CAMBRIDGE
International Education

Cambridge IGCSE™ (9–1)

PHYSICS **0972/22**

Paper 2 Multiple Choice (Extended) **May/June 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. Any blank pages are indicated.

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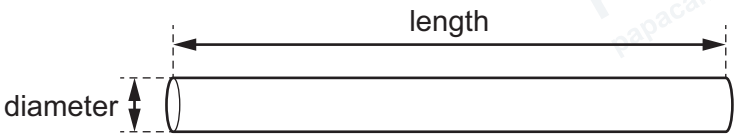
[Turn over

1 A piece of modelling clay is rolled into the shape of a cylinder.

The dimensions shown are approximate.



Which apparatus is used to determine the volume of the cylinder?

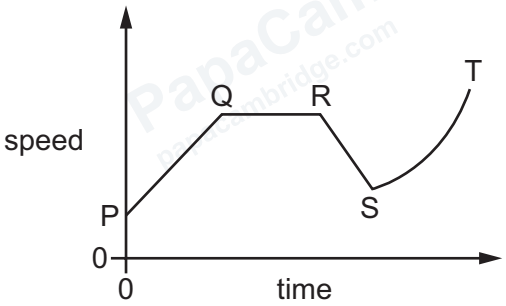
A a protractor

B a ruler

C a syringe

D a stopwatch

2 The diagram shows a speed–time graph for an object.



Which sections of the graph show the object moving with constant, non-zero acceleration?

A PQ, QR and RS

B PQ and RS only

C QR only

D ST only

3 Which unit is a unit of weight?

A kilogram

B kilojoule

C kilometre

D kilonewton

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4 Which statement gives a complete description of any object that is in equilibrium?

A There are no forces acting.

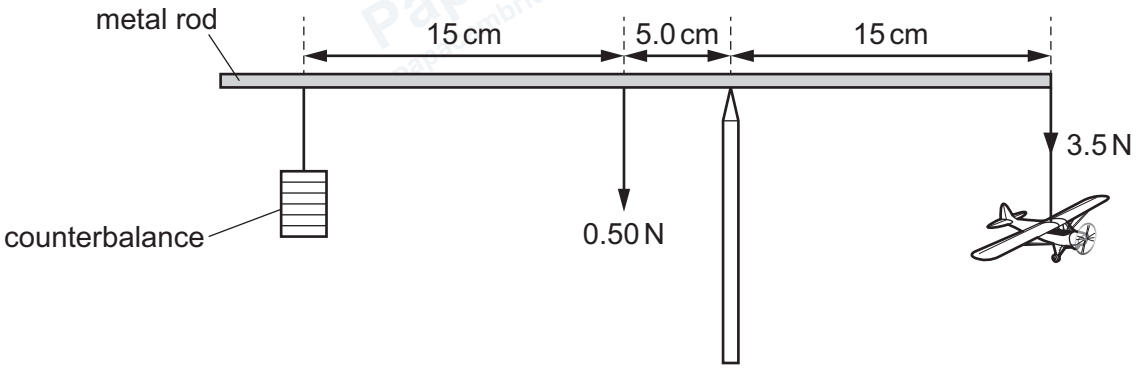
B There is no resultant force.

C There is no resultant force and no resultant turning effect.

D There is no resultant turning effect.

5 A student is designing a toy. She attaches a model plane to one end of a uniform metal rod. The weight of the metal rod is 0.50 N. The weight of the model plane is 3.5 N.

She uses a counterbalance to keep the system in equilibrium.



What is the weight of the counterbalance?

A 2.5 N **B** 2.8 N **C** 3.5 N **D** 4.7 N

6 A model car has a mass of 0.50 kg.

It is accelerated from rest by a constant resultant force of 2.0 N for a time of 3.0 s.

What is the maximum speed of the model car?

A 3.0 m / s **B** 4.0 m / s **C** 6.0 m / s **D** 12 m / s

7 The total mass of a cyclist and his bicycle is 80 kg.

The cyclist starts from rest and rides down a hill without pedalling.

The vertical height of the hill is 50 m.

At the bottom of the hill, the speed of the cyclist is 20 m / s.

How much energy is wasted as the cyclist rides from the top of the hill to the bottom of the hill?

A less than 10 kJ

B between 10 kJ and 20 kJ

C between 20 kJ and 30 kJ

D over 30 kJ

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8 Which energy resource does **not** depend upon the Sun as its source of energy?

A coal

B geothermal

C hydroelectric

D wind

9 A whale dives to a depth of 3000 m in sea water.

In addition to the gravitational field strength, which variables determine the pressure on the whale due to the water at a depth of 3000 m?

A depth, water density and mass of the whale only

B depth and water density only

C depth, surface area of the whale and mass of the whale only

D depth and surface area of the whale only

10 A liquid is at a temperature below its boiling point.

The liquid is then heated to a temperature above its boiling point and becomes a gas.

Which row correctly compares the liquid with the gas?

	average distance between the particles	**average speed of the particles**
A	greater in the liquid	greater in the liquid
B	greater in the liquid	smaller in the liquid
C	smaller in the liquid	greater in the liquid
D	smaller in the liquid	smaller in the liquid

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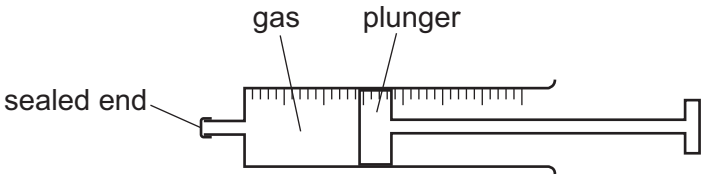
11 The diagram shows a sealed syringe containing a gas at a constant temperature.

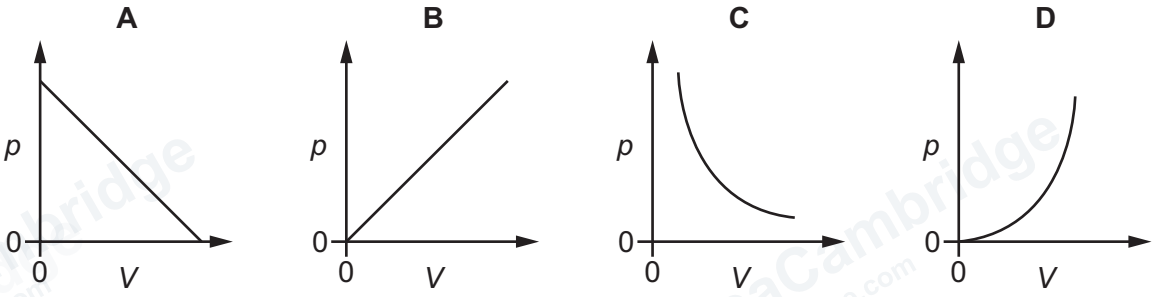


What happens to the gas particles and the pressure of the gas as the plunger is pushed further in?

	gas particles	pressure of the gas
A	hit the walls of the syringe less frequently	decreases
B	hit the walls of the syringe less frequently	increases
C	hit the walls of the syringe more frequently	decreases
D	hit the walls of the syringe more frequently	increases

12 A gas at constant temperature has pressure *p* and volume *V*.

Which graph shows how *p* varies with *V*?



13 900 kJ of energy is transferred to a mass of water. The temperature of the water increases from 20 °C to 45 °C.

The specific heat capacity of water is 4200 J / (kg °C).

Which mass of water is heated?

A 0.0086 kg **B** 5.4 kg **C** 8.6 kg **D** 11 kg

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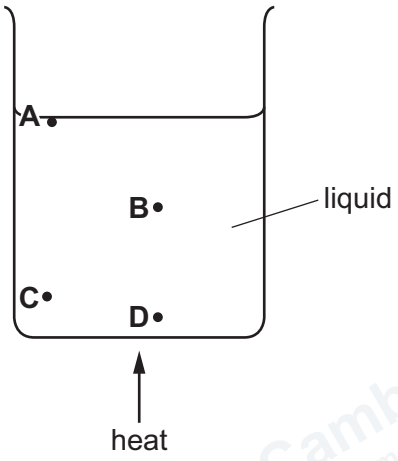
14 A beaker of liquid is heated slowly so that the liquid evaporates.

During evaporation, from where do the more-energetic molecules leave the liquid?



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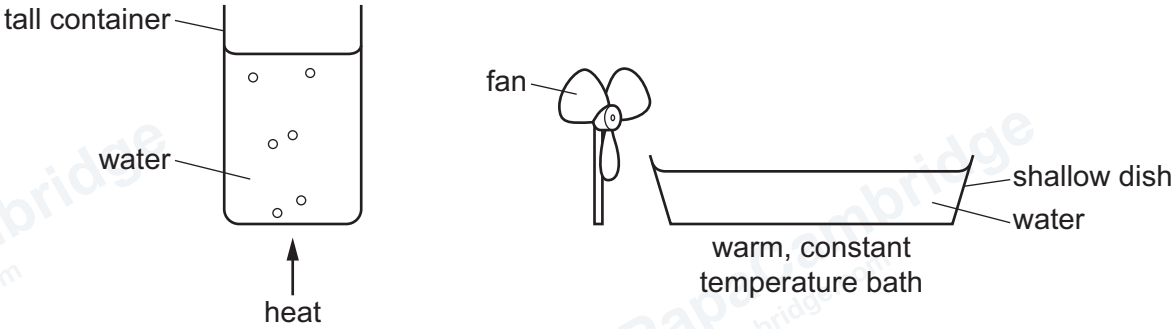
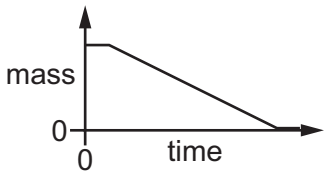
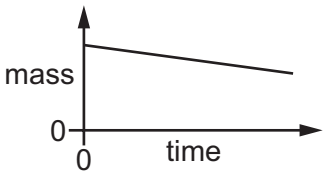
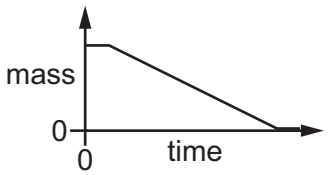
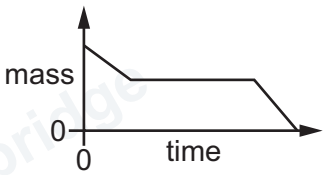
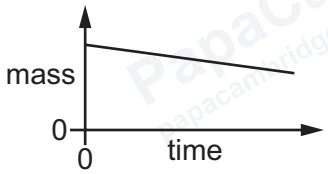
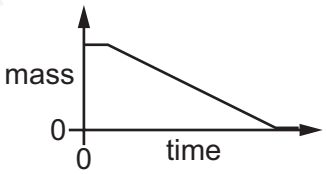
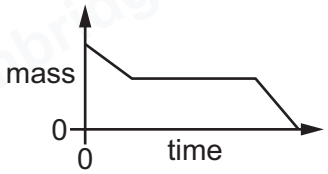
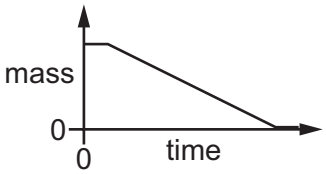
15 A student uses a tall container and a shallow dish for two experiments heating water.

The same mass of water at room temperature is used in each experiment.

The tall container is heated until the water boils and the shallow dish is kept warm at a constant temperature with a fan blowing across it.



Which row shows the correct graph for the mass of water remaining in each experiment?

	tall container	shallow dish
A		
B		
C		
D		

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16 A warm black surface emits radiation. It is decided to increase the amount of radiation emitted.

Which changes increase the amount of radiation emitted?

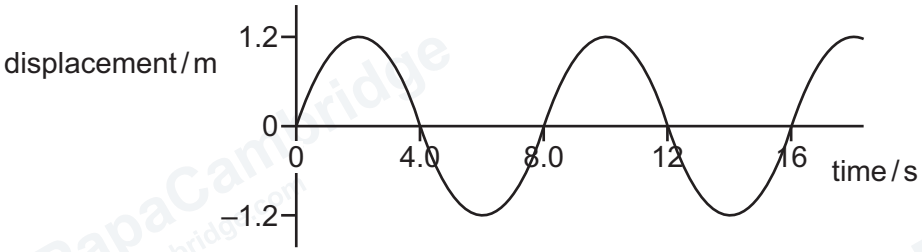
1 making the surface hotter

2 changing the colour of the surface to white

3 decreasing the area of the surface

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

17 The diagram shows the displacement–time graph for a transverse wave moving at a speed of 2.0 m / s.



What is the wavelength of the transverse wave?

A 1.2 m **B** 4.0 m **C** 8.0 m **D** 16 m

18 When red light travels from air into glass, the speed of the light decreases from 3.0×10^8 m / s to 2.1×10^8 m / s.

The wavelength of the light in air is 620 nm.

What is the wavelength of the light in the glass?

A 430 nm **B** 560 nm **C** 620 nm **D** 890 nm

19 Which description of the image of an object in a plane mirror is correct?

A upright and real

B upright and virtual

C upside down and real

D upside down and virtual

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20 A light ray strikes a plane mirror and is reflected.

Which angle is always equal in size to the angle of reflection?

A the angle between the incident ray and the mirror

B the angle between the incident ray and the normal to the mirror

C the angle between the reflected ray and the mirror

D the angle between the reflected ray and the incident ray

21 A student is short-sighted.

The student is standing in a park looking at a tree in the distance.

Where, in relation to the retina, does the eye form an image of the tree, and which type of lens is used to correct the image?

	location of image	type of lens
A	behind retina	converging
B	behind retina	diverging
C	in front of retina	converging
D	in front of retina	diverging

22 Students are asked to distinguish between analogue and digital signals.

Which statement is correct?

A Digital signals **cannot** transmit data at a higher rate than analogue signals.

B Digital signals travel slower than analogue signals.

C Digital signals **cannot** transmit sound data.

D Digital signals have values of 1 or 0.

23 A quiet sound is produced by a loudspeaker. The pitch of the sound remains constant, but the loudness of the sound is increased.

Which property of the sound wave is increased?

A amplitude

B frequency

C speed

D wavelength

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24 In still air, the air pressure is p and the average distance between the air particles is d.

A sound wave produces rarefactions as it travels through the air.

In a rarefaction, the air pressure is P and the average distance between the air particles is D.

Which statement is correct?

A $P > p$ and $D > d$

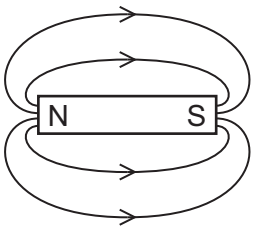
B $P > p$ and $D < d$

C $P < p$ and $D > d$

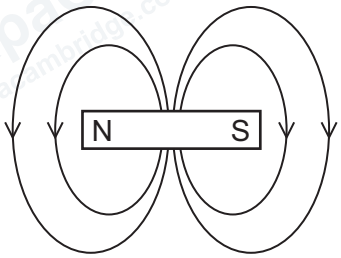
D $P < p$ and $D < d$

25 Which diagram shows the magnetic field around a bar magnet?

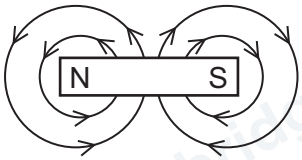
A



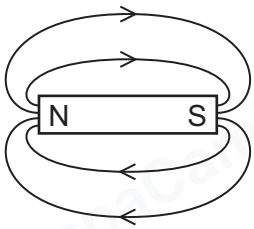
B



C



D



26 A crane uses an electromagnet to move heavy vehicles around in a scrap metal yard.

Why does the crane use an electromagnet?

A Electromagnets are always stronger than all other magnets.

B Electromagnets attract all metals.

C Electromagnets attract all non-metals.

D Electromagnets can be switched on and off.

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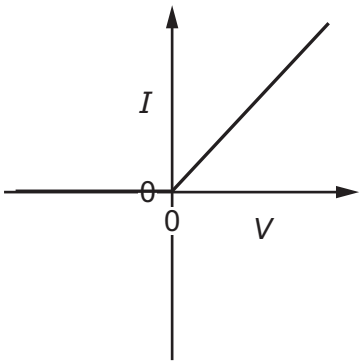
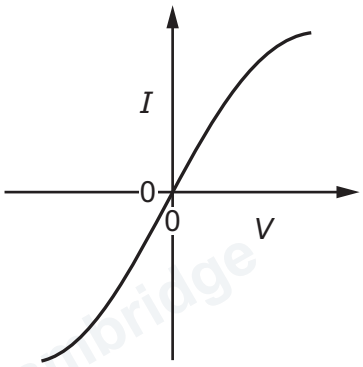
27 What is the current–voltage (I–V) graph of a filament lamp?

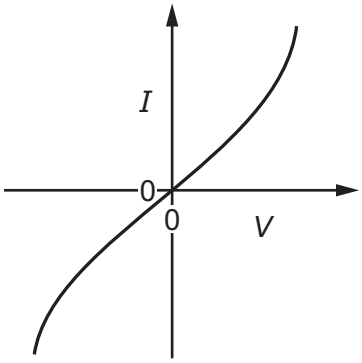
A



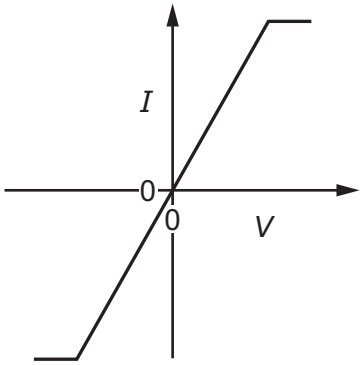
B



C



D



28 There is an electric current I in a resistor for a time t.

The potential difference (p.d.) across the resistor is V.

Which equation can be used to calculate the energy E transferred in the resistor?

A $E = I \times V \times t$ **B** $E = \frac{I \times V}{t}$ **C** $E = \frac{I}{V \times t}$ **D** $E = \frac{V}{I \times t}$

29 Two resistors, X and Y, are connected in parallel.

The two resistors have a combined resistance of 24 Ω.

Resistor X has a resistance of 40 Ω.

What is the resistance of resistor Y?

A 16 Ω **B** 32 Ω **C** 60 Ω **D** 64 Ω

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30 Electrical appliances are connected to a mains circuit by an extension lead with multiple sockets.

Which situation may cause the cable of the extension lead to overheat?

A Appliances are connected using plugs containing fuses with low ratings.

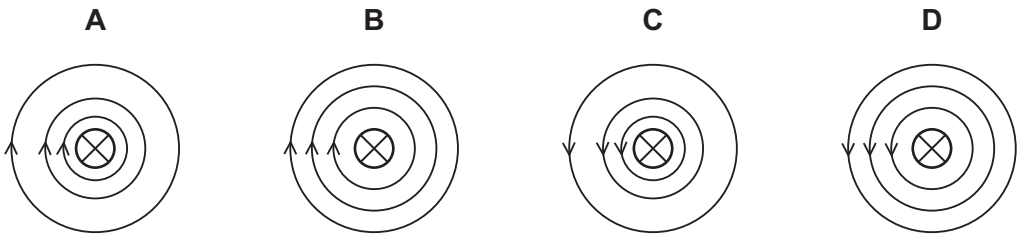
B Appliance cables are surrounded by damp conditions.

C The earth wire touches the metal casing of one of the appliances.

D Multiple appliances are connected to one socket.

31 The diagrams show a straight wire carrying a current directed into the page.

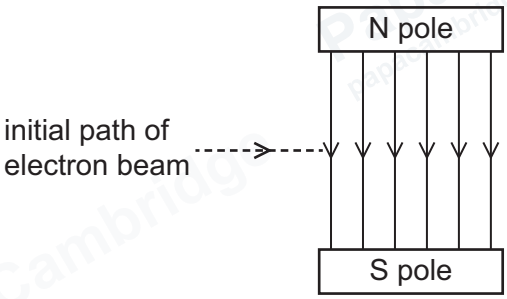
Which diagram shows the pattern and the direction of the magnetic field due to the current in the straight wire?



32 A beam of electrons in a vacuum is directed into a region of uniform magnetic field.

The initial direction of the beam is perpendicular to the field lines as shown.

The beam is deflected by the magnetic field.



In which direction is the beam deflected?

A upwards

B downwards

C out of the page

D into the page

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33 A 100% efficient transformer has 4500 turns on its primary coil and 900 turns on its secondary coil.

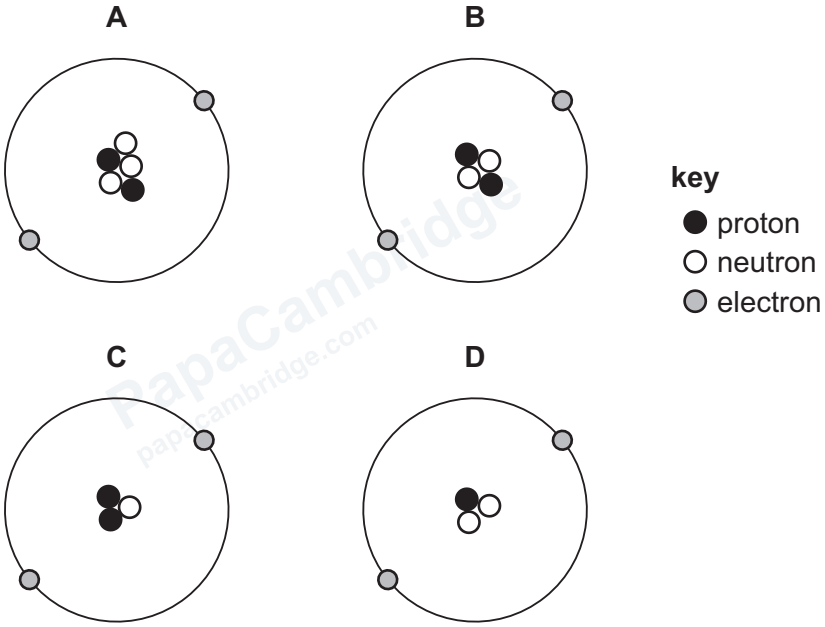
The primary coil is supplied with a current of 1.5 A at a voltage of 240 V.

What is the current in the secondary coil?

A 0.30 A **B** 7.5 A **C** 160 A **D** 360 A

34 The diagrams represent the protons, neutrons and electrons in different atoms and ions.

Which diagram shows a negatively charged ion?



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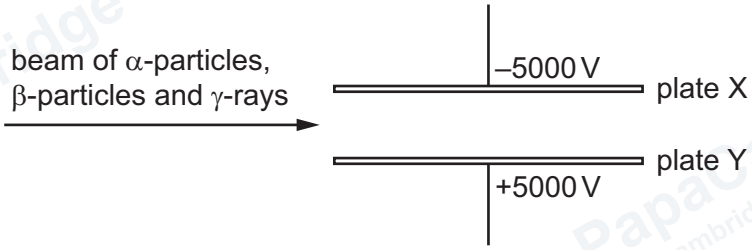
35 The diagram shows a beam of α-particles, β-particles and γ-rays moving in a vacuum towards the space between a pair of charged plates.



Which row shows the deflections of the different particles?

	deflection of α-particles	**deflection of β-particles**	**deflection of γ-rays**
A	towards X	towards Y	undeflected
B	towards Y	towards X	undeflected
C	undeflected	undeflected	towards X
D	undeflected	towards X	towards Y

36 A nucleus of radon, Rn, emits an α-particle and changes into a nucleus of polonium, Po. The equation shows the change.

$$^{a}_{86}\text{Rn} \rightarrow {}^{214}_{b}\text{Po} + {}^{4}_{2}\alpha$$

What are the values of *a* and *b*?

	a	***b***
A	210	84
B	210	88
C	218	84
D	218	88

37 A radioactive isotope has a half-life of 8.0 days.

A detector close to a sample of this isotope gives a count rate of 200 counts per minute.

Without the source, the background count is 20 counts per minute.

What is the count rate **due to the source** after 8.0 days?

A 80 counts per minute

B 90 counts per minute

C 100 counts per minute

D 110 counts per minute

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38 A radiographer works in an area where there is a radioactive source.

The radiographer wears a lead apron.

How does the apron act as a safety precaution?

A It increases the distance between the radiographer and the source.

B It reduces the time that the radiographer is exposed to radiation.

C It shields the radiographer by absorbing some of the radiation.

D It stops radiation reaching the radiographer by reflecting the radiation.

39 Which expression is correct for the orbital period of the Moon around the Earth?

A $2\pi rv$ **B** $\frac{2\pi r}{v}$ **C** $2\pi r^2 v$ **D** $\frac{2\pi r^2}{v}$

40 Proxima Centauri is one of the closest stars to the Earth and is located approximately 4.3 light-years away.

What is this distance in kilometres?

A 1.3×10^9 km **B** 4.1×10^{13} km **C** 2.2×10^{15} km **D** 4.1×10^{16} km

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