

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

PHYSICS

0625/01

Paper 1 Multiple Choice

May/June 2003

45 minutes

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.

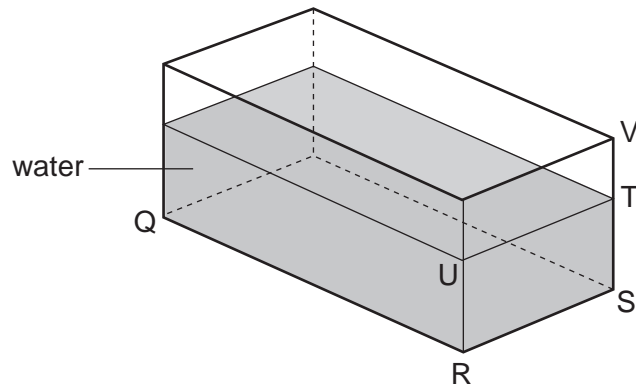
Read the instructions on the Answer Sheet very carefully.

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.



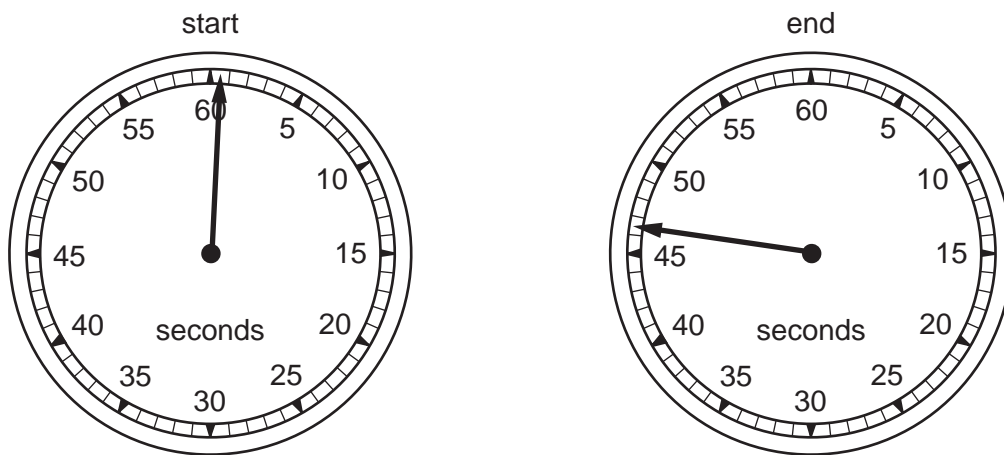
- 1 A glass tank contains some water.



The length QR and the width RS of the tank are known.

What other distance needs to be measured in order to be able to calculate the volume of the water?

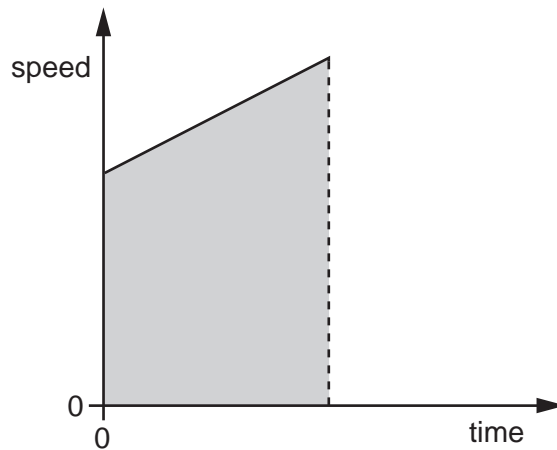
- A** ST **B** SV **C** TU **D** TV
- 2 A stopwatch is used to time a race. The diagrams show the watch at the start and at the end of the race.



How long did the race take?

- A** 45.7 s **B** 46.0 s **C** 46.5 s **D** 47.0 s

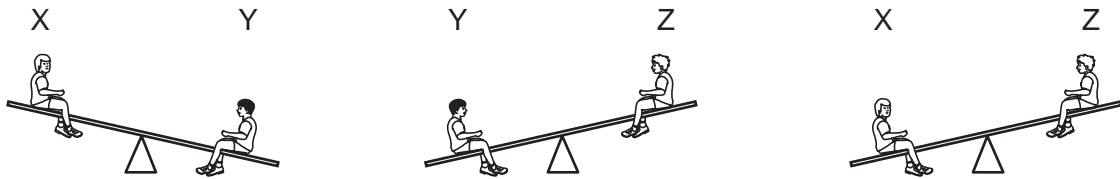
- 3 The diagram shows a speed-time graph for a body moving with constant acceleration.



What is represented by the shaded area under the graph?

- A acceleration
 - B distance
 - C speed
 - D time
- 4 A tunnel has a length of 50 km. A car takes 20 min to travel between the two ends of the tunnel.
- What is the average speed of the car?
- A 2.5 km/h
 - B 16.6 km/h
 - C 150 km/h
 - D 1000 km/h
- 5 Which statement is correct?
- A Mass is a force, measured in kilograms.
 - B Mass is a force, measured in newtons.
 - C Weight is a force, measured in kilograms.
 - D Weight is a force, measured in newtons.

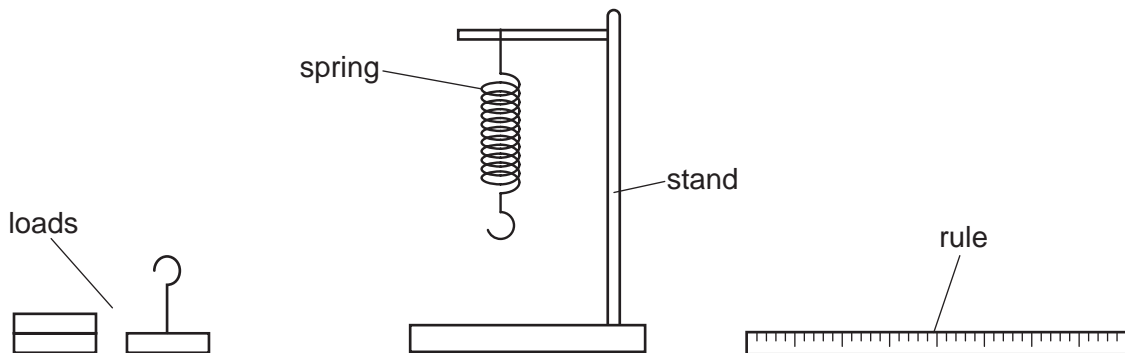
- 6 Three children, X, Y and Z, are using a see-saw to compare their weights.



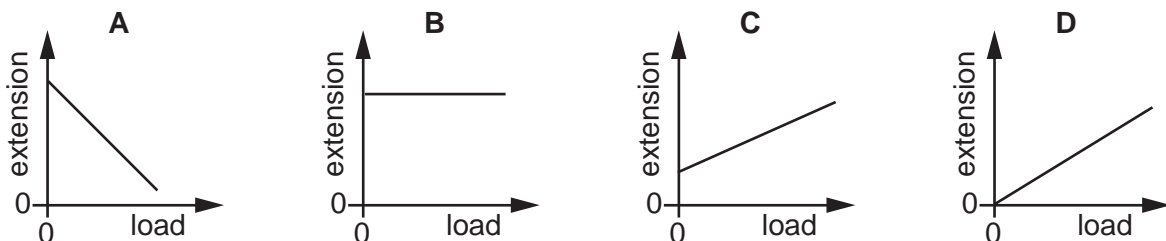
Which line in the table shows the correct order of the children's weights?

| | heaviest | ←————→ | lightest |
|----------|----------|--------|----------|
| A | X | Y | Z |
| B | X | Z | Y |
| C | Y | X | Z |
| D | Y | Z | X |

- 7 What apparatus is needed to determine the density of a regularly-shaped block?
- A** a balance and a ruler
- B** a balance and a forcemeter (spring balance)
- C** a measuring cylinder and a ruler
- D** a measuring cylinder and a beaker
- 8 A spring is suspended from a stand. Loads are added and the extensions are measured.

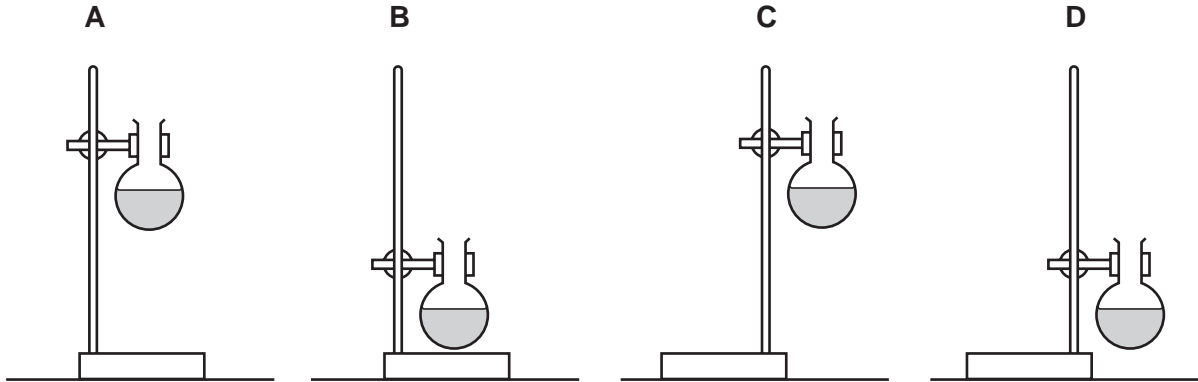


Which graph shows the result of plotting extension against load?



- 9 A student uses a stand and clamp to hold a flask of liquid.

Which diagram shows the most stable arrangement?



- 10 What is the source of the energy converted by a hydro-electric power station?

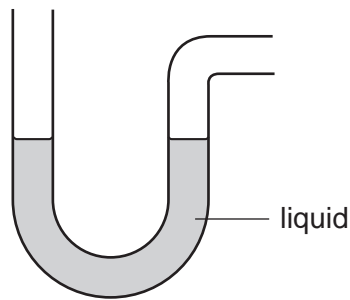
- A hot rocks
- B falling water
- C oil
- D waves

- 11 A labourer on a building site lifts heavy concrete blocks onto a lorry. Lighter blocks are now lifted the same distance in the same time.

What happens to the work done in lifting each block and the power exerted by the labourer?

| | work done in lifting each block | power exerted by labourer |
|---|---------------------------------|---------------------------|
| A | decreases | decreases |
| B | decreases | remains the same |
| C | increases | increases |
| D | remains the same | increases |

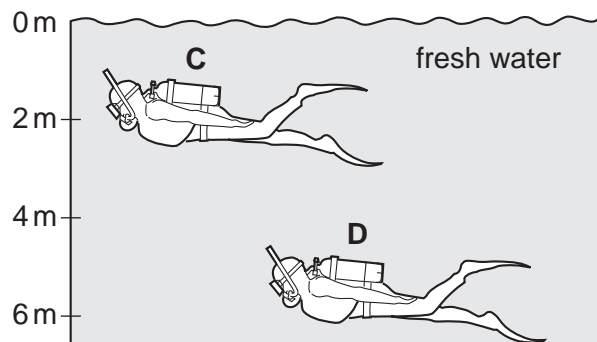
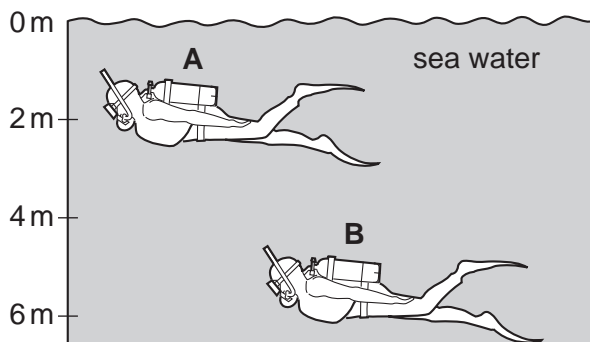
- 12 The diagram shows an instrument used to measure gas pressure.



What is the instrument called?

- A ammeter
 - B barometer
 - C manometer
 - D thermometer
- 13 The diagrams show two divers swimming in the sea and two divers swimming in fresh water. Sea water is more dense than fresh water.

On which diver is there the greatest pressure?

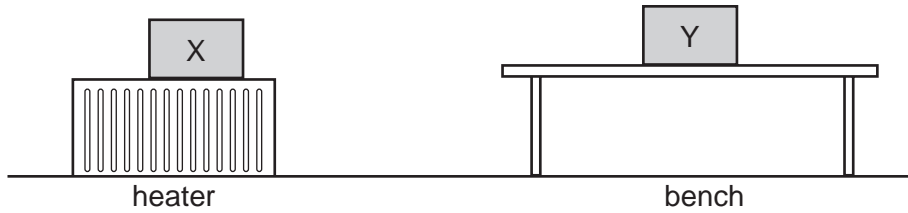


- 14 When water evaporates, some molecules escape.

Which molecules escape?

- A the molecules at the bottom of the liquid with less energy than others
- B the molecules at the bottom of the liquid with more energy than others
- C the molecules at the surface with less energy than others
- D the molecules at the surface with more energy than others

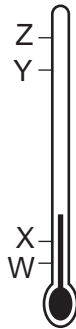
- 15 Two metal boxes containing air are standing in a room. Box X is on top of a heater. Box Y is on a bench. The boxes are left for a long time.



Which line in the table best describes the average speed of the molecules in the containers?

| | box X | box Y |
|----------|-------|-------|
| A | fast | zero |
| B | fast | slow |
| C | slow | fast |
| D | zero | fast |

- 16 The top of the mercury thread in a mercury-in-glass thermometer reaches point X at 0 °C and point Z at 100 °C.

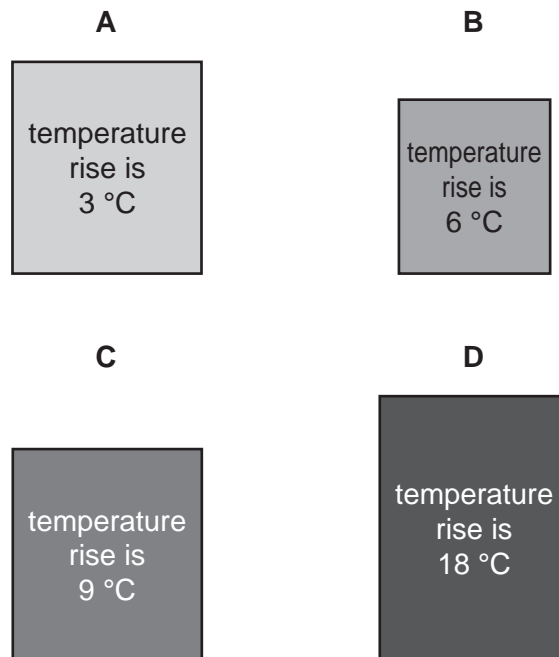


Where might it be at a temperature below the ice-point?

- A** point W
- B** point X
- C** point Y
- D** point Z

- 17 The same quantity of heat energy is applied to four different blocks. The temperature rise produced is shown on each block.

Which block has the highest thermal capacity?

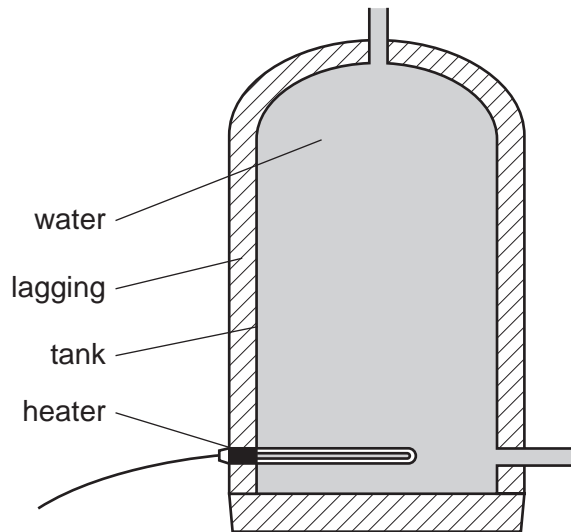


- 18 A person holds a glass beaker in one hand and fills it quickly with hot water. It takes several seconds before his hand starts to feel the heat.

Why is there this delay?

- A Glass is a poor conductor of heat.
- B Glass is a good conductor of heat.
- C Water is a poor conductor of heat.
- D Water is a good conductor of heat.

19 The diagram shows a heater used to heat a tank of cold water.



What is the main process by which heat moves through the water?

- A conduction
- B convection
- C evaporation
- D radiation

20 What causes refraction when light travels from air into glass?

- A The amplitude of the light waves changes.
- B The colour of the light changes.
- C The frequency of the light waves changes.
- D The speed of the light changes.

21 A woman tunes her radio to a station broadcasting on 200 m.

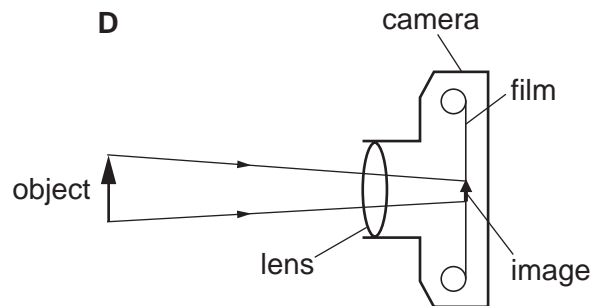
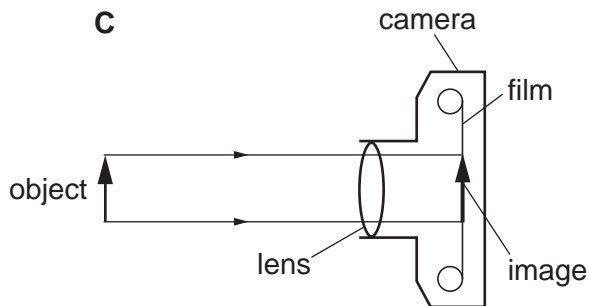
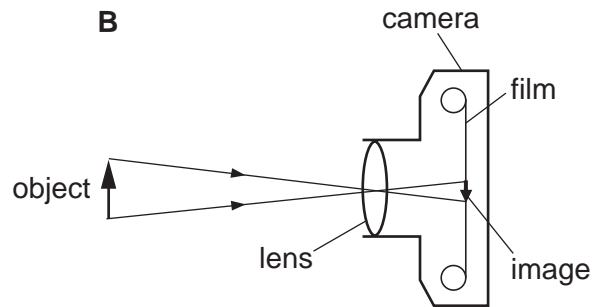
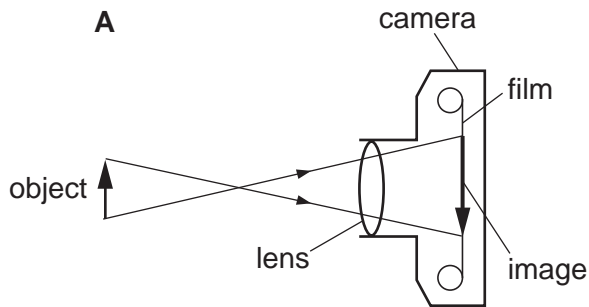
What does the 200 m tell her about the radio wave?

- A its amplitude
- B its frequency
- C its speed
- D its wavelength

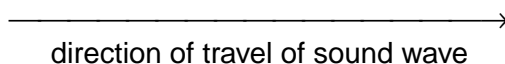
22 Which statement is correct about the speed of electromagnetic waves in a vacuum?

- A Ultra-violet waves have the greatest speed.
- B Visible light waves have the greatest speed.
- C Infra-red waves have the greatest speed.
- D All electromagnetic waves have the same speed.

23 Which diagram correctly shows rays passing through a camera lens?



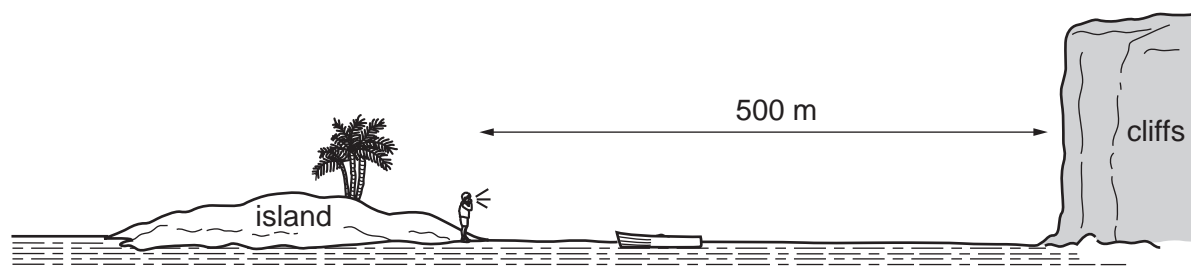
- 24 A sound wave passes through the air, in the direction shown.



How does a particle of air move as the sound wave passes?

- A moves to the right and stays there • →
- B moves left and right ← • →
- C moves up and stays there •
- D moves up and down ↑
•
↓

- 25 A boy is stranded on an island 500 m from the shore.



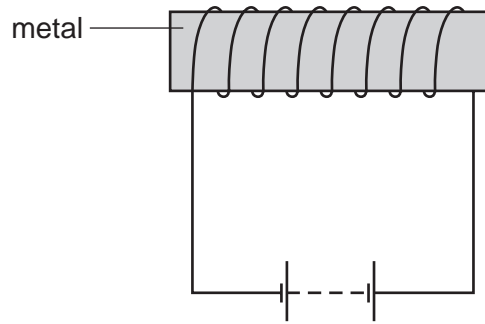
He shouts for help, but all he can hear in reply is the echo of his shout from some cliffs.

Sound travels at 340 m/s through the air.

What is the time interval between the boy shouting and hearing the echo?

- A $\frac{500}{340}$ s B $\frac{2 \times 500}{340}$ s C $\frac{340}{500}$ s D $\frac{2 \times 340}{500}$ s

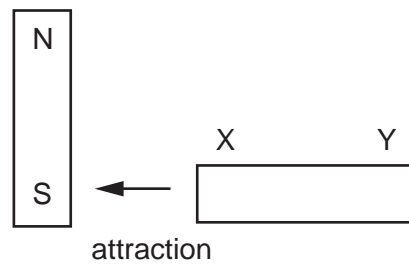
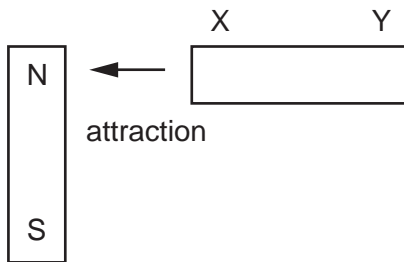
26 A student wishes to use a magnetising coil to make a permanent magnet from a piece of metal.



Which metal should she use?

- A aluminium
- B copper
- C iron
- D steel

27 A metal rod XY is placed near a magnet. End X is attracted when it is placed near to the north pole of the magnet, and also when it is placed near to the south pole.



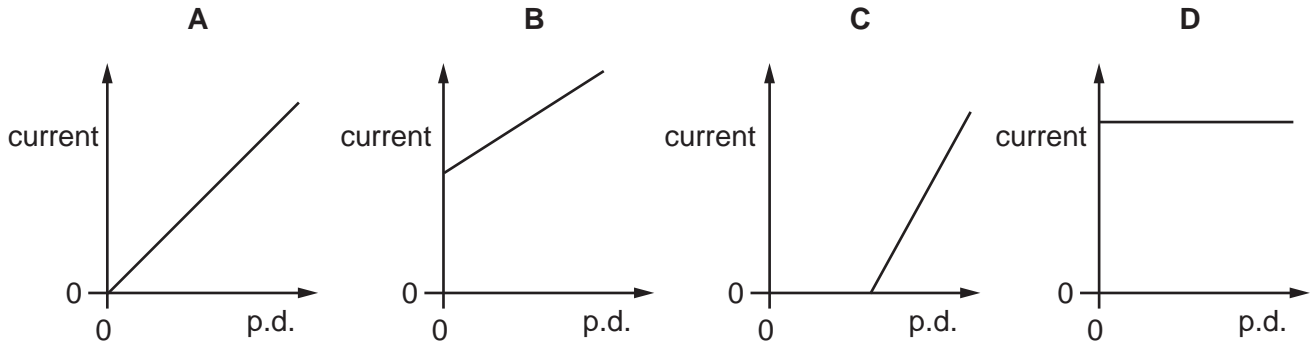
How does end Y behave when it is placed, in turn, near to the two poles of the magnet?

| | Y near north pole | Y near south pole |
|---|-------------------|-------------------|
| A | attraction | attraction |
| B | attraction | repulsion |
| C | repulsion | attraction |
| D | repulsion | repulsion |

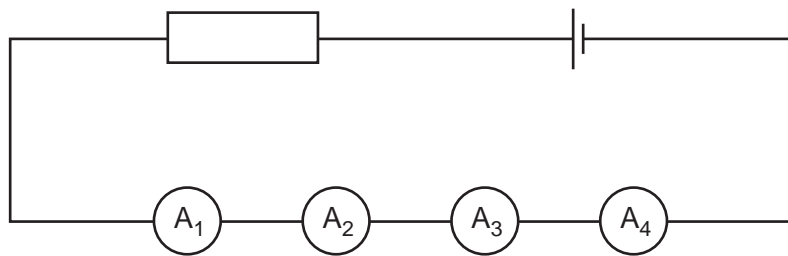
- 28 When the potential difference (p.d.) across a piece of resistance wire is changed, the current through the wire also changes.

The temperature of the wire is kept the same.

Which graph shows how the p.d. and current are related?



- 29 Two faulty ammeters and two perfect ammeters are connected in series in the circuit shown.



The readings on the ammeters are

$$A_1 \quad 2.9 \text{ A}$$

$$A_2 \quad 3.1 \text{ A}$$

$$A_3 \quad 3.1 \text{ A}$$

$$A_4 \quad 3.3 \text{ A}$$

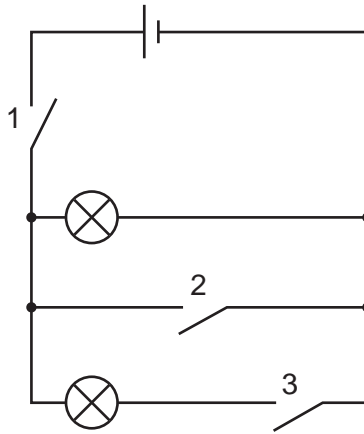
Which two ammeters are faulty?

- A** A_1 and A_2 **B** A_1 and A_4 **C** A_2 and A_3 **D** A_3 and A_4

- 30 Which electrical component would **not** normally be found in a battery-operated torch (flashlight)?



31 A student connects two lamps in the circuit shown.

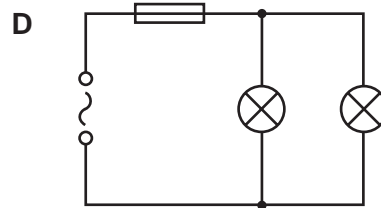
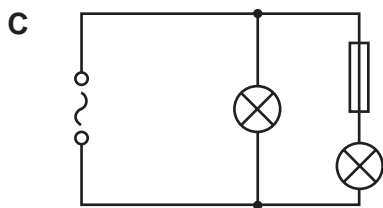
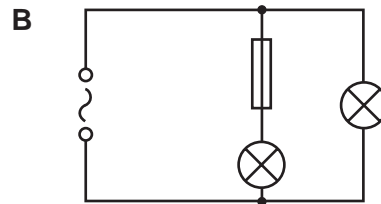
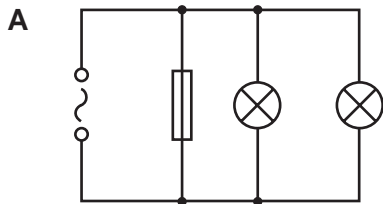


Which switches must he close to light both lamps?

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

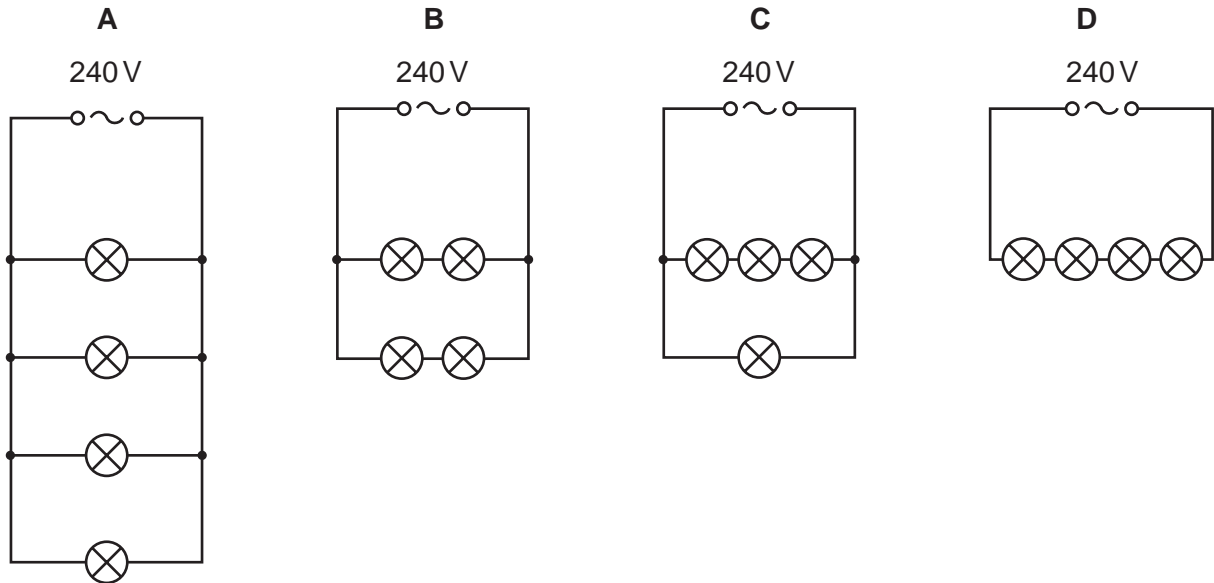
32 A student makes four circuits.

In which circuit are both lamps protected by the fuse?

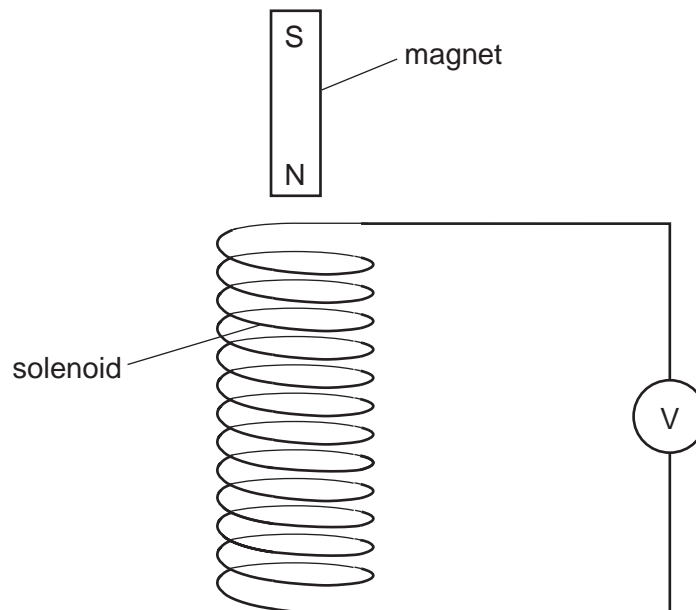


33 Four lamps are labelled '60 W 240 V'.

In which circuit are the lamps connected so that they all work at normal brightness?



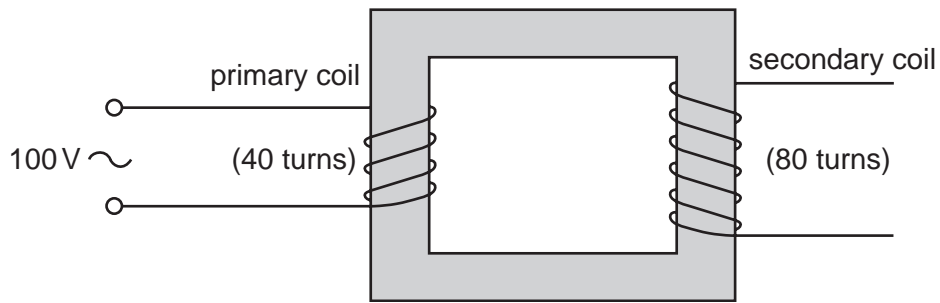
34 The diagram shows a solenoid connected to a sensitive voltmeter.



Which of the following would give a zero reading on the voltmeter?

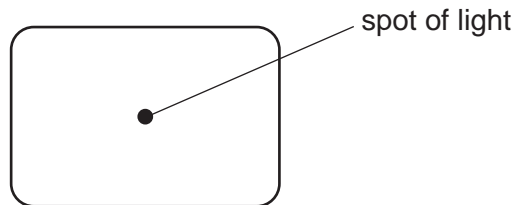
- A holding the magnet stationary inside the solenoid
- B moving the magnet away from the solenoid
- C moving the magnet towards the solenoid
- D moving the solenoid towards the magnet

- 35 The diagram shows a transformer with an alternating voltage of 100 V applied to the primary coil.



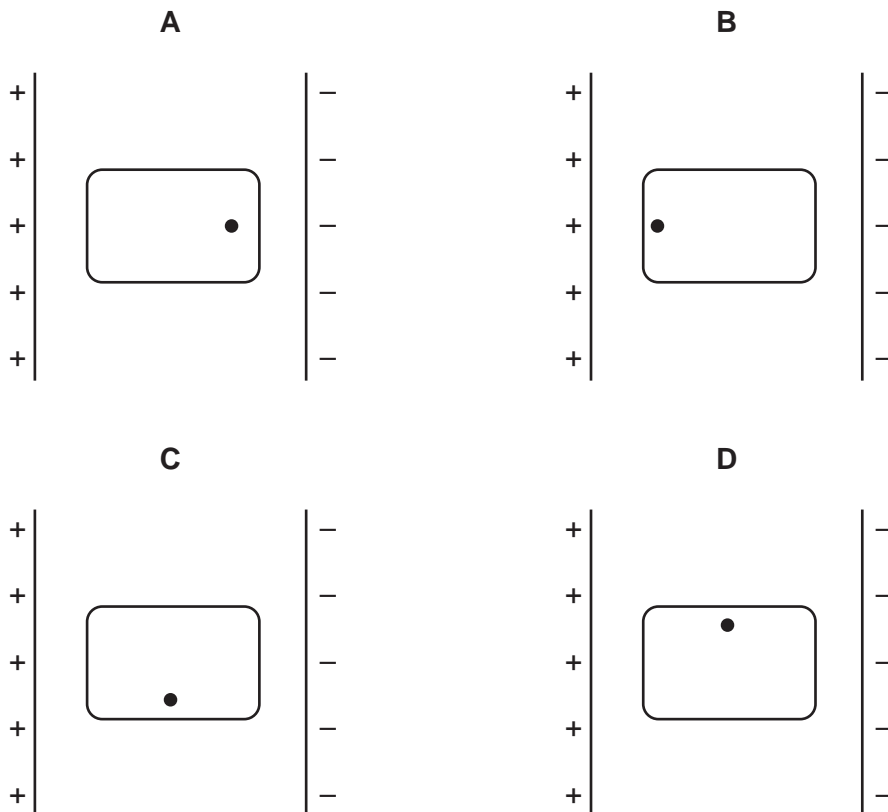
What is the voltage produced across the secondary coil?

- A 50 V B 100 V C 200 V D 8000 V
- 36 The diagram below shows the screen of a cathode-ray oscilloscope tube.

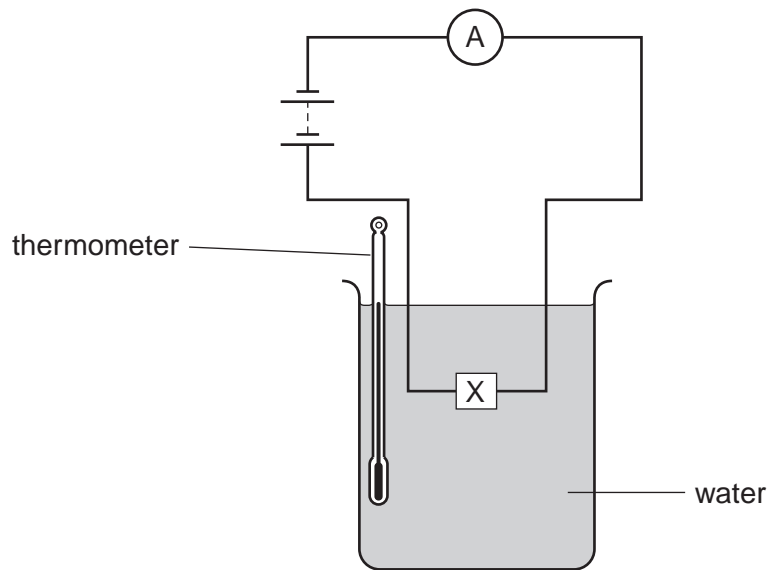


The tube is placed between a pair of charged plates.

Which diagram shows the new position of the spot?



37 An electrical component X is placed in water, as shown.



When the temperature of the water is increased, the reading on the ammeter increases.

What is component X?

- A a capacitor
 - B a light-dependent resistor
 - C a reed relay
 - D a thermistor
- 38 Which type of radiation can be stopped by a sheet of paper?
- A α -particles
 - B β -particles
 - C γ -rays
 - D X-rays
- 39 The half-life of a radioactive substance is 5 hours. A sample is tested and found to contain 0.48 g of the substance.
- How much of the substance was present in the sample 20 hours before the sample was tested?
- A 0.03 g
 - B 0.12 g
 - C 1.92 g
 - D 7.68 g

40 An atom of lithium contains three protons and three electrons.

The nucleon number (mass number) of the atom is 7.

How many neutrons are there in the atom?

- A** 3 **B** 4 **C** 7 **D** 10

