



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Ordinary Level

HUMAN AND SOCIAL BIOLOGY

5096/12

Paper 1 Multiple Choice

October/November 2011

1 hour

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

* 5 2 8 3 6 1 4 7 2 6 *

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 All living things depend directly or indirectly on green plants for their energy.

Which energy change in living things is brought about **only** by green plants?

- A chemical energy to movement energy
- B heat energy to light energy
- C light energy to chemical energy
- D movement energy to heat energy

- 2 A living organism absorbs glucose, releases energy from it and then passes out carbon dioxide.

Which characteristics can all be identified in the statement above?

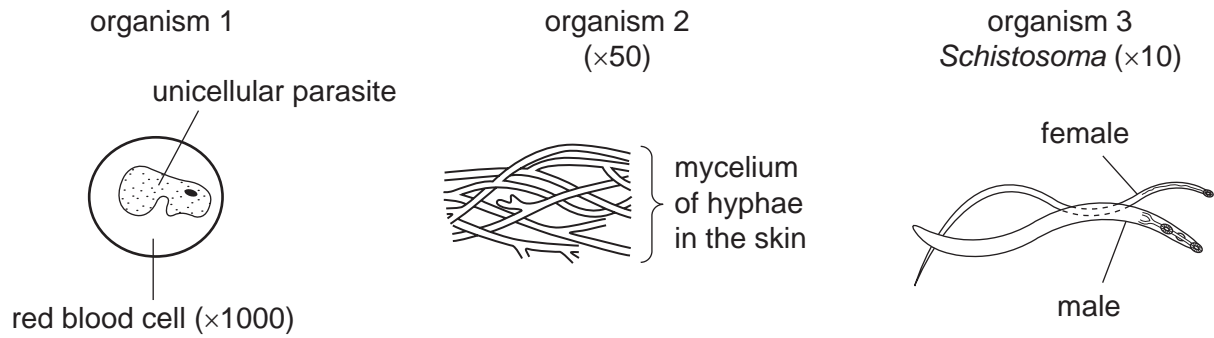
	excretion	growth	nutrition	respiration	irritability (sensitivity)
A	✓		✓	✓	
B	✓	✓		✓	
C	✓	✓	✓		✓
D			✓	✓	✓

- 3 The four diagrams show the appearance of red blood cells. The red blood cells were placed in distilled water or in one of three sodium chloride solutions of different concentrations.

Which cell was placed in distilled water?



4 The diagrams show three types of organism which affect human health.



What is the classification group for each organism?

	organism 1	organism 2	organism 3
A	fungus	protozoa	flatworm
B	fungus	protozoa	threadworm
C	protozoa	fungus	flatworm
D	protozoa	fungus	threadworm

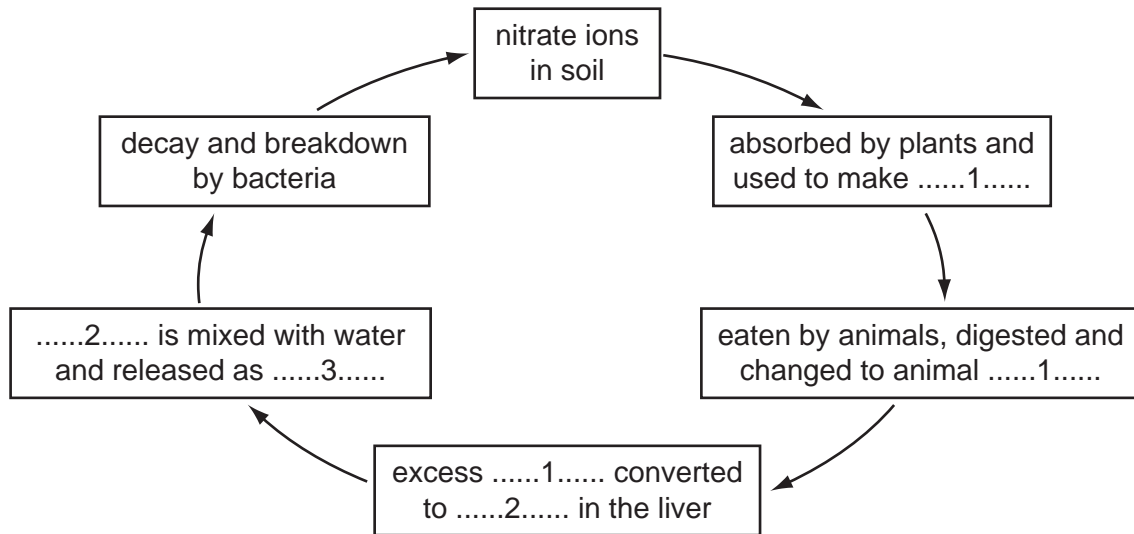
5 Some features of insects are listed.

- 1 transmit diseases
- 2 are multicellular
- 3 have an exoskeleton
- 4 have segmented bodies
- 5 have jointed limbs
- 6 have two pairs of wings
- 7 can reproduce sexually and asexually and have complex lifecycles

Which are true of **all** insects?

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

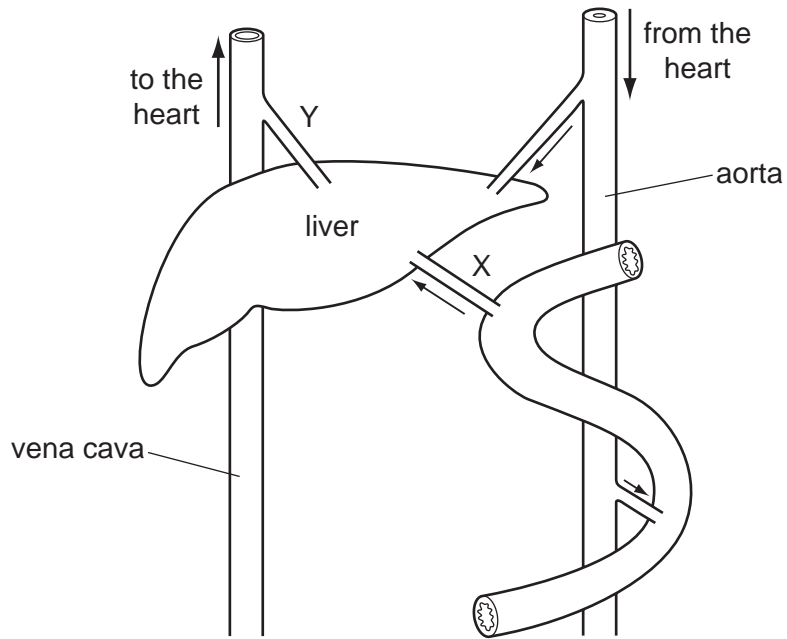
6 The diagram shows part of the nitrogen cycle.



Which words complete gaps 1, 2 and 3?

	1	2	3
A	protein	urea	urine
B	protein	urine	urea
C	urea	urine	protein
D	urine	urea	protein

7 The diagram shows the liver and associated blood vessels.

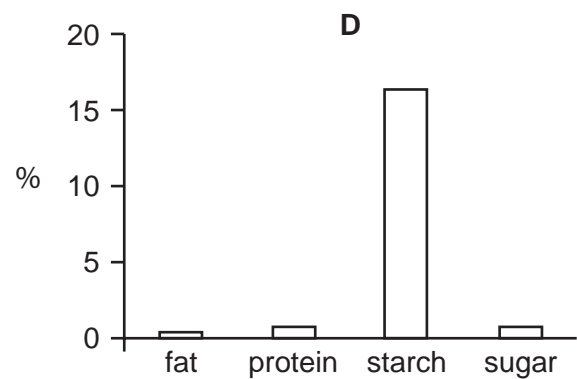
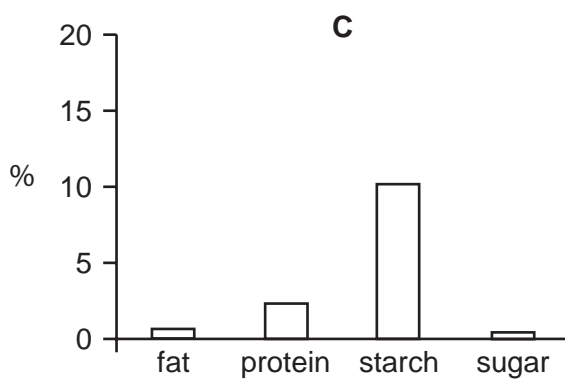
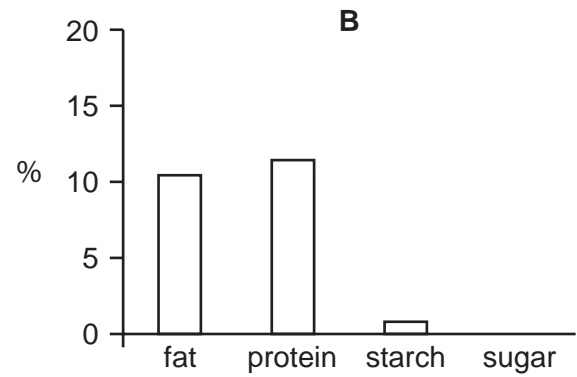
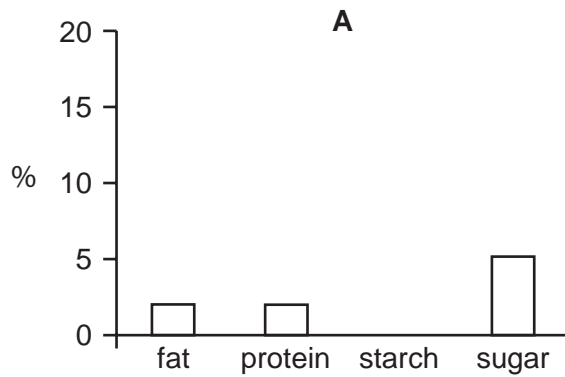


What differences occur between the composition of the blood in X and Y after a meal with alcohol?

- A X has a higher glucose concentration than Y
- B X has a higher urea concentration than Y
- C X has a lower alcohol concentration than Y
- D X has a lower amino acid concentration than Y

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

Which food is milk?



9 Which nutrient is linked to its use?

	nutrient	use
A	fat	to prevent anaemia
B	protein	to make insulin
C	starch	to make amylase
D	sugar	to prevent rickets

10 The table shows the results of three tests on a liquid food.

	test	result
1	dropped on filter paper and dried	translucent mark (light spot)
2	biuret reagent added	colour remains blue
3	iodine solution added	colour change from yellow/brown to blue/black

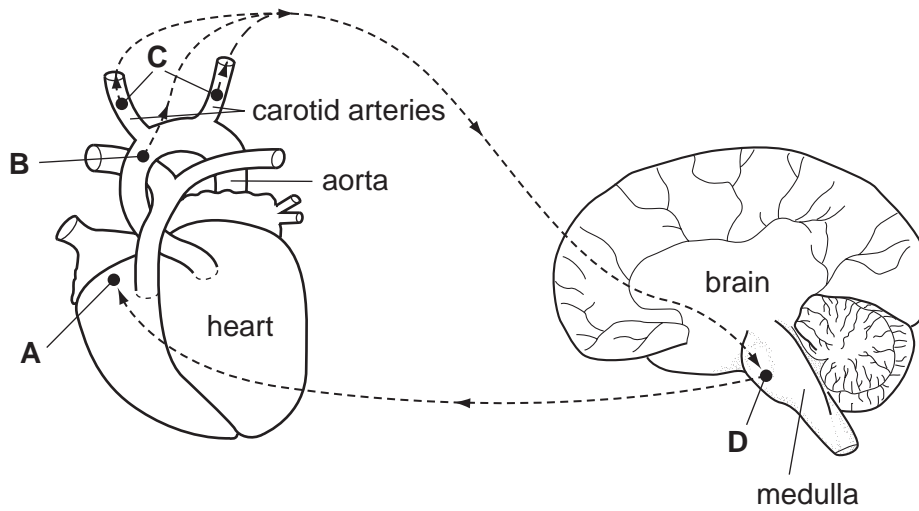
What does the food contain?

- A fat and protein
 - B fat and starch
 - C protein and reducing sugar
 - D protein and starch
- 11 What will **not** help to prevent tooth decay?
- A drinking water containing fluorine
 - B drinking water containing iron
 - C eating crisp fruit such as apples
 - D eating food rich in calcium
- 12 What is the main function of lymphocytes?
- A to aid in clotting when the skin is cut
 - B to form antigens when pathogens invade the body
 - C to produce antibodies which destroy pathogens
 - D to surround and digest foreign particles in the blood
- 13 Which statements are true of constipation and diarrhoea?

	constipation	diarrhoea
A	is a sign of malaria	is caused by a lack of iron in the diet
B	is a sign of typhoid	is caused by too much fat in the diet
C	is caused by a lack of fibre in the diet	is a sign of cholera
D	is caused by too much protein in the diet	is a sign of typhoid

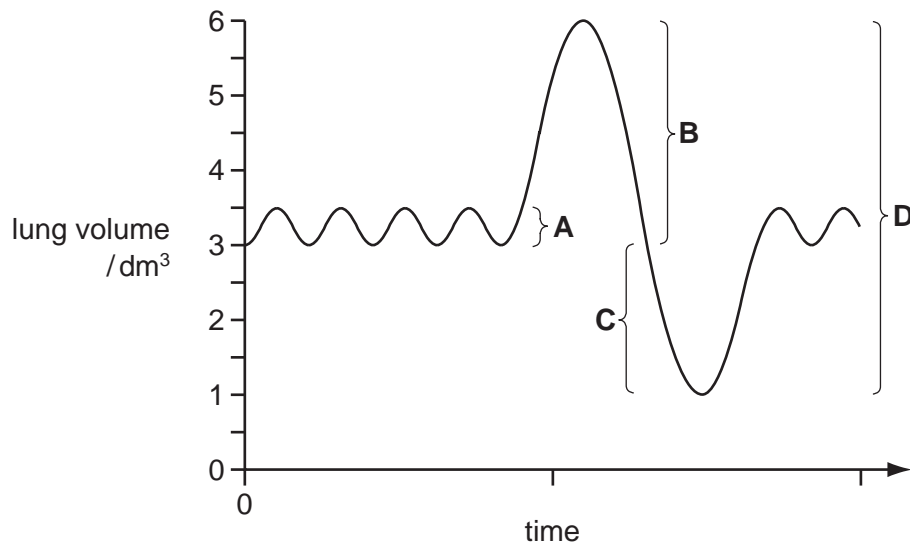
- 14 The diagram shows four parts concerned with varying the heartbeat. The dotted lines represent nerves. The arrows on them represent impulses travelling along the nerves.

Which part is the pacemaker?

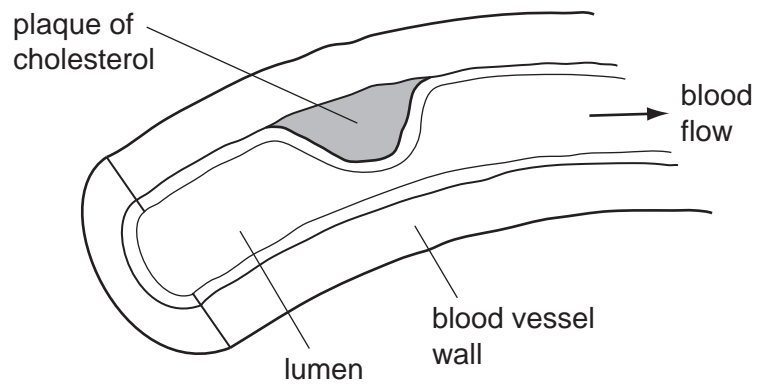


- 15 The diagram shows changes in lung volume and rate of breathing over a period of time.

Which bracket shows the vital capacity?



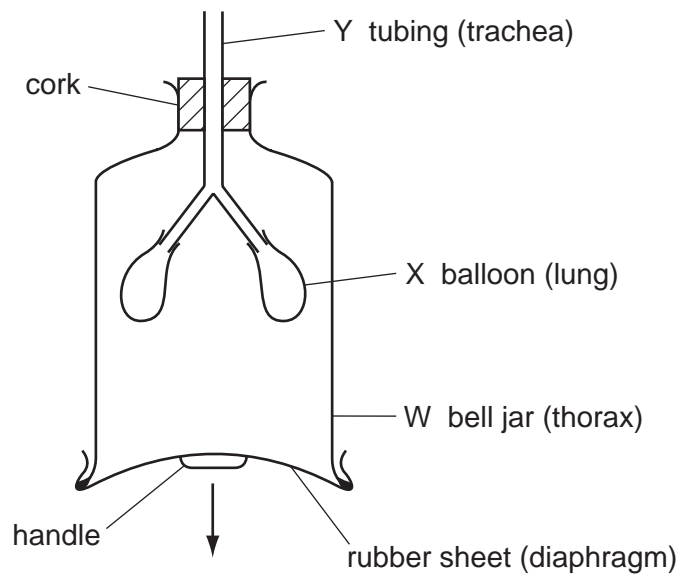
- 16 The diagram shows developments in a section of a blood vessel that may result in oxygen starvation to cardiac muscle.



In which blood vessel is this taking place and what is a possible result?

	blood vessel	result
A	carotid artery	cerebral thrombosis (stroke)
B	carotid vein	brain damage
C	coronary artery	heart attack
D	coronary vein	coronary thrombosis (stroke)

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

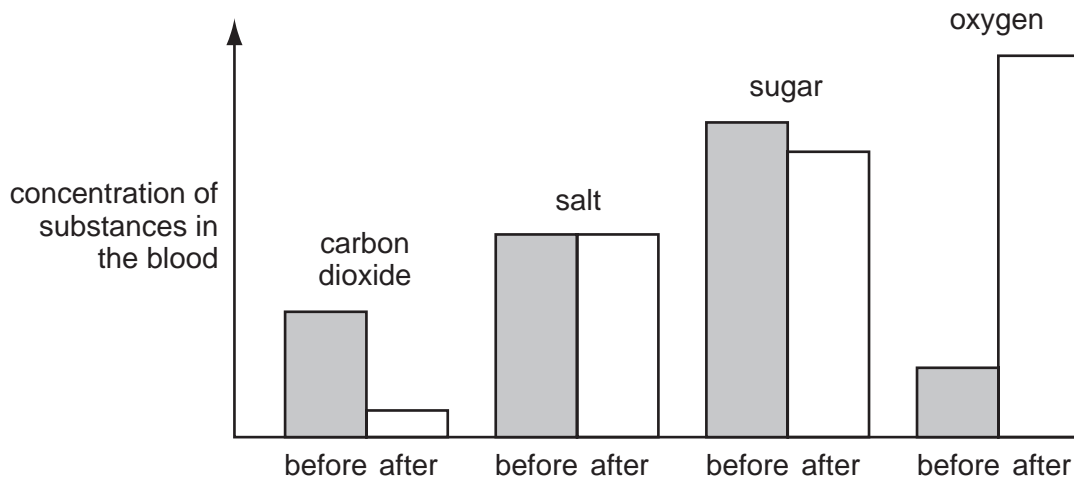


The handle is pulled down moving the rubber sheet in the direction of the arrow.

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

	air pressure in W	volume of X	direction of air flow in Y
A	increases	decreases	towards balloons
B	increases	increases	away from balloons
C	decreases	decreases	away from balloons
D	decreases	increases	towards balloons

18 The bar graphs show the concentration of carbon dioxide, salt, sugar and oxygen in the blood before and after passing through an organ.

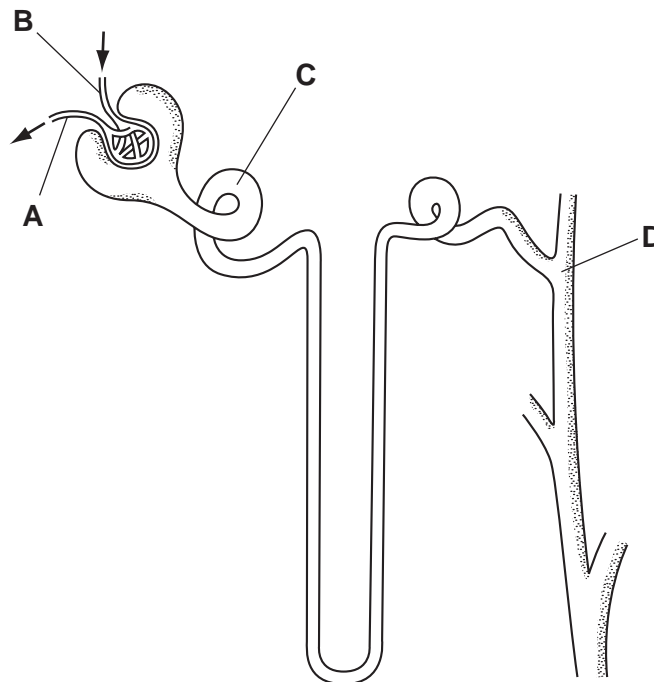


Through which organ has the blood passed?

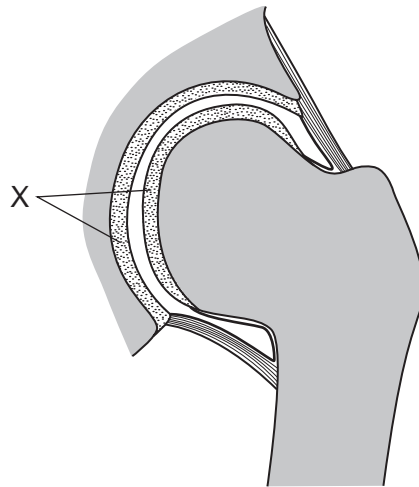
- A heart
- B kidney
- C liver
- D lung

19 The diagram shows a kidney tubule and its blood supply. Samples of fluid were taken from a normal healthy person at points A, B, C and D.

Which sample would **not** contain glucose and protein?



The following diagram should be used to answer questions **20** and **21**.



20 Which tissue is present at X?

- A** cartilage
- B** ligament
- C** synovial membrane
- D** tendon

21 The diagram shows a section through a joint.

In which part of the body is this type of joint found?

- A** elbow
- B** knee
- C** rib
- D** shoulder

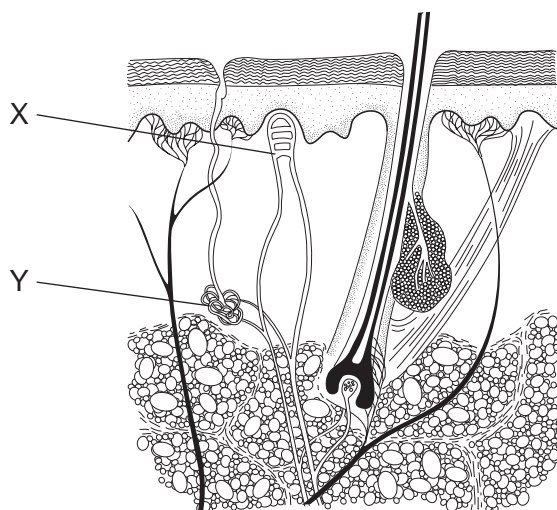
22 Which neurones involved in a reflex action are situated in the central nervous system and which are mainly in the peripheral nervous system?

	sensory neurone	intermediate neurone	motor neurone
A	central	central	peripheral
B	central	peripheral	central
C	peripheral	central	peripheral
D	peripheral	peripheral	central

23 What do the kidneys control and remove from the body?

	control in body	remove from body
A	osmotic pressure	urea
B	protein concentration	urea
C	salt concentration	protein
D	sugar concentration	glucose

24 The diagram shows a section through the skin.



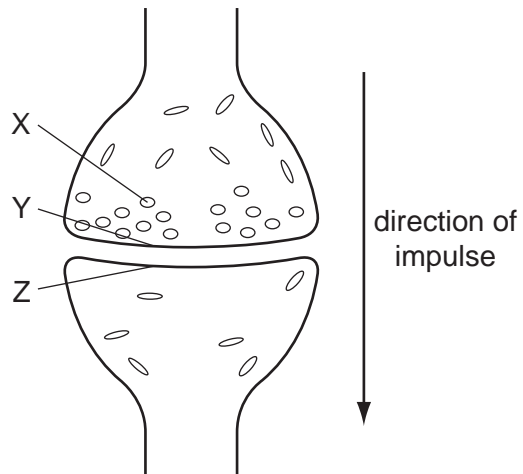
When would it be most likely for capillaries X to become narrower and gland Y to be less active?

- A** in cool weather at rest
- B** in cool weather during vigorous exercise
- C** in hot weather
- D** in hot weather during vigorous exercise

25 What are the physical effects of heroin?

	physical effects of heroin	
A	addiction occurs rapidly	rate of breathing increases
B	causes anxiety and panic	increases sensitivity to pain
C	reduces rate of breathing	causes anxiety and panic
D	reduces sensitivity to pain	addiction occurs rapidly

26 The diagram represents a synapse.

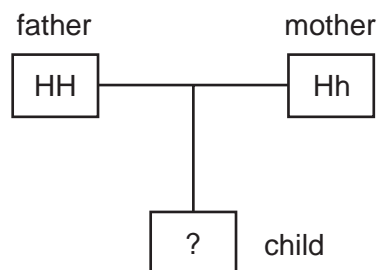


When an impulse passes through a synapse, the neurotransmitter chemical

- A causes an impulse at Y.
- B diffuses from Z to Y.
- C is formed at Z.
- D is released from X.

27 H is the dominant allele and h the recessive allele controlling a character in humans.

The diagram shows the genotypes of two parents.



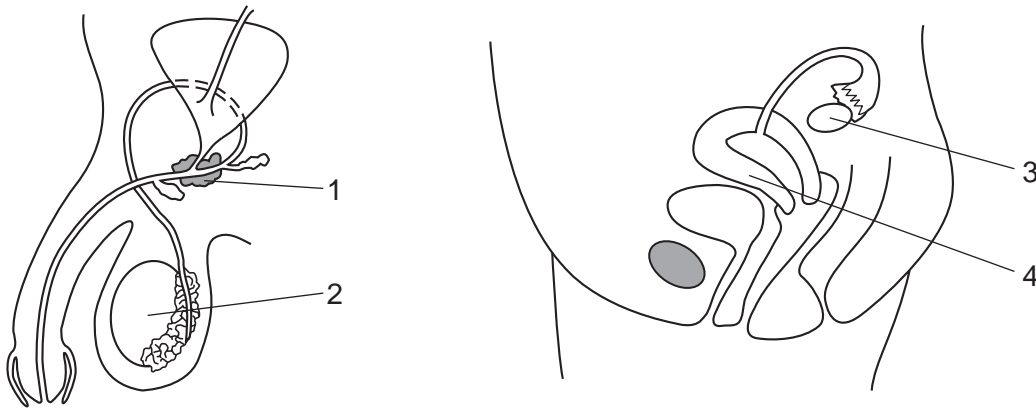
What are the chances of their child carrying the recessive allele?

- A 25%
- B 50%
- C 75%
- D 100%

28 Which method of birth control for family planning has its function correctly described?

	contraceptive method	function
A	cap/diaphragm	prevents eggs descending from ovary
B	intrauterine device/IUD	destroys sperm entering during copulation
C	oral contraceptive pill	stops ovulation during the monthly cycle
D	tied oviducts/sterilisation	prevents sperm entering uterus

29 The diagrams show sections through the male and female reproductive systems.



Which parts have cells dividing by meiosis in both systems?

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

30 Which hormone change will cause the lining of the uterus to thicken before ovulation?

- A** a decrease in oestrogen secretion
B a decrease in progesterone secretion
C an increase in oestrogen secretion
D an increase in progesterone secretion

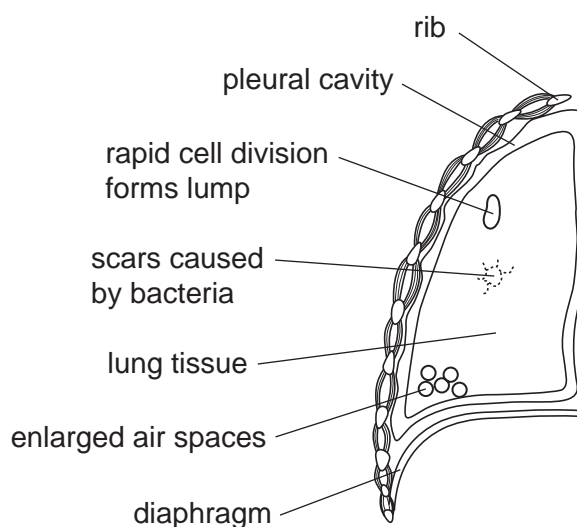
31 Which pathogen causes tuberculosis?

- A** a bacterium that can form spores
B a bacterium that cannot form spores
C a virus that can form spores
D a virus that cannot form spores

32 Which pathogen must spend part of its life cycle in two different hosts?

- A human immuno-deficiency virus
- B *Mycobacterium tuberculosis*
- C *Plasmodium*
- D ringworm

33 The diagram shows signs of infection in one lung of a person suffering from four diseases of the lung.



Which disease could **not** be identified from the signs shown in this lung?

- A emphysema
- B influenza
- C lung cancer
- D tuberculosis

34 What is a difference between an antiseptic and a disinfectant?

	antiseptic	disinfectant
A	damages human tissue	kills most bacteria
B	damages human tissue	used in pit latrines
C	inhibits bacterial reproduction	damages human tissue
D	inhibits bacterial reproduction	used in pit latrines

35 An antibiotic is a chemical produced by

- A a bacterium which kills viruses.
- B a fungus which kills bacteria.
- C a plant which kills insects.
- D a virus which kills other viruses.

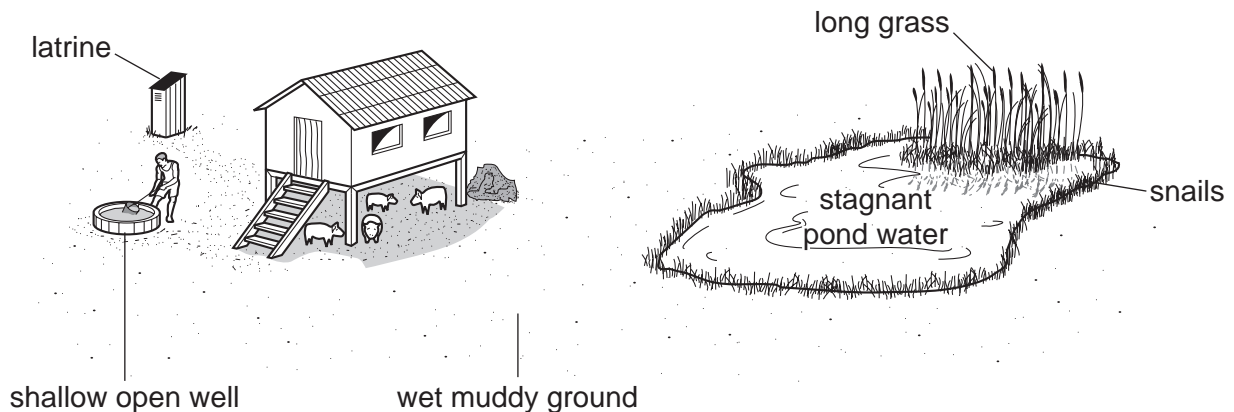
36 In 430 BC there was an outbreak of the plague in Greece which killed many people.

The sick and the dying were tended by carers who had recovered, because they knew no one was ever attacked a second time.

Which type of immunity did the carers have?

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

37 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 visible signs in the surroundings?

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

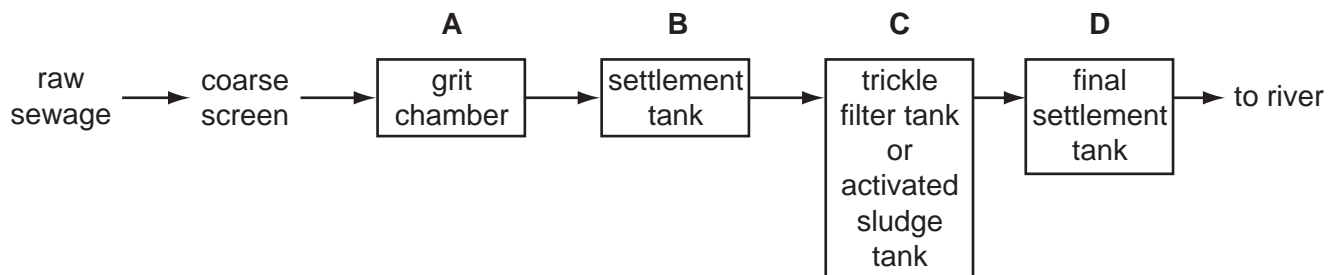
38 Untreated sewage is discharged into a river.

What effect does this have on the concentration of oxygen and on the number of bacteria in the river downstream of the discharge?

	concentration of oxygen	number of bacteria
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

39 The diagram shows the main stages in the treatment of sewage.

At which stage shown is most of the organic material broken down by aerobic bacteria?



40 Which is an example of biological control of houseflies?

- A** cover food to prevent access to adult flies
- B** removal of faeces and decaying plants from around buildings
- C** spraying walls with an insecticide which kills adult flies on contact
- D** spraying walls with bacterial spores which infect and kill adult flies

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