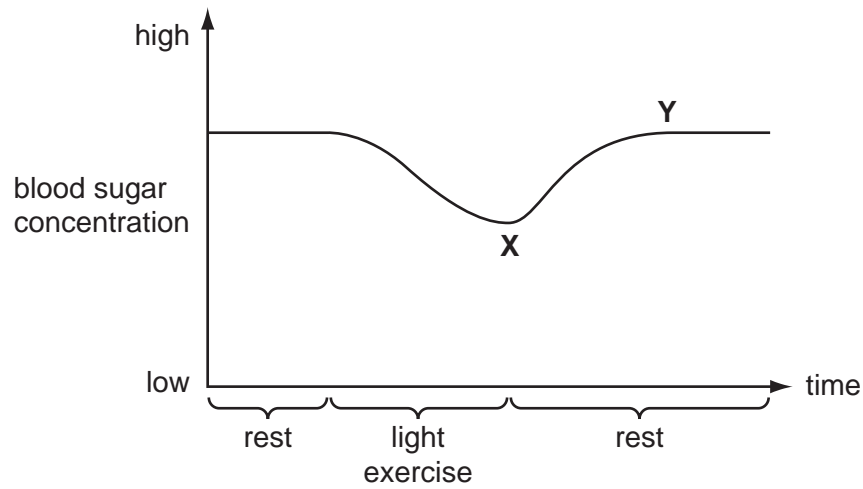
	forearm	biceps	triceps
<b>A</b>	lowered	contracted	contracted
<b>B</b>	lowered	contracted	relaxed
<b>C</b>	raised	contracted	relaxed
<b>D</b>	raised	relaxed	contracted

22 What is the usual effect on the volume and concentration of urine produced when a person suffers from diarrhoea?

	volume	concentration
<b>A</b>	decreases	decreases
<b>B</b>	decreases	increases
<b>C</b>	increases	decreases
<b>D</b>	increases	increases



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

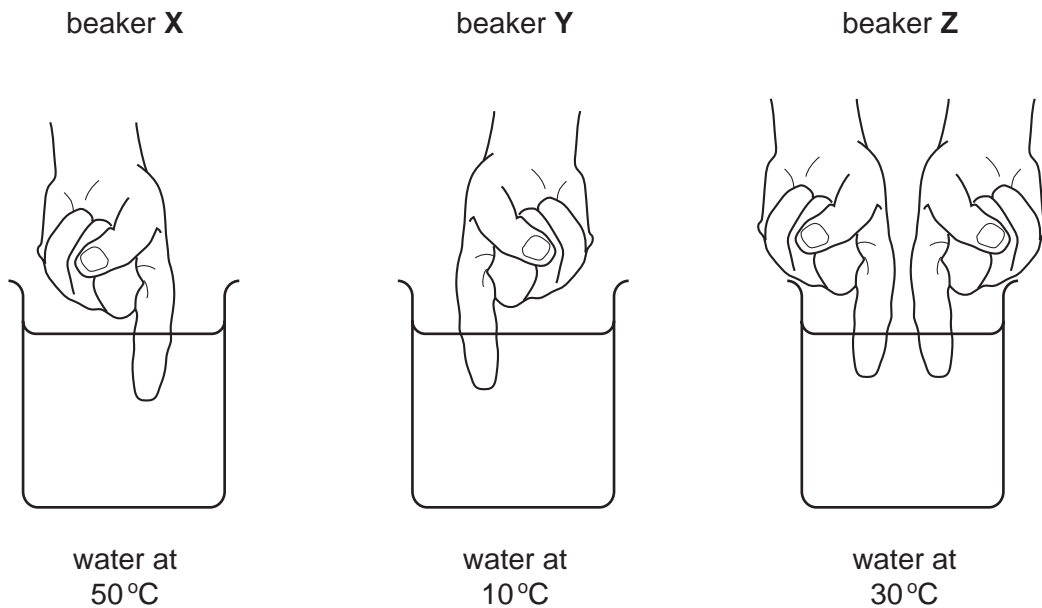


What causes the change in blood sugar level between **X** and **Y**?

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

**24** A student places one left hand finger in beaker **X** and one right hand finger in beaker **Y**.

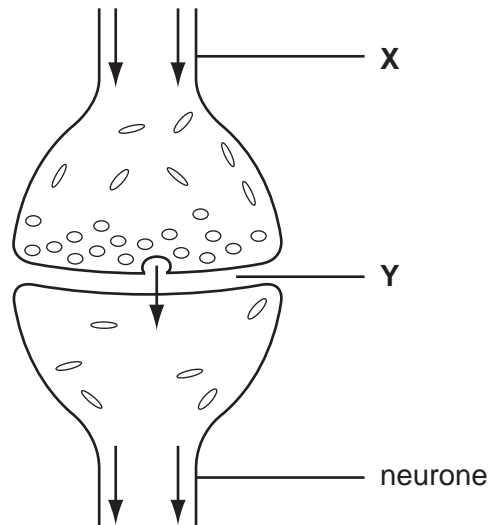
After 20 seconds both these fingers are placed in beaker **Z** at the same time as shown in the diagram.



What would the student feel in each of these fingers?

	finger moved from beaker <b>X</b> to beaker <b>Z</b> feels	finger moved from beaker <b>Y</b> to beaker <b>Z</b> feels
<b>A</b>	warm	cold
<b>B</b>	cold	cold
<b>C</b>	cold	warm
<b>D</b>	warm	warm

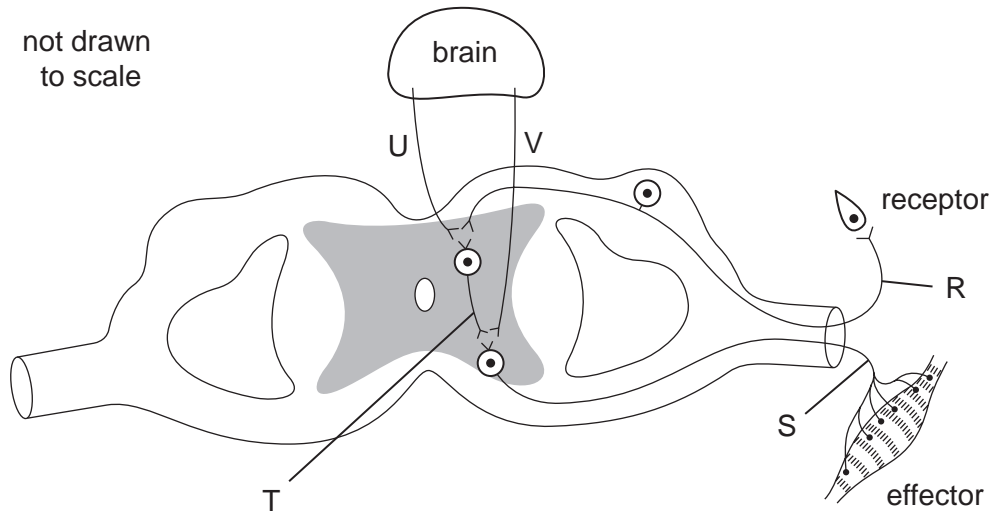
25 The diagram shows part of a very small structure in the nervous system.



What are parts **X** and **Y**?

	<b>X</b>	<b>Y</b>
<b>A</b>	motor neurone	synovial fluid
<b>B</b>	motor neurone	synapse
<b>C</b>	sensory neurone	synovial fluid
<b>D</b>	sensory neurone	synapse

26 The diagram shows some possible routes for nerve impulses.



What is the direction taken by an impulse during a spinal reflex action?

- A  $U \rightarrow R$
- B  $V \rightarrow S$
- C  $S \rightarrow T \rightarrow R$
- D  $R \rightarrow T \rightarrow S$

27 The table shows a 28 day menstrual cycle.

On which day is ovulation likely to occur?

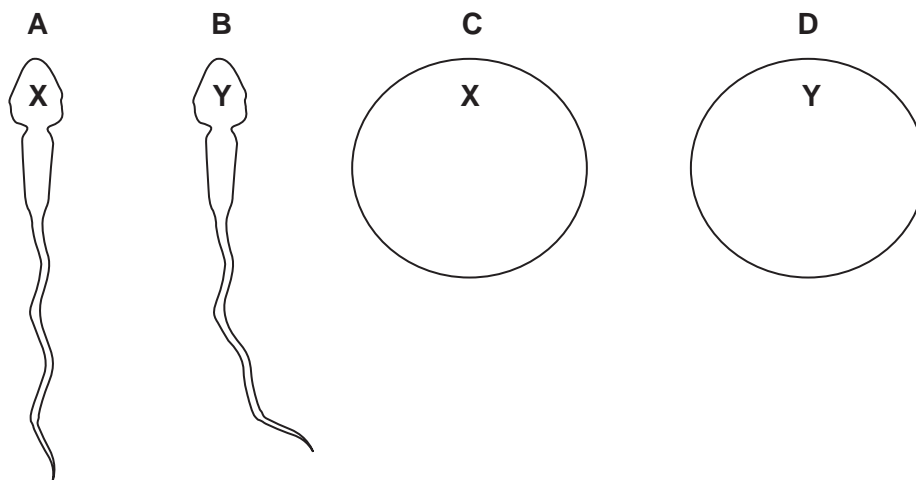
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
*	*	*	*	*																							
				A									B							C						D	

key

\* = menstrual loss of blood

- 28 The diagrams show sex cells (not drawn to scale) with the sex chromosomes marked as **X** and **Y** in each cell.

Which sex cell could **not** be produced?



- 29 What is caused by a diet low in vitamin D?

- A Blood clots more slowly.
- B Calcium ions are not absorbed from the gut.
- C Children develop sickle cell anaemia.
- D Wounds heal more slowly.

- 30 What spreads ringworm?

- A a bite from an infected mosquito
- B houseflies landing on food
- C infected people sneezing in public places
- D sharing a towel with an infected person

- 31 The table shows the occurrence of different diseases among children in four schools.

In which school was BCG vaccination successful?

disease	number of cases of disease recorded in children			
	school A	school B	school C	school D
cholera	4	3	0	5
ringworm	1	3	0	15
sickle cell anaemia	8	1	3	0
tuberculosis	9	0	3	5

**32** Why does the human immunodeficiency virus (HIV) increase the chance of infection by other diseases?

- A** because liver damage occurs
- B** because lymphocytes are destroyed
- C** because red blood cells are reduced in number
- D** because seminal fluid is infected









**33** Why does the body smell if it is not washed after sweating?


- A** bacterial activity
- B** evaporation of sweat
- C** salt secretions
- D** urea from sweat

**34** Two sterile agar plates were prepared and disinfectant was added to one of the plates.

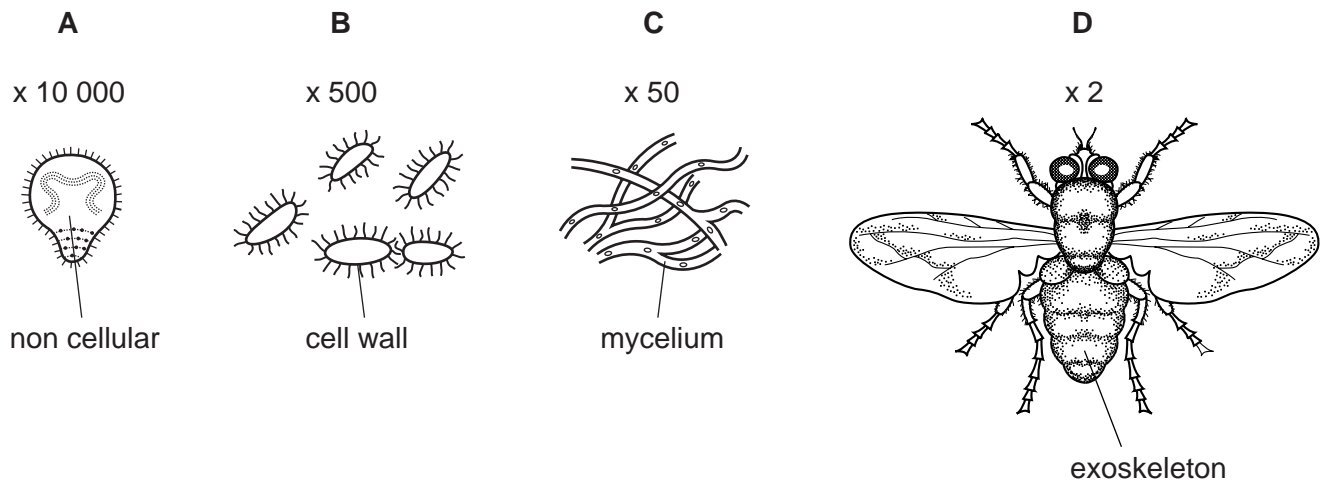
The plates were exposed to the air for an hour and then covered and incubated for 48 hours at 37 °C.

Which diagram shows the results of this experiment?

	nothing added	disinfectant added
<b>A</b>		
<b>B</b>		
<b>C</b>		
<b>D</b>		

key	
colonies of bacteria	

35 Which diagram shows the type of organism that is killed by an antibiotic?



36 What is an advantage of passive immunity?

- A It gives immediate protection.
- B It lasts longer than active immunity.
- C It makes the white cells produce antibodies.
- D It reduces antibody concentration in the blood.

37 Which disease is **not** normally associated with poor sewage disposal?

- A cholera
- B schistosomiasis
- C tuberculosis
- D typhoid

38 Which process occurs in both large scale sewage disposal and large scale treatment of water for drinking?

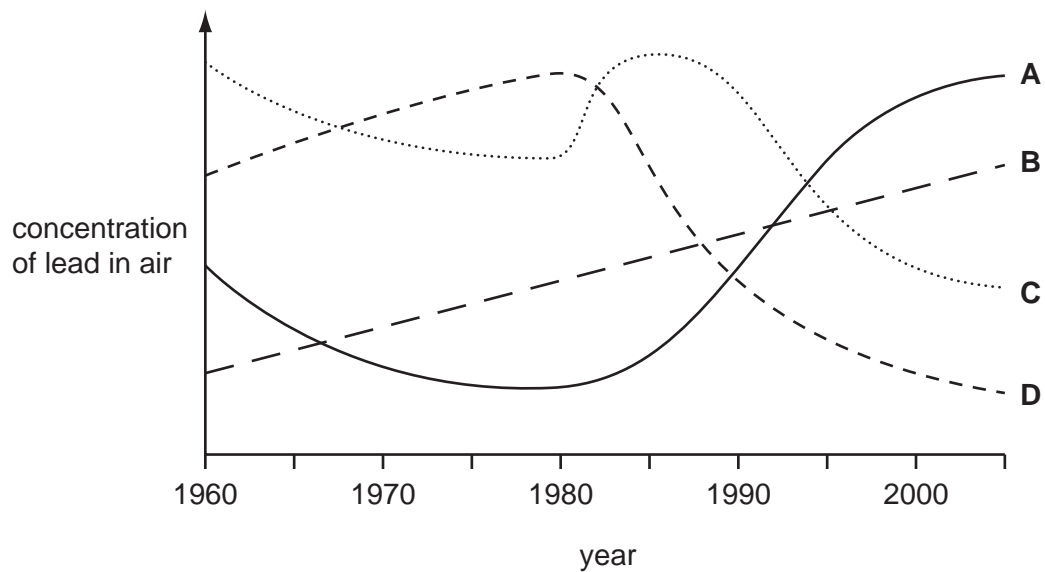
- A Disinfectants are used to kill micro-organisms.
- B Effluent removes micro-organisms.
- C Micro-organisms act as decomposers.
- D Filters are used to remove micro-organisms.

39 Why is refuse pressed down and compacted at communal sites?

- A to increase aerobic respiration of organisms
- B to increase the bacterial activity
- C to prevent rats burrowing into the refuse
- D to reduce unpleasant smells

40 The graph shows the amounts of lead in the air in four countries.

Which country introduced unleaded petrol for cars in 1980?



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