



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**SCIENCE (PHYSICS, BIOLOGY)**

**5125/01**

Paper 1 Multiple Choice

**October/November 2008**

**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.

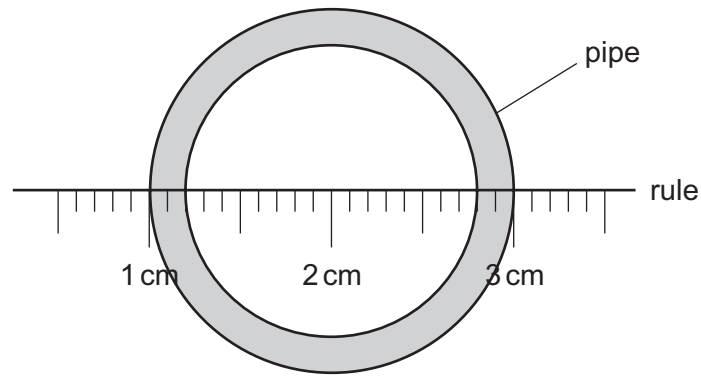
**Read the instructions on the Answer Sheet very carefully.**

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 **17** printed pages and **3** blank pages.

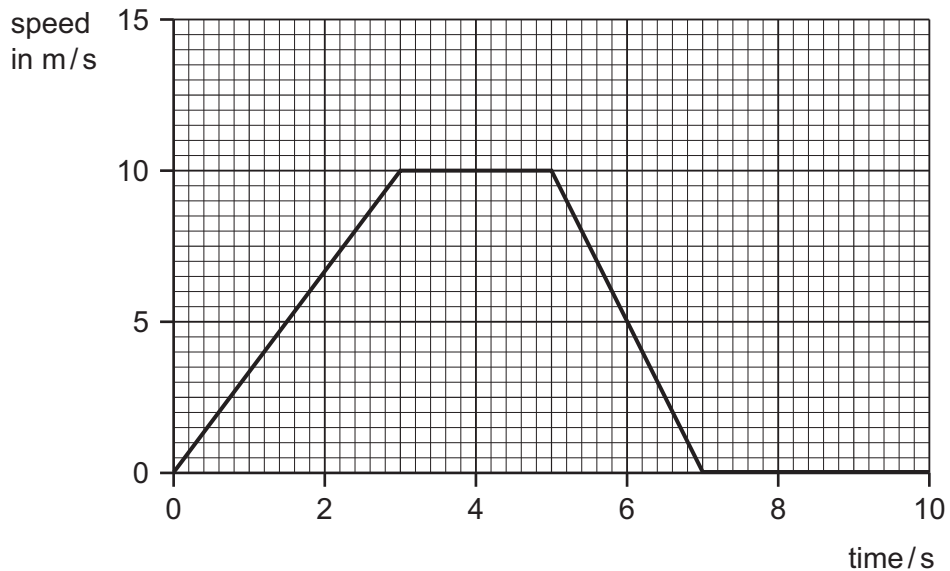


- 1 A rule is used to measure the internal diameter of a pipe.



What is the internal diameter of the pipe?

- A** 1.6 cm      **B** 1.8 cm      **C** 2.0 cm      **D** 2.6 cm
- 2 The graph shows the speed of a car over the first ten seconds of a journey.



Which statement about the acceleration of the car between 3 s and 5 s is true?

- A** The acceleration decreases.  
**B** The acceleration increases.  
**C** The acceleration is zero.  
**D** The acceleration is 10 m/s.
- 3 A container is filled with 5 kg of paint. The density of the paint is 2 g/cm<sup>3</sup>.

Which volume of container is needed?

- A** 10 cm<sup>3</sup>      **B** 400 cm<sup>3</sup>      **C** 2500 cm<sup>3</sup>      **D** 10 000 cm<sup>3</sup>

4 Which object will experience an **elastic** deformation?

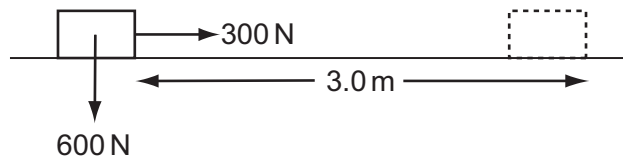
- A a car damaged in a collision
- B a football being kicked
- C a log hit by an axe
- D a target hit by an arrow

5 In a hydroelectric power station, water from a reservoir falls down a large pipe before entering the turbines. The turbines then turn the generator.

What is the **overall** energy conversion?

- A kinetic energy into chemical energy
- B kinetic energy into electrical energy
- C potential energy into chemical energy
- D potential energy into electrical energy

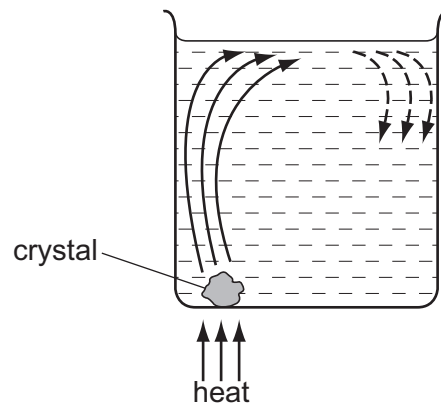
6 When a 300 N force is applied to a box weighing 600 N, the box moves 3.0 m horizontally in 20 s.



What is the average power?

- A 45 W
- B 90 W
- C 900 W
- D 1800 W

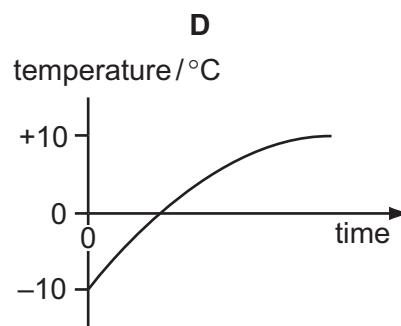
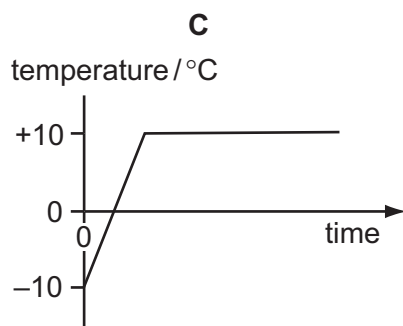
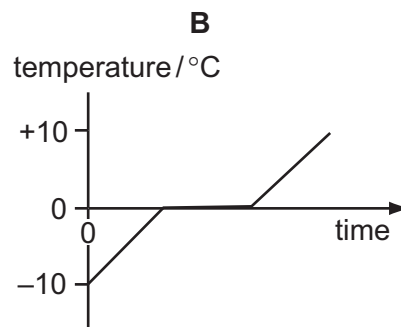
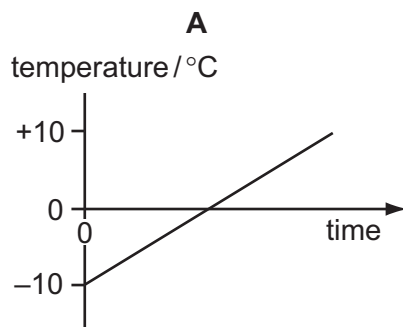
- 7 The diagram shows a coloured crystal being heated in a beaker of water. The crystal dissolves showing how the water circulates around the beaker.



What is happening to cause the water above the crystal to rise?

- A The water contracts and its density decreases.
  - B The water contracts and its density increases.
  - C The water expands and its density decreases.
  - D The water expands and its density increases.
- 8 Ice at  $-10^{\circ}\text{C}$  is heated until it is water at  $+10^{\circ}\text{C}$ .

Which graph shows how the temperature changes with time?

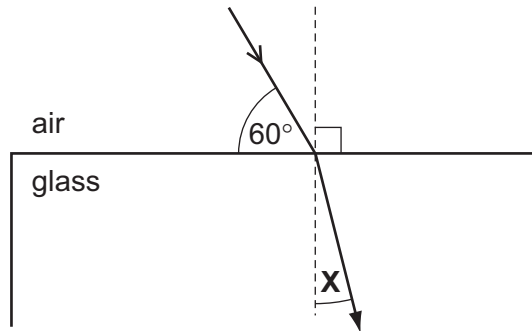


- 9 A VHF radio station broadcasts at a frequency of 60 MHz ( $6.0 \times 10^7$  Hz). The speed of radio waves is  $3.0 \times 10^8$  m/s.

What is the wavelength of the waves broadcast by the station?

- A 5.0 m            B 2.0 m            C 0.5 m            D 0.2 m

- 10 A ray of light passes into a glass block of refractive index 1.5.



What is the value of the angle marked  $X$ ?

- A  $19.5^\circ$             B  $25.0^\circ$             C  $35.0^\circ$             D  $48.5^\circ$

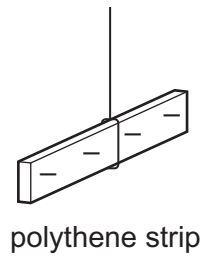
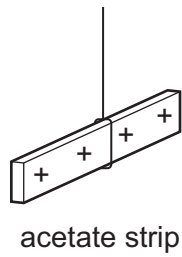
- 11 Which statement is true for all electromagnetic waves?

- A They are longitudinal.  
 B They can be seen.  
 C They have the same frequency in air.  
 D They travel at the same speed in a vacuum.

- 12 What is the approximate frequency range which can be heard by the human ear?

- A 2 Hz – 20 Hz  
 B 2 Hz – 200 Hz  
 C 20 Hz – 2000 Hz  
 D 20 Hz – 20 000 Hz

- 13 The diagram shows a positively charged acetate strip and a negatively charged polythene strip that are freely suspended.



Two rods **X** and **Y** are brought up in turn to these two strips.  
 Rod **X** attracts the acetate strip but repels the polythene strip.  
 Rod **Y** does not repel either the acetate strip or the polythene strip.

Which type of charge is on each rod?

	rod <b>X</b>	rod <b>Y</b>
<b>A</b>	negative	positive
<b>B</b>	negative	uncharged
<b>C</b>	positive	negative
<b>D</b>	positive	uncharged

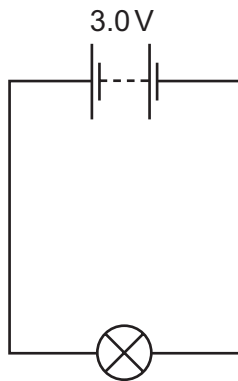
- 14 A current of 2 A flows through a lamp for 1 minute.

How much charge passes through the lamp?

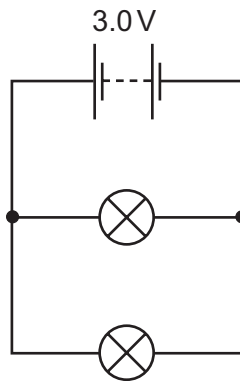
- A** 2 C                      **B** 30 C                      **C** 60 C                      **D** 120 C

- 15 Torch lamps are marked 3.0V, 0.5A.

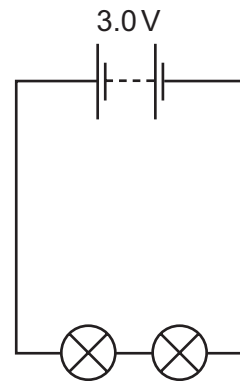
They are connected as shown in circuits X, Y and Z.



X



Y



Z

Which statement is true?

- A** The current in all three circuits will be the same.  
**B** The current in circuit X will be the greatest.  
**C** The current in circuit Y will be the greatest.  
**D** The current in circuit Z will be the greatest.
- 16 A  $24\ \Omega$  resistor is connected in series with a 12V battery.  
 What is the power loss for the resistor?  
**A** 0.5W      **B** 6W      **C** 12W      **D** 24W
- 17 Electrical equipment should **not** be used in damp conditions.  
 What is the main hazard?  
**A** The equipment becomes too hot.  
**B** The fuse keeps 'blowing'.  
**C** The insulation becomes damaged.  
**D** The risk of an electric shock.
- 18 There are 2000 turns in the secondary coil of a transformer and 500 turns in the primary coil.  
 An alternating voltage of 240V is applied across the primary coil.  
 What is the voltage across the secondary coil?  
**A** 60V      **B** 500V      **C** 960V      **D** 2000V

- 19 A nuclide of sodium contains 11 protons and 12 neutrons.

How many electrons are in a neutral atom of this sodium nuclide?

- A 1                      B 11                      C 12                      D 23

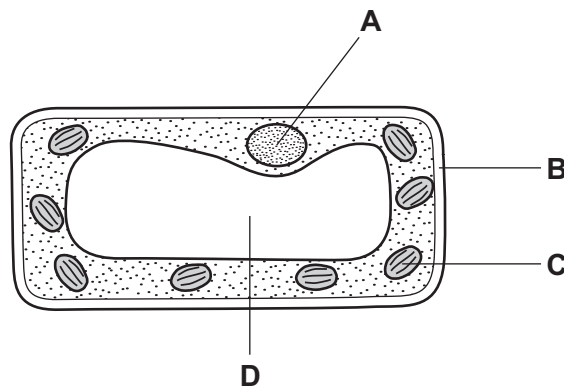
- 20 A radioactive chemical is used to investigate possible damage within a patient's body. The chemical is injected into the patient's body and the radiation detected outside.

Which source of radiation is the most suitable?

	radiation from source	half-life of source
<b>A</b>	beta only	long
<b>B</b>	beta only	short
<b>C</b>	gamma only	long
<b>D</b>	gamma only	short

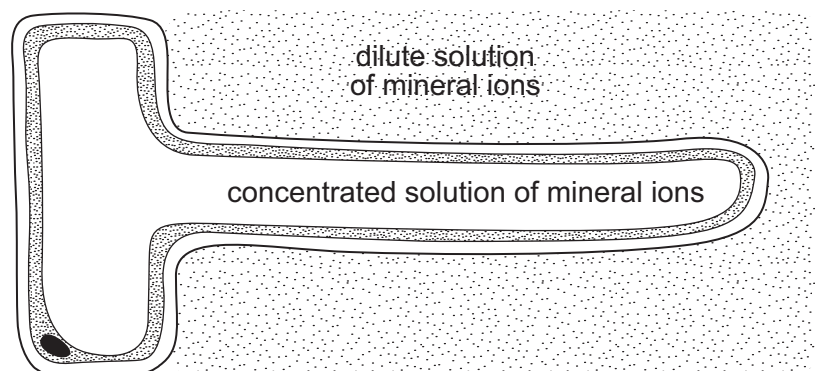
- 21 A plant is grown in bright sunshine. After a few hours, a leaf from this plant is stained with iodine solution. The diagram shows what is seen when a cell from this leaf is placed under a microscope.

Which structure will be stained blue/black?





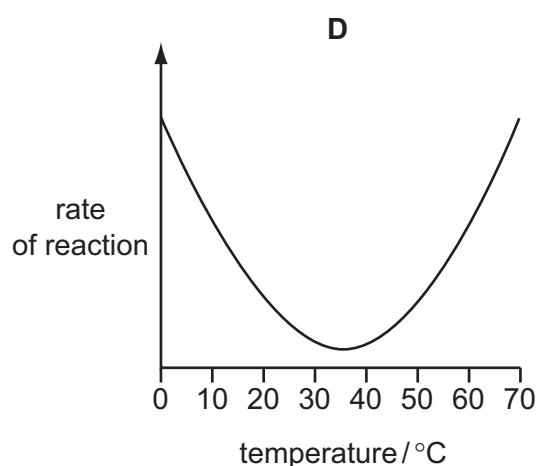
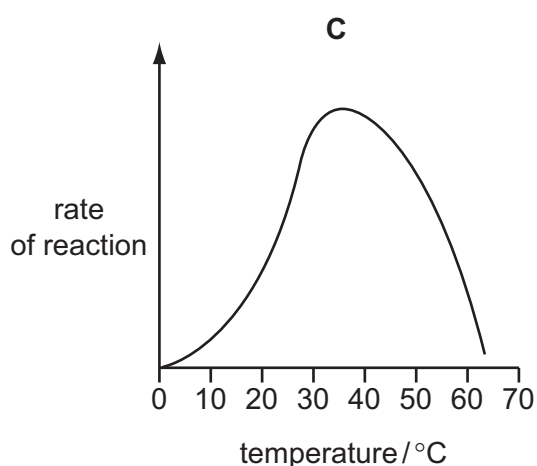
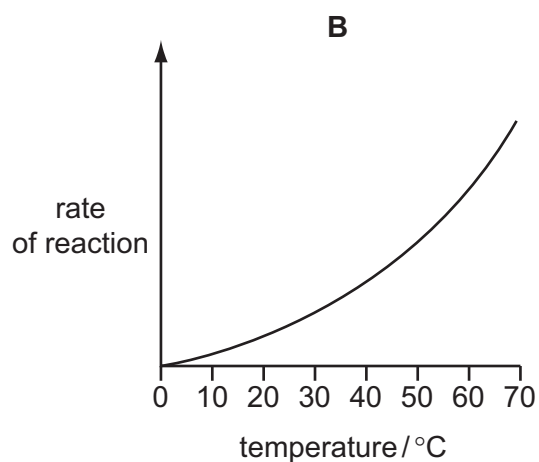
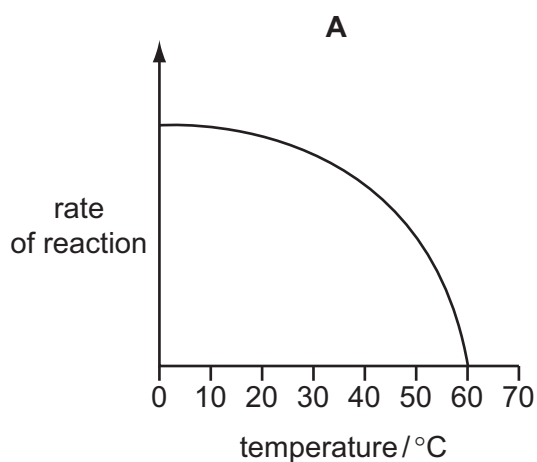
22 The diagram shows a root hair, surrounded by a dilute solution of mineral ions.



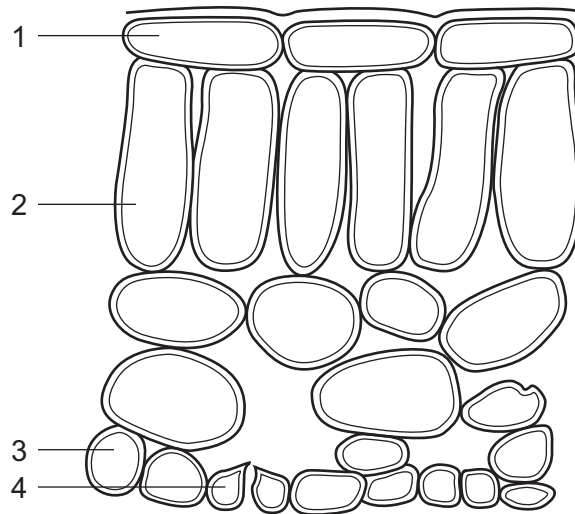
Which statement describes what happens?

- A Water molecules move into the root hair because their concentration is lower inside.
- B Water molecules move into the root hair because their concentration is lower outside.
- C Water molecules move out of the root hair because their concentration is lower inside.
- D Water molecules move out of the root hair because their concentration is lower outside.

23 Which graph shows how an enzyme catalysed reaction in the alimentary canal varies with temperature?



- 24 The diagram shows the arrangement of cells inside the leaf of a green plant. (No cell contents are shown.)

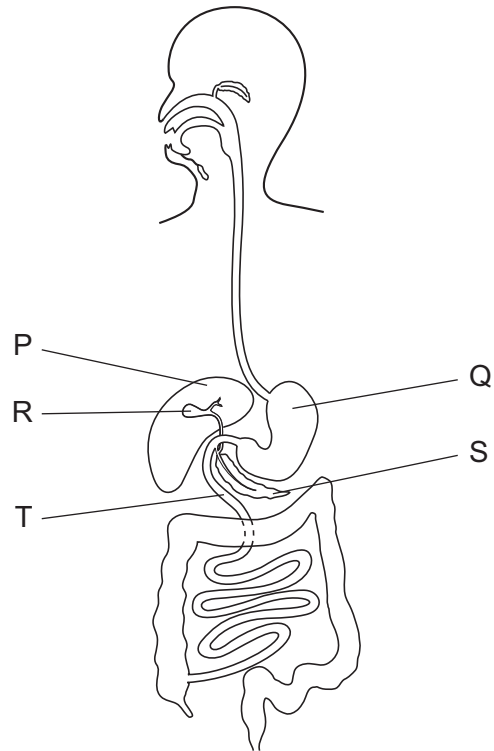


Which cells normally contain chloroplasts?

- A** 1 and 2      **B** 1 and 4      **C** 2 and 3      **D** 2 and 4
- 25 Where is amylase secreted in the digestive system, and what is its end product?

	secreted from	end product
<b>A</b>	pancreas and salivary glands	glucose
<b>B</b>	pancreas and salivary glands	maltose
<b>C</b>	stomach and small intestine	glucose
<b>D</b>	stomach and small intestine	maltose

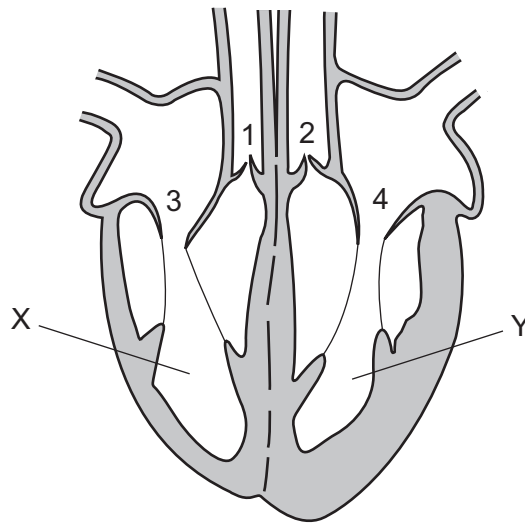
26 The diagram shows the human gut.



Where is bile made, where is it stored and where does it act?

	where it is made	where it is stored	where it acts
<b>A</b>	P	Q	R
<b>B</b>	P	R	T
<b>C</b>	Q	S	P
<b>D</b>	Q	T	S

27 The diagram shows a section through the heart.



While chambers X and Y are emptying, which valves are open and which are closed?

	valves 1 and 2	valves 3 and 4
<b>A</b>	closed	closed
<b>B</b>	closed	open
<b>C</b>	open	closed
<b>D</b>	open	open

28 The amount of oxygen carried by human blood depends on the

- A** amount of plasma.
- B** number of platelets.
- C** number of red blood cells.
- D** number of white blood cells.

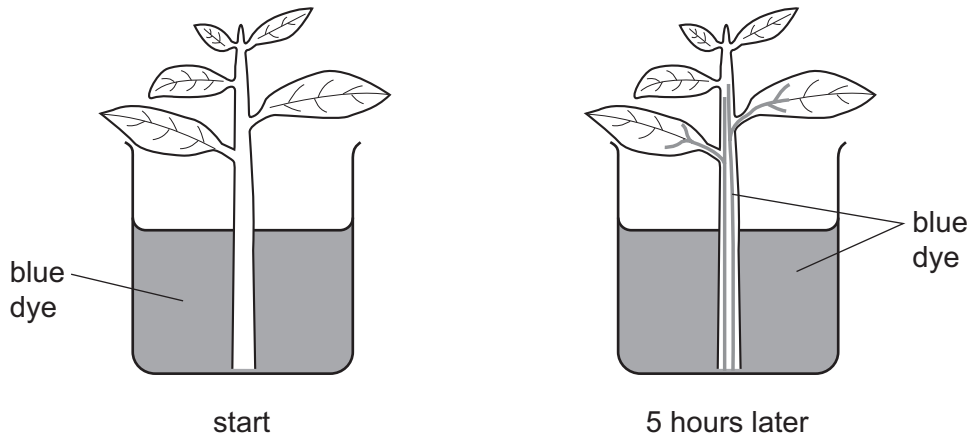
29 What are the products of aerobic and anaerobic respiration in muscle tissue?

	aerobic respiration	anaerobic respiration
<b>A</b>	carbon dioxide and water	ethanol
<b>B</b>	carbon dioxide and water	lactic acid
<b>C</b>	ethanol	carbon dioxide and water
<b>D</b>	lactic acid	carbon dioxide and water

30 Which process does **not** result in an overall loss of energy from the organism?

- A a boy running one hundred metres
- B photosynthesis in a green plant
- C respiration in an animal
- D the germination of seeds

31 A piece of a plant with a transparent stem was placed in a beaker containing a blue dye and then examined 5 hours later.



Which statement explains the change in appearance?

- A Blue dye diffuses through the cells of the plant.
  - B Blue dye diffuses up the stem by osmosis.
  - C Blue dye moves up through the phloem.
  - D Blue dye moves up through the xylem.
- 32 Which organ excretes most carbon dioxide from the human body?
- A kidney
  - B lung
  - C rectum
  - D skin

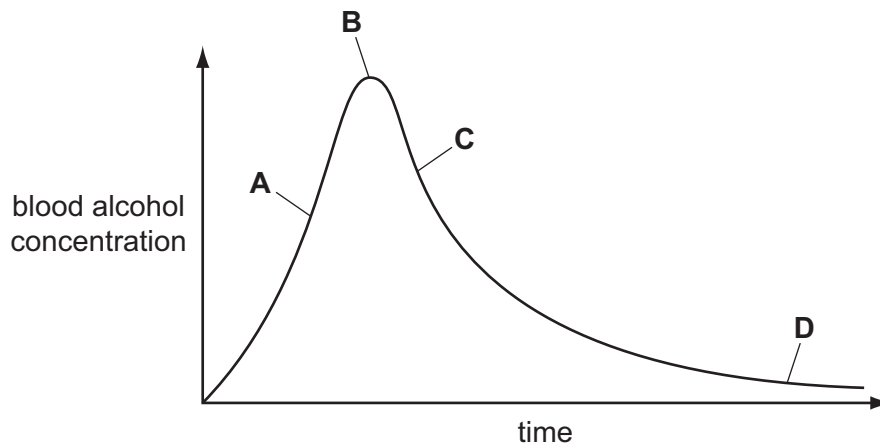
33 What happens in the eye when a person walks from a dark room into sunlight?

	radial muscles of the iris	circular muscles of the iris	pupil size
<b>A</b>	contract	relax	decreases
<b>B</b>	contract	relax	increases
<b>C</b>	relax	contract	decreases
<b>D</b>	relax	contract	increases

34 Samples of blood are taken every half hour from a person who has been drinking alcohol.

The graph shows the amount of alcohol in the person's blood.

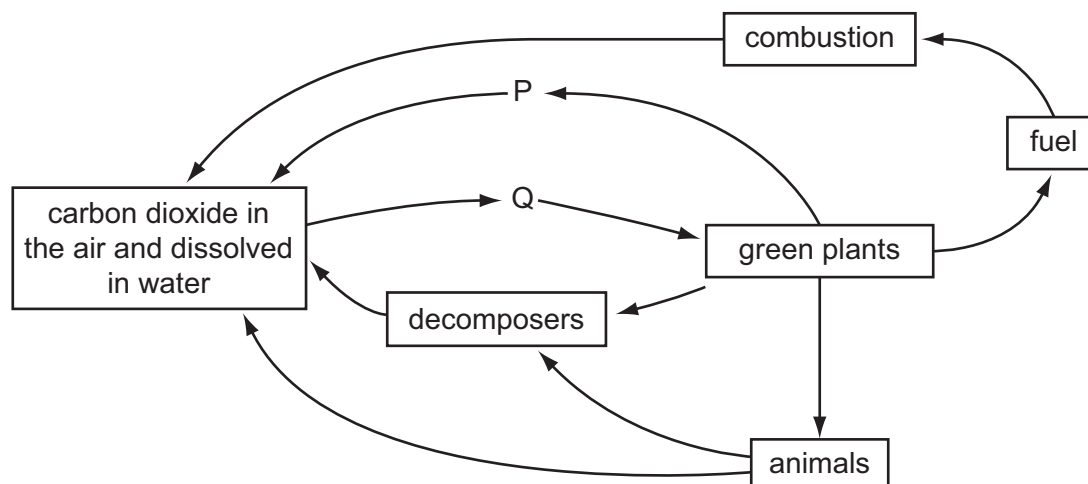
During which period is alcohol removed fastest from the blood?



35 What happens to energy after it has flowed through a food chain?

- A** It is lost as heat.
- B** It is recycled.
- C** It is stored as carbohydrate.
- D** It is used to power metabolic processes.

36 The diagram shows the carbon cycle.



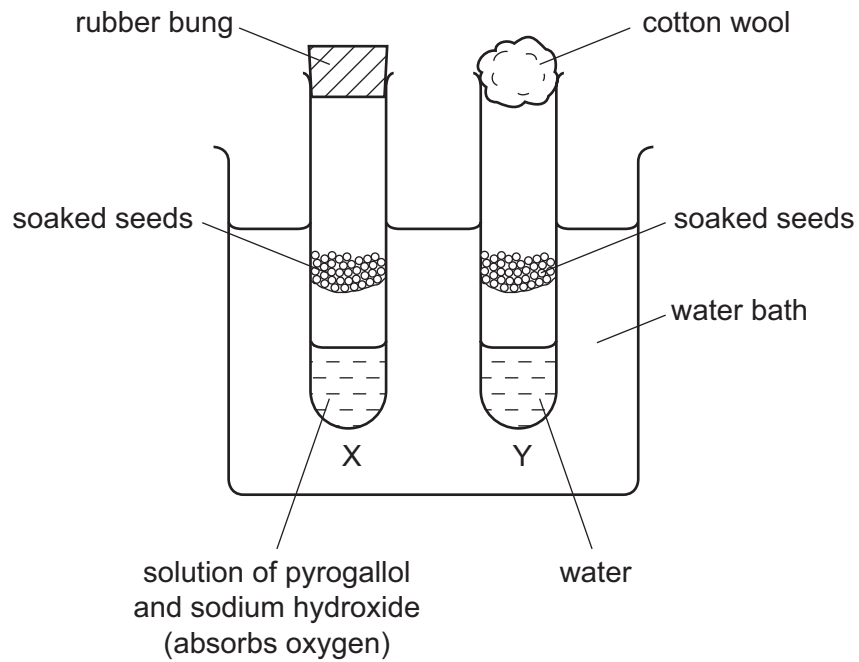
What are processes P and Q?

	P	Q
<b>A</b>	photosynthesis	photosynthesis
<b>B</b>	respiration	respiration
<b>C</b>	photosynthesis	respiration
<b>D</b>	respiration	photosynthesis

37 Which property of modern insecticides helps to keep environmental pollution at the **lowest** level?

- A** They accumulate in the bodies of predators.
- B** They are broken down by soil bacteria.
- C** They are easily washed into lakes and rivers.
- D** They are taken up by plant roots.

38 The diagram shows an experiment to find out if seeds need oxygen to germinate.

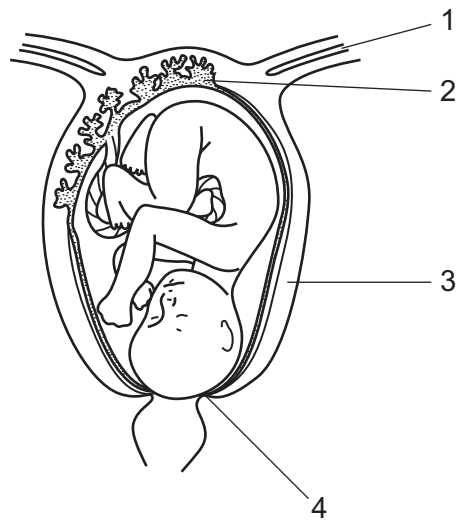


Which change should be made for tube Y to be an effective control?

- A Add soda lime at the bottom of tube Y.
- B Do not soak the seeds in tube Y.
- C Replace the cotton wool in tube Y with a rubber bung.
- D Replace the soaked seeds in tube Y with seeds that have been boiled.

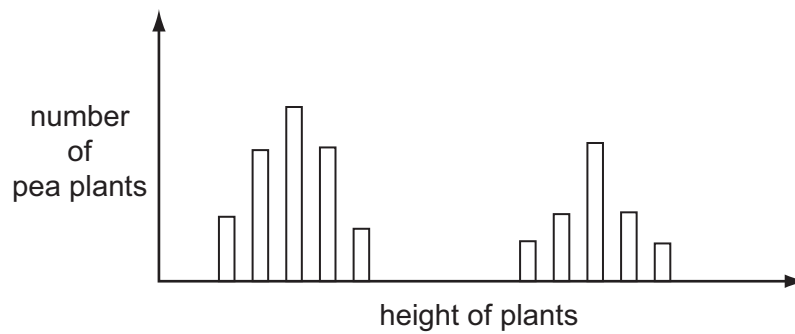


39 Where are the uterus and the cervix?



	uterus	cervix
<b>A</b>	1	2
<b>B</b>	2	1
<b>C</b>	3	4
<b>D</b>	4	3

40 The bar chart shows the heights of pea plants grown from 500 pea seeds.



What variation do the plants show?

- A** continuous variation only
- B** discontinuous variation only
- C** both continuous variation and discontinuous variation
- D** neither continuous variation nor discontinuous variation



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