Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/13**

Paper 1 Multiple Choice (Core) **October/November 2024**

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.
- 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.

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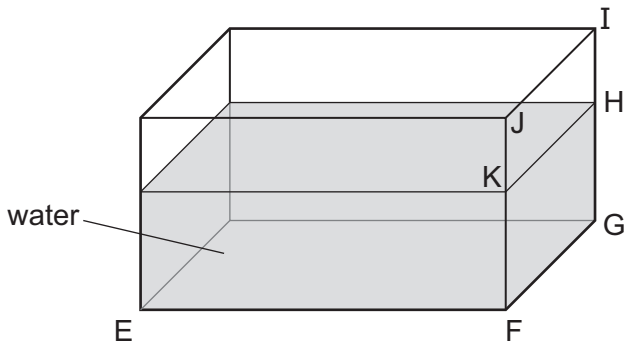
1 A student uses a ruler to find the volume of water in a tank.

View solution

She measures the lengths EF and FG.



What other length does she need to measure?

A FJ **B** FK **C** HI **D** IJ

2 Which statement is correct?

View solution

A speed = distance travelled × time taken

B speed = velocity in a given direction

C $\text{velocity} = \dfrac{\text{time taken}}{\text{distance travelled}}$

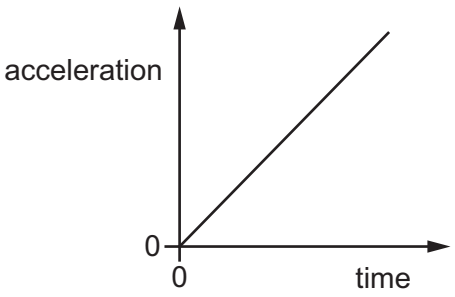
D velocity = speed in a given direction

3 A stone falls freely from the top of a cliff. Air resistance may be ignored.

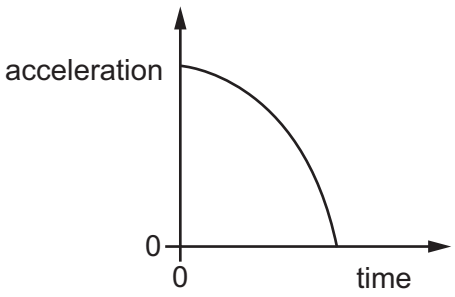
View solution

Which graph shows how the acceleration of the stone varies with time as it falls?

A



B



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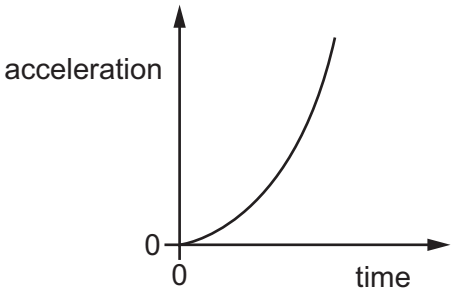
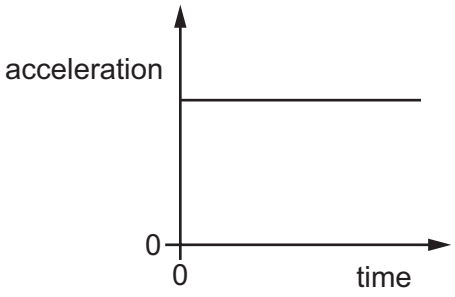


D



4 Which statement about weight is correct?

View solution

A It is a measure of the quantity of matter in an object.

B It is the gravitational force on an object that has mass.

C It is equivalent to the acceleration of free fall.

D It is the gravitational force per unit mass.

5 A student uses the equation $\rho = \frac{m}{V}$.

View solution

Which row shows the correct meaning of these symbols?

	ρ	m	V
A	density	mass	velocity
B	density	mass	volume
C	pressure	mass	volume
D	pressure	moment	velocity

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6 What is the point at which the weight of an object appears to act?

View solution

A the centre of gravity of the object

B the density of the object

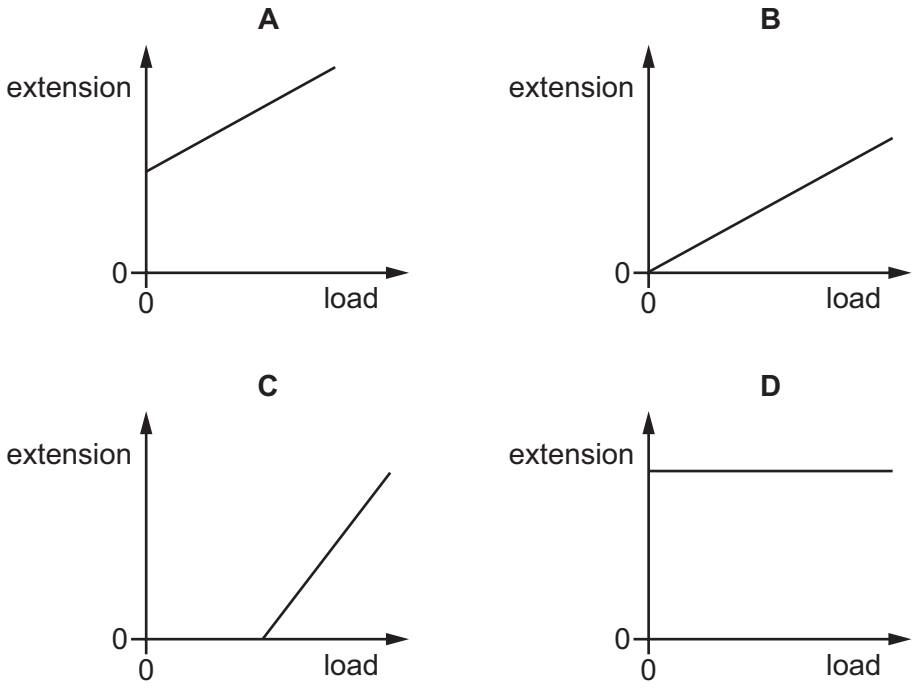
C the moment of a force about a point

D the pressure on the object due to its depth

7 A spring is stretched by adding loads to it.

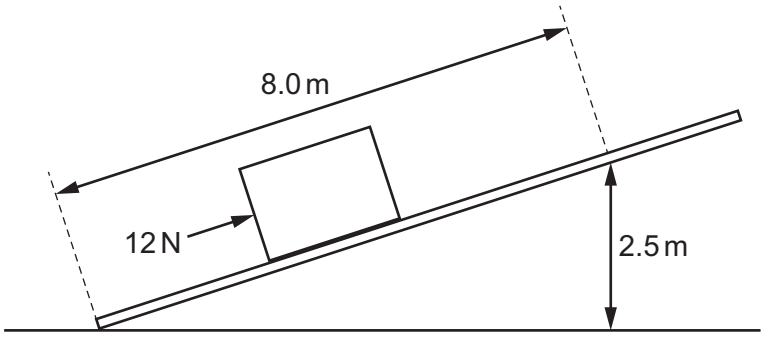
View solution

Which diagram shows the extension–load graph for the spring?



8 The diagram shows a force of 12 N being used to push a box up a slope. The box is moved 8.0 m along the slope. This lifts the box through a vertical height of 2.5 m.

View solution



How much work is done pushing the box from the bottom to the top of the slope?

A 1.5 J **B** 4.8 J **C** 30 J **D** 96 J

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9 Which energy resource is non-renewable?

View solution

A biofuel

B energy from the Sun

C nuclear fuel

D water behind a dam

10 What is the relationship between the power of a motor, the force exerted by the motor, the distance moved by the force and the time taken?

View solution

A $\text{power} = \dfrac{\text{distance moved} \times \text{time taken}}{\text{force}}$

B power = force × distance moved × time taken

C $\text{power} = \dfrac{\text{force} \times \text{time taken}}{\text{distance moved}}$

D $\text{power} = \dfrac{\text{force} \times \text{distance moved}}{\text{time taken}}$

11 How is pressure defined?

View solution

A area per unit force

B force per unit area

C mass per unit area

D mass per unit volume

12 A fixed mass of gas is trapped in a cylinder with a piston. The volume of the gas is slowly reduced at constant temperature without any particles of gas escaping.

Which statement is correct?

View solution

A The force exerted by the gas on the piston will decrease because the particles move more quickly.

B The force exerted by the gas on the piston will decrease because the particles move more slowly.

C The force exerted by the gas on the piston will increase because the particles are hitting the piston harder.

D The force exerted by the gas on the piston will increase because the particles are hitting the piston more frequently.

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13 The air temperature rises from 10 °C to 40 °C.

View solution

What is the change in temperature, expressed in kelvin?

A 30 K **B** 50 K **C** 243 K **D** 303 K

14 Which effect is **not** due to thermal expansion?

View solution

A convection currents in air

B expansion of a bubble rising through a fizzy drink

C expansion of a liquid in a thermometer

D lengthening of overhead power lines in the summer

15 On a hot summer day, the level of the water in a pond falls.

View solution

Which statement explains this?

A The least energetic water particles escape from the surface and do not return.

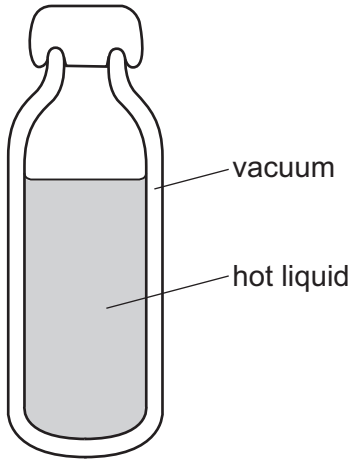
B The least energetic water particles escape from the surface and then return.

C The most energetic water particles escape from the surface and do not return.

D The most energetic water particles escape from the surface and then return.

16 The diagram shows a vacuum flask used to keep liquid hot.

View solution



How does thermal energy pass through the vacuum?

A conduction and convection only

B conduction only

C convection only

D radiation only

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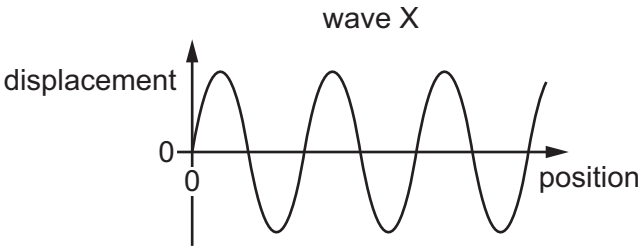
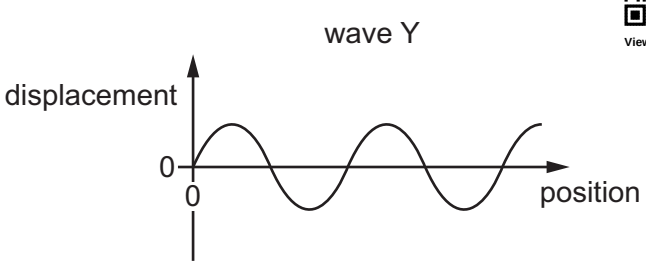
17 The diagrams show two transverse waves X and Y and are to the same scale.

View solution





Which row is correct?

	wave with the largest amplitude	wave with the largest wavelength
A	X	X
B	X	Y
C	Y	X
D	Y	Y

18 Which row shows an example of a transverse wave and an example of a longitudinal wave?

View solution

	transverse	longitudinal
A	light	radio
B	radio	sound
C	sound	water
D	water	light

19 A ray of light is reflected from a plane mirror.

View solution

Which angle is the angle of reflection?

A the angle between the incident ray and the normal

B the angle between the incident ray and the reflected ray

C the angle between the reflected ray and the normal

D the angle between the reflected ray and the surface

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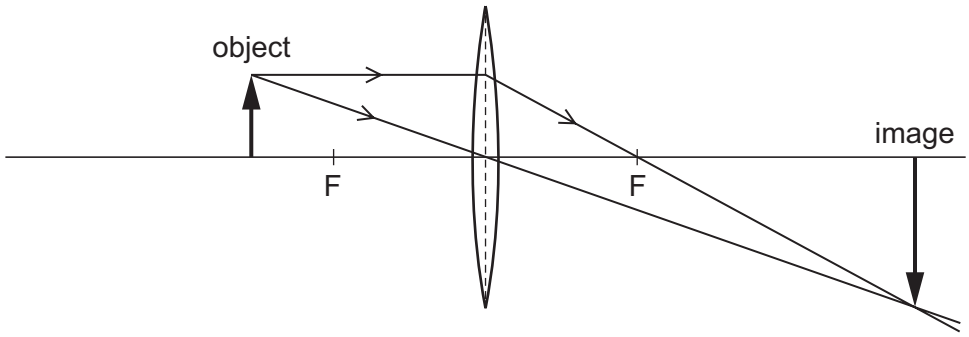
20 A thin converging lens forms an image.

View solution



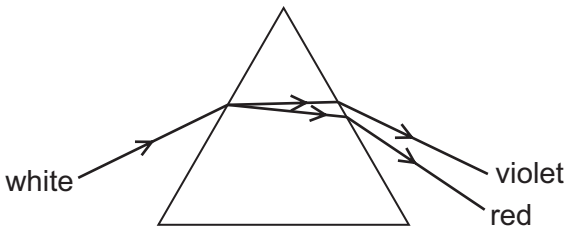
What is the nature of this image and can it be formed on a screen?

	nature of image	can be formed on a screen
A	virtual	no
B	virtual	yes
C	real	no
D	real	yes

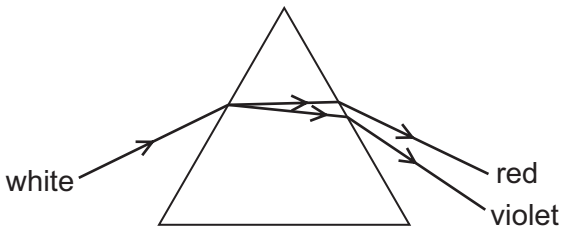
21 Which diagram shows the dispersion of white light by a prism?

View solution

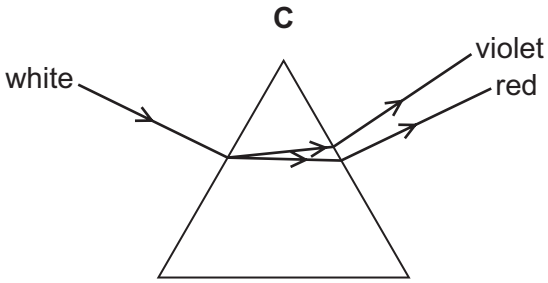
A



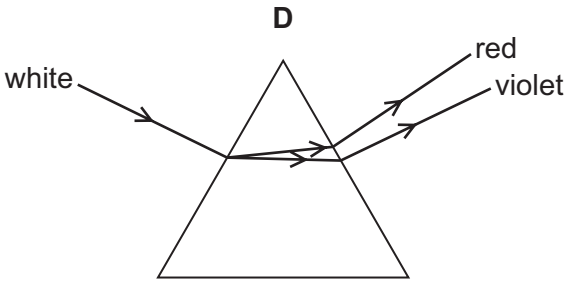
B



C



D



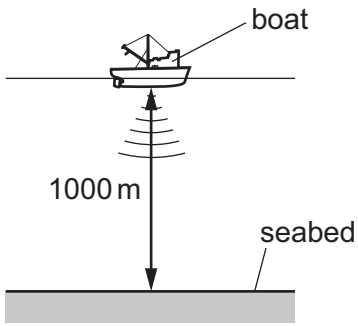
22 Which row correctly compares microwaves and ultraviolet?

View solution

	frequency of microwaves compared to ultraviolet	uses
A	higher	microwaves are used to heat water and ultraviolet is used to sterilise water
B	higher	microwaves are used to sterilise water and ultraviolet is used to heat water
C	lower	microwaves are used to heat water and ultraviolet is used to sterilise water
D	lower	microwaves are used to sterilise water and ultraviolet is used to heat water

23 A pulse of sound is produced at the bottom of a boat. The sound travels through the water and is reflected from the seabed. The reflected sound reaches the boat 1.3 s after the sound was produced. The seabed is 1000 m below the boat.

View solution

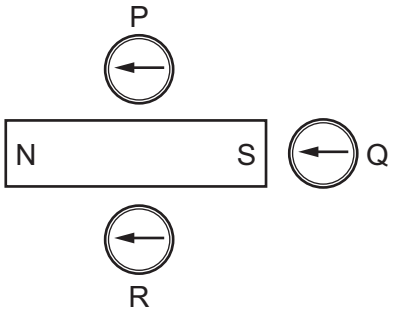


Using this information, what is the speed of sound in the water?

A 770 m / s **B** 1300 m / s **C** 1500 m / s **D** 2600 m / s

24 The diagram shows three small compasses near to a bar magnet.

View solution

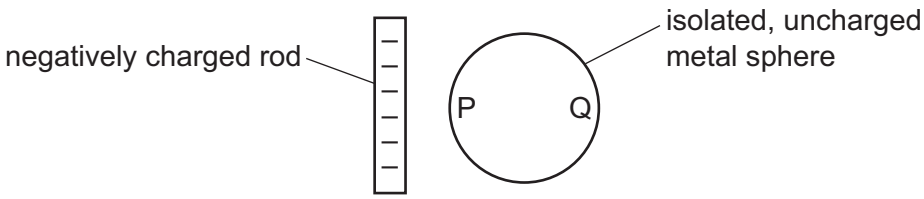


Which compasses show the direction of the magnetic field due to the bar magnet?

A P and Q **B** P only **C** Q and R **D** Q only

25 A negatively charged rod is brought close to an isolated, uncharged metal sphere.

View solution



What are the charges on sides P and Q of the sphere?

A P and Q are both negatively charged.

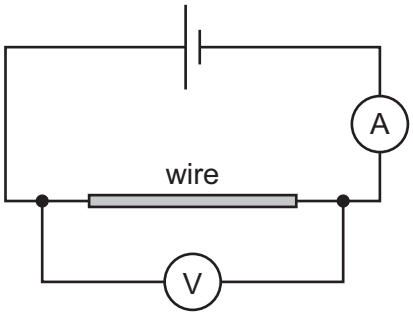
B P and Q are both positively charged.

C P is negatively charged and Q is positively charged.

D P is positively charged and Q is negatively charged.

26 The diagram shows a simple circuit.

View solution



The ammeter reading is 2.0 A and the voltmeter reading is 6.0 V.

What is the resistance of the wire?

A 0.33 Ω **B** 3.0 Ω **C** 8.0 Ω **D** 12 Ω

27 A lamp is rated 240 V, 0.40 A. The lamp operates at normal brightness for 1.0 min.

View solution

How much energy does the lamp transfer?

A 60 J **B** 96 J **C** 600 J **D** 5800 J

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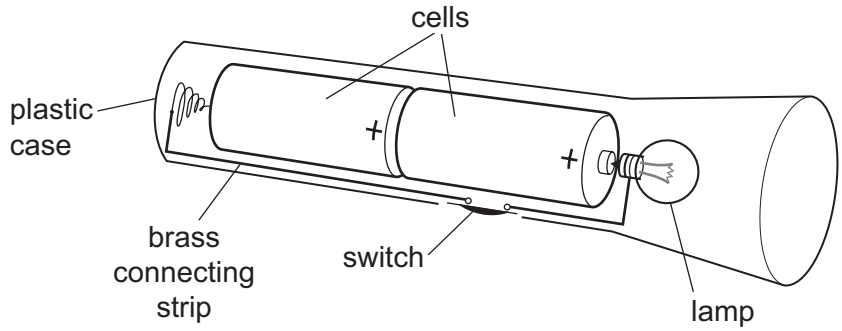
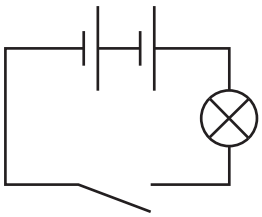
28 The diagram shows a torch containing two cells, a switch and a lamp.

View solution

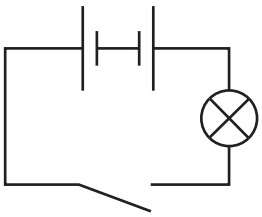


Which circuit diagram is correct for the torch?

A



B



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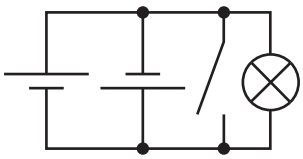

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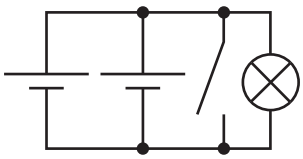
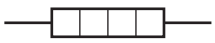


29 Which symbol represents a device that contains a current-carrying coil in a magnetic field?

View solution

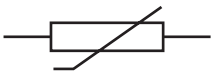
A



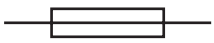
B



C

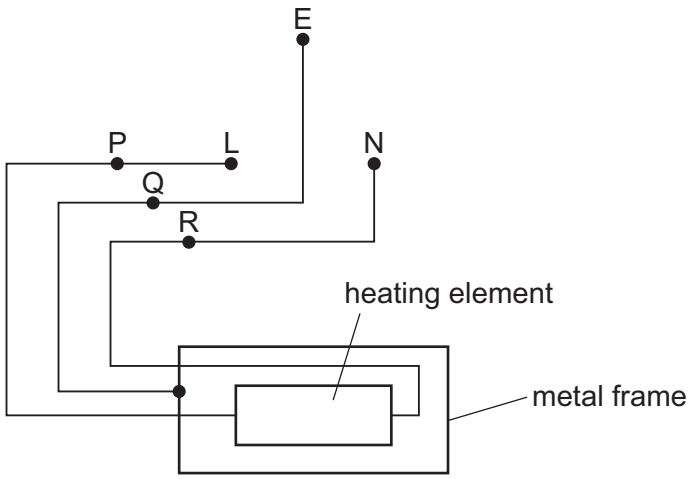


D



30 The diagram shows a three-core cable connecting a three-pin socket to an electric fire with a metal frame.

View solution



The earth, live and neutral connections of the socket are labelled E, L and N respectively.

A switch is connected into the circuit.

Where is a switch connected?

A at either of P or R

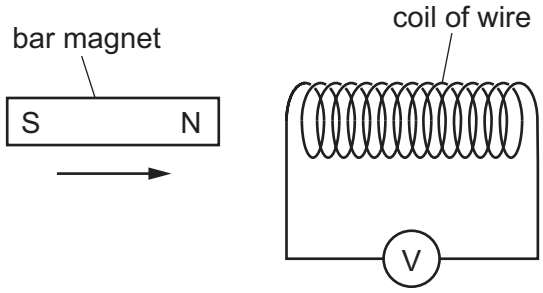
B at P only

C at Q only

D at R only

31 A student investigates electromagnetic induction. She moves the N pole of a magnet quickly towards a coil of wire. There is a reading on the sensitive voltmeter.

View solution



What can she do to get a greater reading on the sensitive voltmeter?

A Hold the bar magnet stationary inside the coil.

B Move the bar magnet slowly away from the coil.

C Use a coil of wire with fewer turns on it.

D Use a stronger bar magnet.

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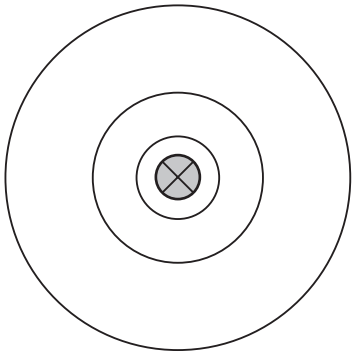
32 The direction of the current in a straight wire X is into the paper.

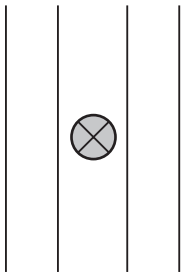
View solution

Which diagram shows the shape of the magnetic field pattern around the wire?

A



B



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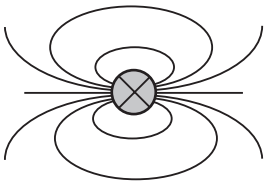

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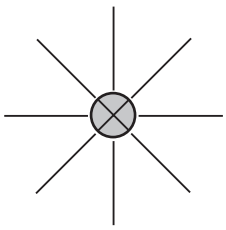

33 What does a step-up transformer increase?

View solution

A current

B energy

C power

D voltage

34 When measuring the emissions from a radioactive rock brought into the laboratory, a teacher mentions that background radiation must be taken into account.

View solution

What is this background radiation?

A ionising radiation in the laboratory when the radioactive rock is not present

B ionising radiation from the radioactive rock brought into the laboratory

C infrared radiation from the Sun

D infrared radiation from warm objects in the laboratory

35 How do the ionising effect and the penetrating ability of α-particles compare with those of β-particles and γ-rays?

View solution

	ionising effect	penetrating ability
A	higher	lower
B	higher	higher
C	lower	lower
D	lower	higher

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36 Half-life is .....1..... for the .....2..... a sample of a radioactive isotope to halve.

View solution

Which words correctly complete gaps 1 and 2?

	1	2
A	half of the time taken	nucleon number of
B	half of the time taken	number of nuclei in
C	the time taken	nucleon number of
D	the time taken	number of nuclei in

37 Radioactive materials must be handled in a safe way.

View solution

What is **not** a safety procedure?

A storing radioactive materials in cardboard boxes

B monitoring exposure time to radioactive materials

C using tongs to pick up the radioactive source

D wearing protective clothing

38 The Solar System contains eight major planets.

View solution

What is the correct order of three of the major planets, starting with the planet furthest from the Sun?

A Mercury → Venus → Earth

B Neptune → Jupiter → Saturn

C Neptune → Mars → Earth

D Jupiter → Saturn → Uranus

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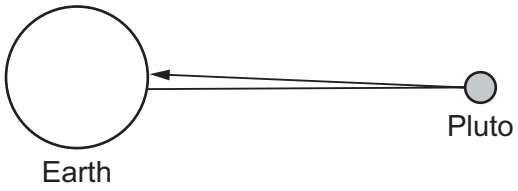
39 The diagram shows a radio signal from the Earth being reflected by Pluto and returning to the Earth.

View solution

The distance between the Earth and Pluto is 0.00050 light-years.



What is the time taken for the radio signal to return to the Earth after being sent?

A 2000 years

B 1000 years

C 0.0010 years

D 0.00050 years

40 The Milky Way is a .....1..... made up of about a hundred .....2..... stars.

View solution

Which words correctly complete gaps 1 and 2?

	1	2
A	galaxy	billion
B	universe	billion
C	galaxy	thousand
D	universe	thousand

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