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PHYSICS **0625/22**

Paper 2 Multiple Choice (Extended) **February/March 2026**

45 minutes

You must answer on the multiple choice answer sheet.

You will need: Multiple choice answer sheet
Soft clean eraser
Soft pencil (type B or HB is recommended)

INSTRUCTIONS

- 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 multiple choice answer sheet.
- Follow the instructions on the multiple choice answer sheet.
- Write in soft pencil.
- Write your name, centre number and candidate number on the multiple choice answer sheet in the spaces provided unless this has been done for you.
- Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You may use a calculator.
- Take the weight of 1.0 kg to be 9.8 N (acceleration of free fall = 9.8 m / s^2).

INFORMATION

- The total mark for this paper is 40.
- Each correct answer will score one mark.
- Any rough working should be done on this question paper.

This document has **16** pages.

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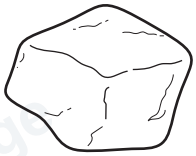
1 The diagram shows a stone of irregular shape.



Which property of the stone can be found by lowering it into a measuring cylinder half-filled with water?

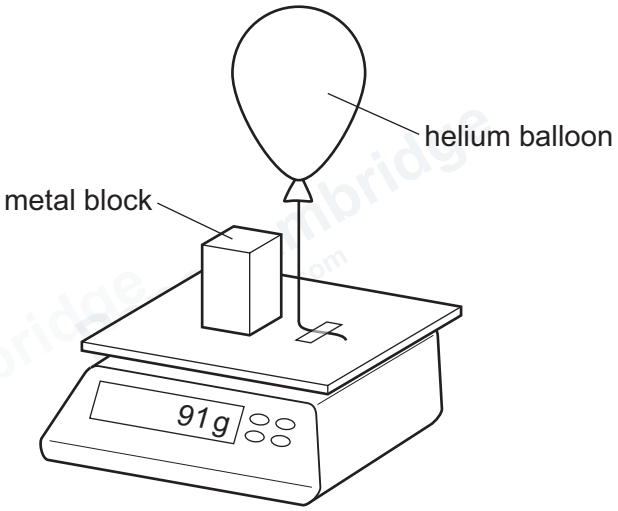
A length

B mass

C volume

D weight

2 A helium balloon is taped to a top-pan balance. A metal block of mass 100 g is placed on the balance. The reading on the balance is 91 g.



Which statement can be deduced from this experiment?

A The balloon exerts a downward force of 0.09 N on the top-pan balance.

B The helium has a mass of –9 g.

C The helium has a mass of +9 g.

D The resultant downward force on the top-pan balance is 0.89 N.

3 An athlete runs 300 m up a hill in 100 s.

She then runs down the same hill in 50 s.

What is her average speed for the whole run?

A 2.0 m/s **B** 4.0 m/s **C** 8.0 m/s **D** 9.0 m/s

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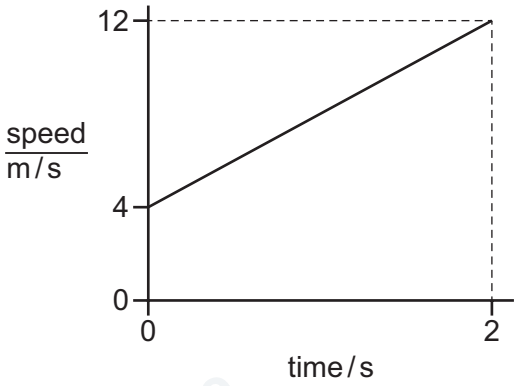
4 The diagram shows the speed–time graph for a car.



What is the acceleration of the car?

A $4.0\,m/s^2$ **B** $6.0\,m/s^2$ **C** $16\,m/s^2$ **D** $24\,m/s^2$

5 What is a weight?

A a frictional force

B a magnetic force

C a gravitational force

D an electromagnetic force

6 What is the relationship between the force F on an object, its mass m and its acceleration a?

A $a = \frac{m}{F}$ **B** $a = F \times m$ **C** $m = \frac{F}{a}$ **D** $m = F \times a$

7 Which statement about the resultant force acting on a moving object must be correct?

A It is the change in the momentum of the object per unit time.

B It is the force needed to keep the object moving at constant speed.

C It is the impulse acting on the object to keep the object moving.

D It is the largest forward force acting on the object.

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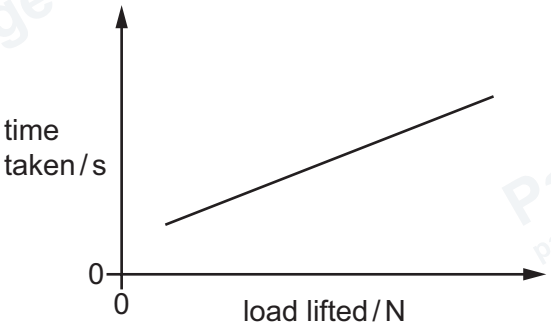
8 A motor is used to lift different sized loads through the same vertical height.

The power input to the motor is kept constant. The graph of time taken against load lifted is shown.



Which statement about the efficiency of the motor is correct?

A It decreases as the load increases.

B It increases as the load increases.

C It stays the same as the load increases.

D More information is needed to determine this.

9 An object is at a depth h below the surface of a liquid.

The density of the liquid is ρ and the gravitational field strength is g.

What is the total liquid pressure at depth h?

A $\frac{h\rho}{g}$ **B** $\frac{hg}{\rho}$ **C** $\frac{1}{h\rho g}$ **D** $h\rho g$

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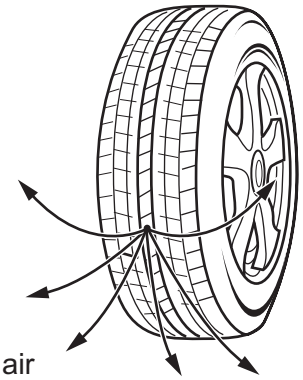
10 A car tyre runs over a nail that makes a hole in it. The air in the tyre leaks out.



Why does the air leave the tyre?

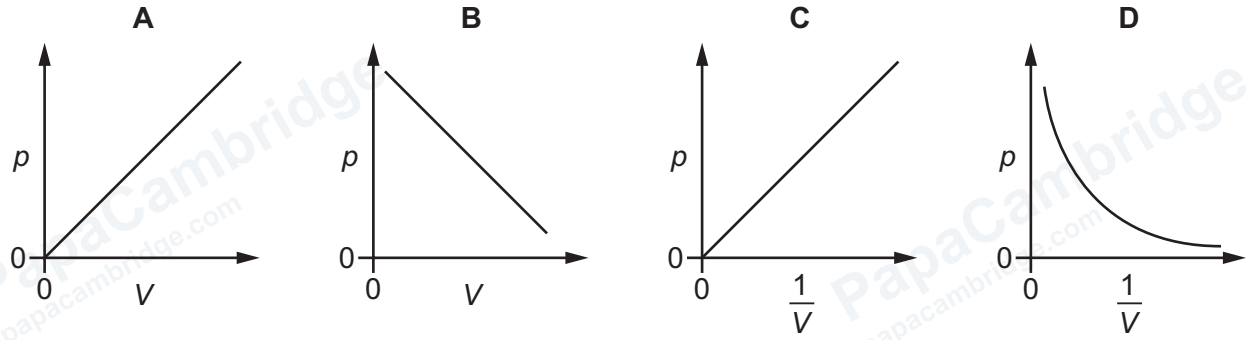
A The pressure inside the tyre is greater than the pressure outside.

B The pressure inside the tyre is less than the pressure outside.

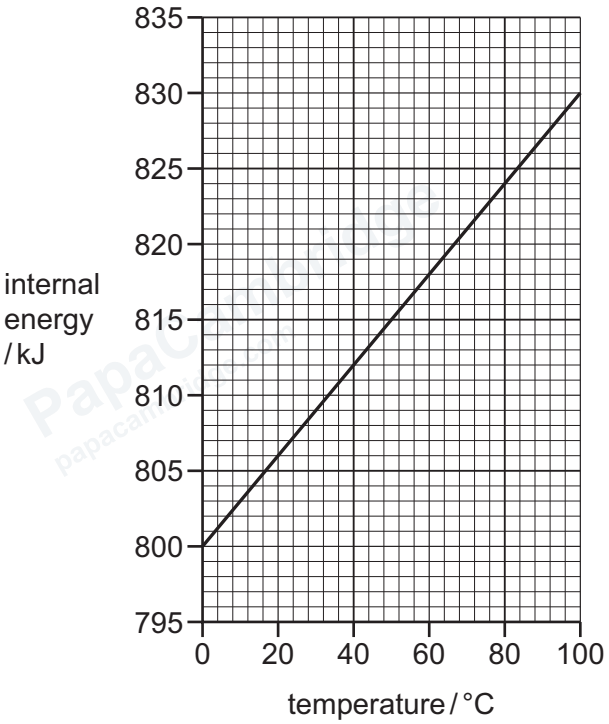
C The temperature inside the tyre is greater than the temperature outside.

D The temperature inside the tyre is less than the temperature outside

11 Which graph shows the relationship between pressure p and volume V for a fixed mass of gas at constant temperature?



12 The graph shows how the internal energy of 1.0 kg of a metal changes with temperature.



What is the increase in the internal energy of a block of the same metal of mass 0.125 kg when its temperature rises from 40 °C to 80 °C?

A 60 J **B** 600 J **C** 1500 J **D** 2400 J

13 Both melting and boiling of water require an input of energy.

What happens to the temperature of water during melting and boiling?

A Temperature rises during both melting and boiling.

B Temperature does **not** change during melting, but rises during boiling.

C Temperature rises during melting, but does **not** change during boiling.

D Temperature remains unchanged during melting and during boiling.

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14 A beaker contains a liquid.

As the liquid evaporates, particles escape from the surface of the liquid and the temperature of the beaker changes.

Which statement is correct?

A The beaker cools down because the less-energetic particles escape from the surface of the liquid.

B The beaker cools down because the more-energetic particles escape from the surface of the liquid.

C The beaker heats up because the less-energetic particles escape from the surface of the liquid.

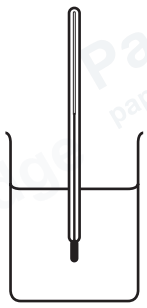
D The beaker heats up because the more-energetic particles escape from the surface of the liquid.

15 Equal volumes of water at 100 °C are put in four containers. Two containers have matt black sides and two containers have shiny white sides. One of each type of container has a lid.

The containers are left for two minutes.

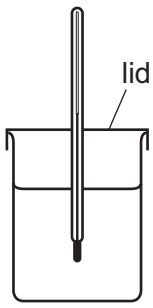
Which container of water has the highest temperature?

A



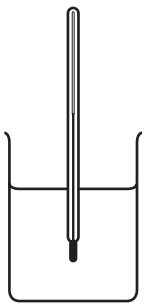
matt black sides

B



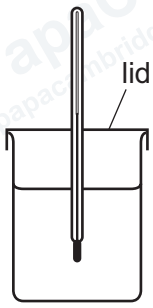
matt black sides

C



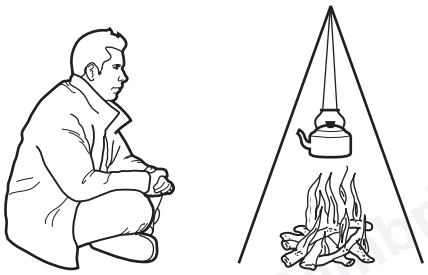
shiny white sides

D



shiny white sides

16 The diagram shows a person keeping warm while water in a metal kettle boils over a wood fire.



Which thermal energy transfers are taking place in this situation?

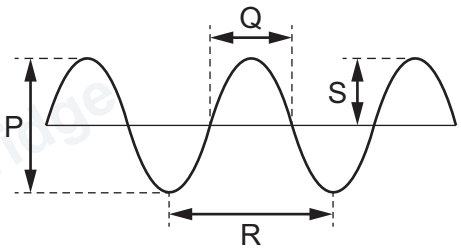
A conduction, convection and radiation

B conduction and convection only

C convection and radiation only

D conduction and radiation only

17 The diagram shows a wave.



Which letter represents the amplitude and which letter represents the wavelength of the wave?

	amplitude	wavelength
A	P	Q
B	P	R
C	S	Q
D	S	R

18 Which statement about the image of an object formed in a plane mirror is correct?

A It is smaller than the object.

B It is the same size as the object.

C It is larger than the object.

D It is inverted.

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19 A ray of light travels from air into a glass block.

	in air	in glass
speed of ray	v_a	v_g
wavelength of ray	λ_a	λ_g
frequency of ray	f_a	f_g

Three suggestions as to how the refractive index of glass n may be calculated are listed.

1 $n = \frac{v_a}{v_g}$

2 $n = \frac{\lambda_a}{\lambda_g}$

3 $n = \frac{f_a}{f_g}$

Which suggestions are correct?

A 1, 2 and 3 **B** 1 and 2 only **C** 1 and 3 only **D** 2 and 3 only

20 A light ray travels from air into glass.

The angle of incidence is 32.0° and the angle of refraction is 21.1°.

What is the refractive index of the glass?

A 0.679 **B** 0.709 **C** 1.47 **D** 1.52

21 A real image of an object is formed by a converging lens.

Which statement is correct?

A The rays from the tip of the object meet at a point and the image can be viewed on a screen.

B The rays from the tip of the object meet at a point and the image **cannot** be viewed on a screen.

C The rays from the tip of the object do **not** meet at a point and the image can be viewed on a screen.

D The rays from the tip of the object do **not** meet at a point and the image **cannot** be viewed on a screen.

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22 Intruder alarms, mobile phones and security scanners are practical uses of electromagnetic radiation.

Which list places the devices in the correct order of increasing wavelength of the electromagnetic radiation used?

A intruder alarms → mobile phones → security scanners

B mobile phones → intruder alarms → security scanners

C security scanners → intruder alarms → mobile phones

D security scanners → mobile phones → intruder alarms

23 A student wants to explain why the sound from a train gets louder when it gets closer.

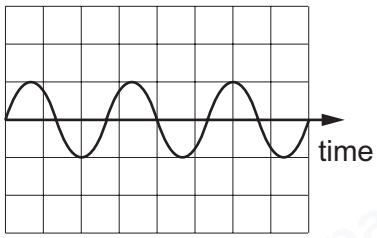
What is the type of wave and which property of the sound causes it to be louder?

	type of wave	property
A	longitudinal	wave is moving faster
B	longitudinal	wave has a larger amplitude
C	transverse	the wavelength of the wave is increasing
D	transverse	the frequency of the wave is increasing

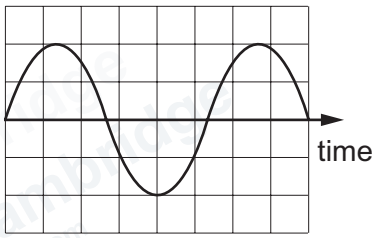
24 The diagrams show four different sound waves as represented by an oscilloscope. The scales are the same in all the diagrams.

Which sound has the lowest pitch?

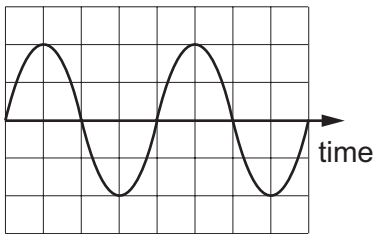
A



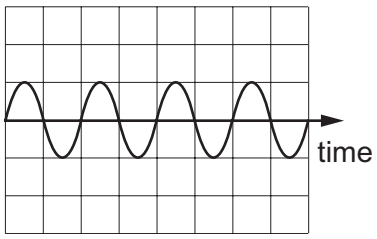
B



C



D



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25 A soft-iron bar is **not** magnetised. It is held close to the N pole of a magnet and then to the S pole of the same magnet.

What will be the result?

	N pole	S pole
A	attracts	attracts
B	attracts	repels
C	repels	attracts
D	repels	repels

26 Which quantity is defined as the energy transferred by a cell in driving unit charge around a complete circuit?

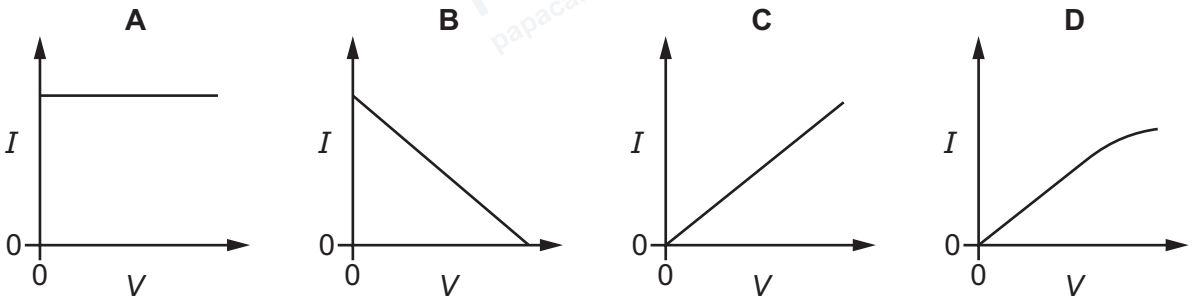
A current

B electromotive force (e.m.f.)

C power

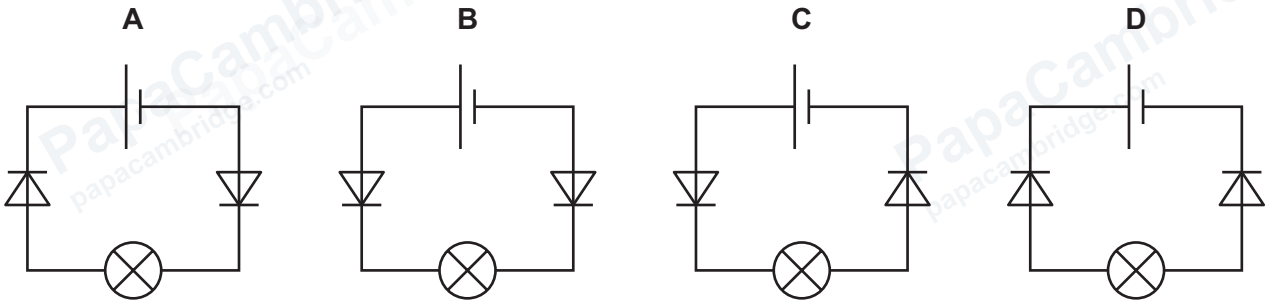
D resistance

27 Which graph shows the relationship between current I and voltage V for a metal wire at constant temperature?



28 The circuit diagrams show a cell connected to two diodes and a lamp in series.

In which circuit does the lamp light up?



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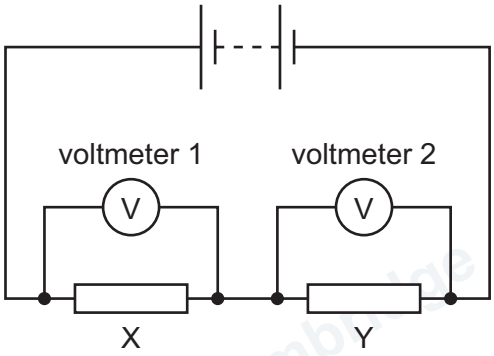
29 The diagram shows a battery connected to two resistors, X and Y.

Two voltmeters are connected into the circuit.



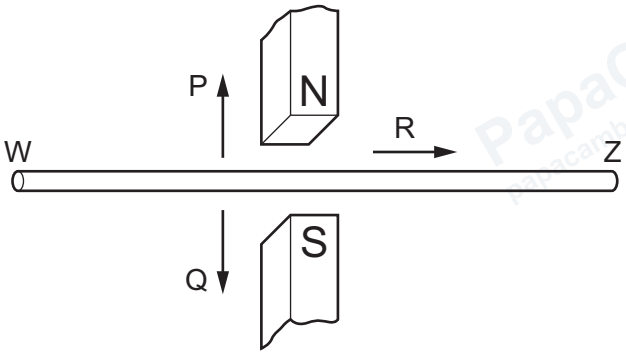
The reading on voltmeter 1 is greater than the reading on voltmeter 2.

Which row about the current in the two resistors and the resistance of the two resistors is correct?

	current	size of resistors
A	current is the same in both resistors	both resistors have the same resistance
B	current is the same in both resistors	resistance of X is greater than resistance of Y
C	current in X is greater than current in Y	both resistors have the same resistance
D	current in X is greater than current in Y	resistance of X is greater than resistance of Y

30 The diagram shows a conductor WZ.

Part of the conductor lies between the magnetic poles N and S.



When the conductor is moved, electrons flow along the conductor from Z to W.

In which direction is the conductor moved?

A in the direction of arrow P

B in the direction of arrow Q

C in the direction of arrow R

D out of the paper towards the viewer

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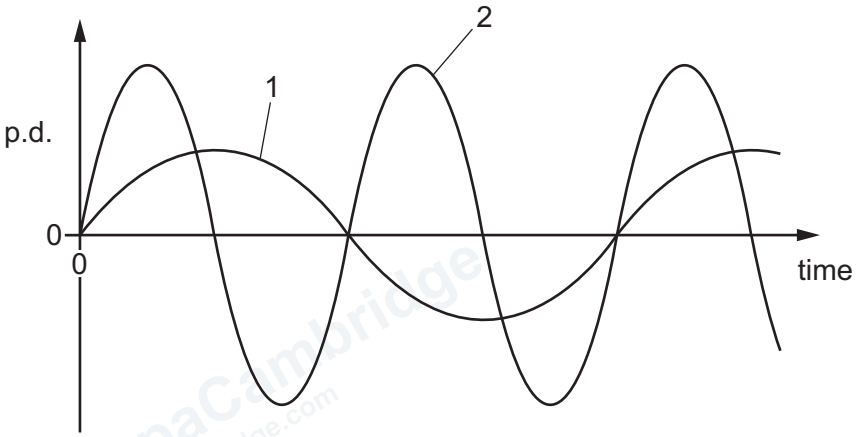
31 Graph 1 shows the output from an a.c. generator.



Which changes can be made so that the generator produces graph 2?

A decreasing the magnetic field strength and decreasing the speed of rotation only

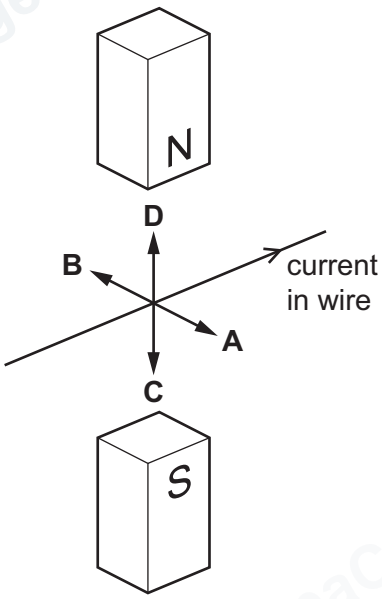
B increasing the magnetic field strength and decreasing the number of coils only

C increasing the number of coils only

D increasing the speed of rotation only

32 The diagram shows a current-carrying wire in a magnetic field.

What is the direction of the magnetic force on the wire?



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33 A transformer has a primary coil with 2000 turns and a secondary coil with 10 000 turns.

The transformer is 100% efficient.

V_p is the voltage across the primary coil.

V_s is the voltage across the secondary coil.

I_p is the current in the primary coil.

I_s is the current in the secondary coil.

Which statement about this transformer is correct?

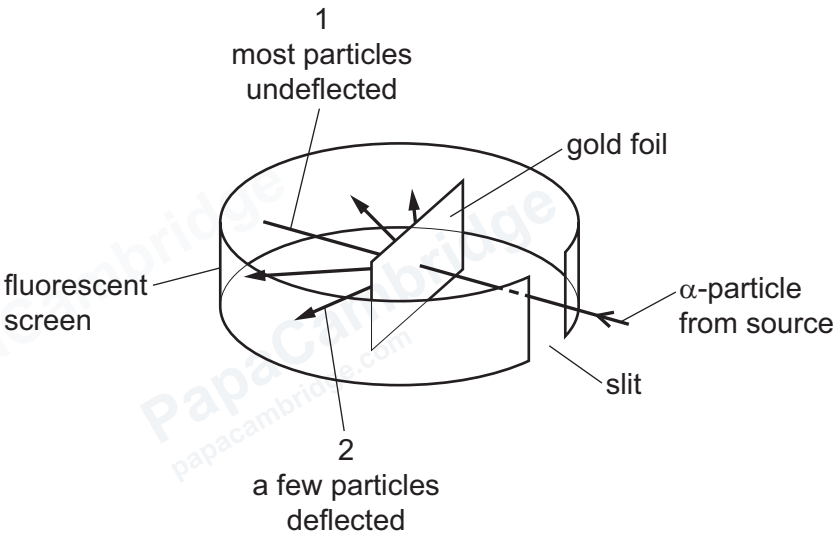
A $V_s = V_p \times 5$ and $I_s = I_p \times 5$

B $V_s = V_p \times 5$ and $I_s = I_p \times 0.2$

C $V_s = V_p \times 0.2$ and $I_s = I_p \times 5$

D $V_s = V_p \times 0.2$ and $I_s = I_p \times 0.2$

34 The diagram shows the scattering of α-particles by gold foil.



Two observations from the experiment are labelled 1 and 2. They are evidence for the structure of the atom.

Which conclusion is correct?

A The atom has no overall charge.

B The atom has an overall positive charge.

C The atom is mostly empty space.

D The atom has an overall negative charge.

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35 A nuclide has the symbol $^{23}_{11}Na$.

Which statement about all atoms of this nuclide is correct?

A There are 11 protons in the nucleus.

B There are 23 neutrons in the nucleus.

C There are 11 electrons in the nucleus.

D There are 34 nucleons in the nucleus.

36 A student measures the count rate from a radioactive source.

Which method should the student use to remove the contribution made by background radiation?

A Take the measurement in an empty room.

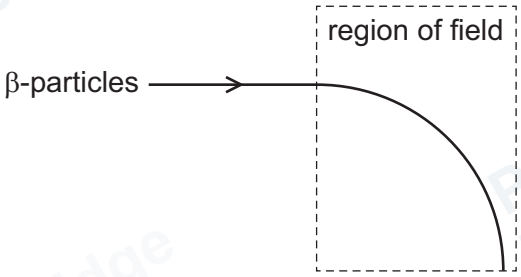
B Measure the count rate due to the background radiation on its own and add it to the measurement from the source.

C Measure the count rate due to the background radiation on its own and subtract it from the measurement from the source.

D Reduce the measurement time.

37 A beam of β-particles travels in a straight line.

It enters a region where there is a field that deflects the particles in a circular path, as shown.



What is the type of field and its direction on the diagram?

A an electric field into the page

B an electric field towards the bottom of the page

C a magnetic field into the page

D a magnetic field towards the bottom of the page

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38 Uranium-235 can undergo nuclear fission in many ways.

Which equation correctly shows a possible fission reaction for uranium-235?

A $^{1}_{0}n + {}^{235}_{92}U \rightarrow {}^{141}_{56}Ba + {}^{92}_{36}Kr + 3{}^{1}_{0}n$

B $^{1}_{0}n + {}^{235}_{92}U \rightarrow {}^{91}_{38}Sr + {}^{144}_{54}Xe + 2{}^{1}_{0}n$

C $^{1}_{0}n + {}^{235}_{92}U \rightarrow {}^{95}_{37}Rb + {}^{136}_{55}Cs + 3{}^{1}_{0}n$

D $^{1}_{0}n + {}^{235}_{92}U \rightarrow {}^{87}_{35}Br + {}^{146}_{57}La + 4{}^{1}_{0}n$

39 A satellite is orbiting above the Earth's equator. It completes one orbit of the Earth every 24 hours.

The satellite is 36 000 km above the surface of the Earth and the radius of the Earth is 6400 km.

What is the orbital speed of the satellite?

A 2.6 m/s **B** 3.1 km/s **C** 74 km/s **D** 470 km/s

40 One nuclear reaction that occurs in the Sun is responsible for most of the energy released in the Sun.

What is this nuclear reaction?

A fission of helium to form hydrogen

B fission of hydrogen to form helium

C fusion of helium to form hydrogen

D fusion of hydrogen to form helium

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