Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

PHYSICS **0625/12**

Paper 1 Multiple Choice (Core) **May/June 2016**

45 minutes

Additional Materials: Multiple Choice Answer Sheet
Soft clean eraser
Soft pencil (type B or HB recommended)

* 8 2 0 9 6 5 7 7 6 0 *

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, 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.
DO **NOT** WRITE IN ANY BARCODES.

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.

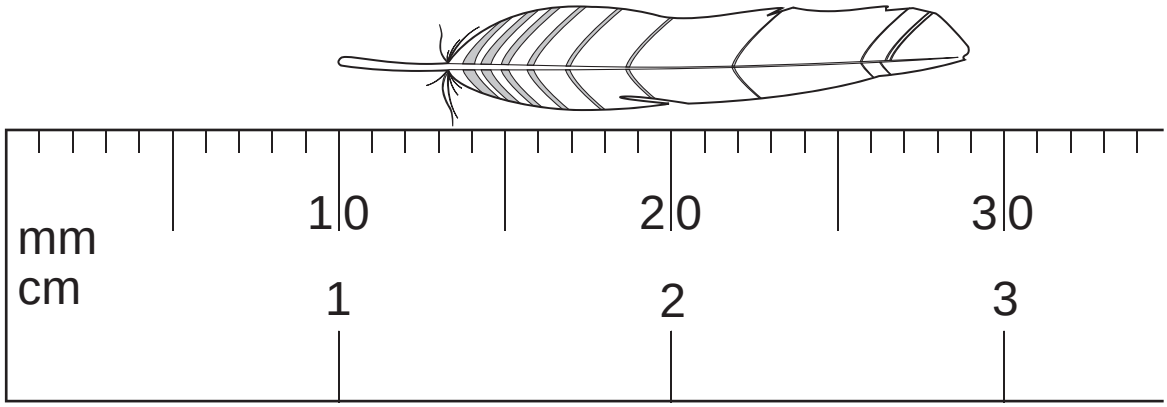
Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
Any rough working should be done in this booklet.
Electronic calculators may be used.
Take the weight of 1.0 kg to be 10 N (acceleration of free fall = 10 m / s^2).

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **16** printed pages.

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1 The diagram shows an enlarged drawing of the end of a metre rule. It is being used to measure the length of a small feather.

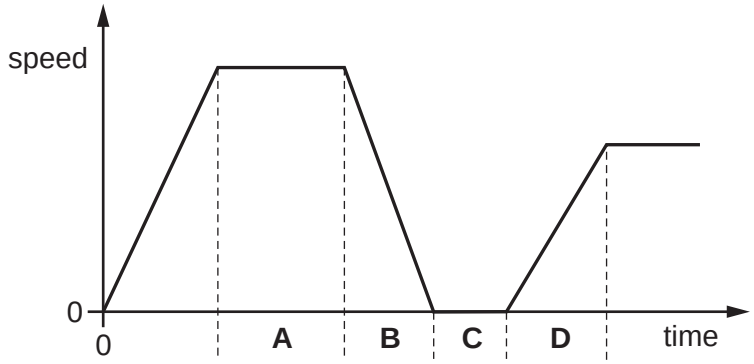


What is the length of the feather?

A 19 mm **B** 29 mm **C** 19 cm **D** 29 cm

2 The graph shows how the speed of a van changes with time for part of its journey.

In which labelled section is the van decelerating?



3 A large stone is dropped from a bridge into a river. Air resistance can be ignored.

Which row describes the acceleration and the speed of the stone as it falls?

	acceleration of the stone	speed of the stone
A	constant	constant
B	constant	increasing
C	increasing	constant
D	increasing	increasing

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4 A cup contains hot liquid.

Some of the liquid evaporates.

What happens to the mass and what happens to the weight of the liquid in the cup?

	mass	weight
A	decreases	decreases
B	decreases	stays the same
C	stays the same	decreases
D	stays the same	stays the same

5 A boy throws a stone. The stone leaves the boy's hand and moves vertically upwards. Air resistance can be ignored.

How should the force on the stone be described just after the stone leaves the boy's hand?

A downwards and constant

B downwards and increasing

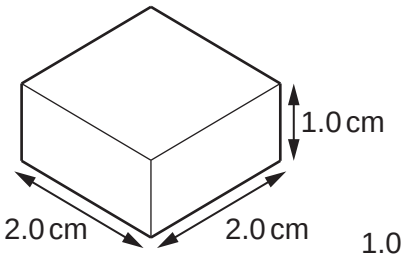
C upwards and constant

D upwards and decreasing

6 The diagrams show the dimensions and masses of four regular solid objects. The objects are made from different metals.

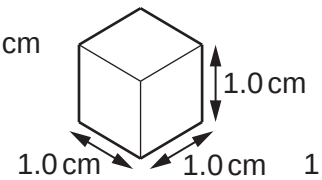
Which metal has the greatest density?

A



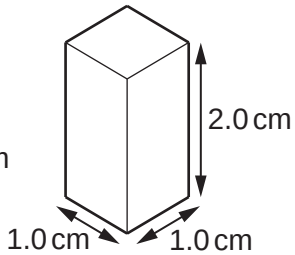
mass = 20 g

B



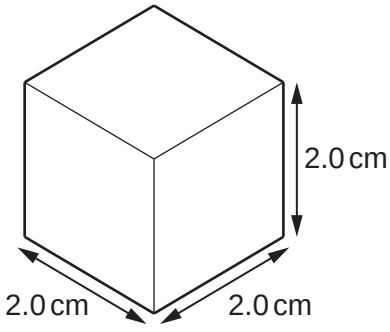
mass = 6.0 g

C



mass = 14 g

D

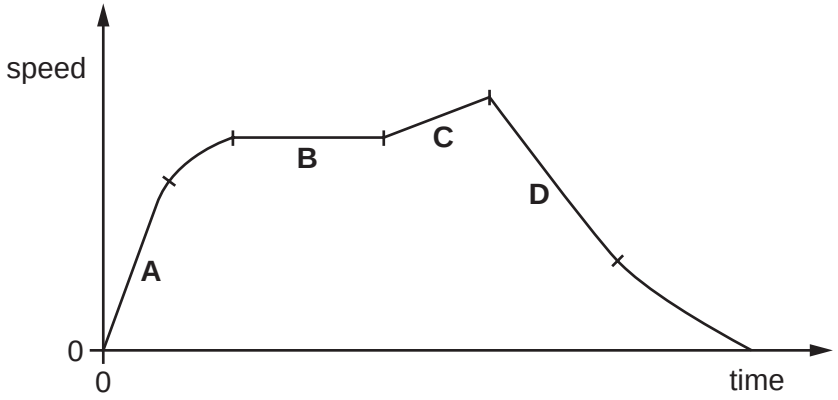


mass = 32 g

7 A car travels along a straight road.

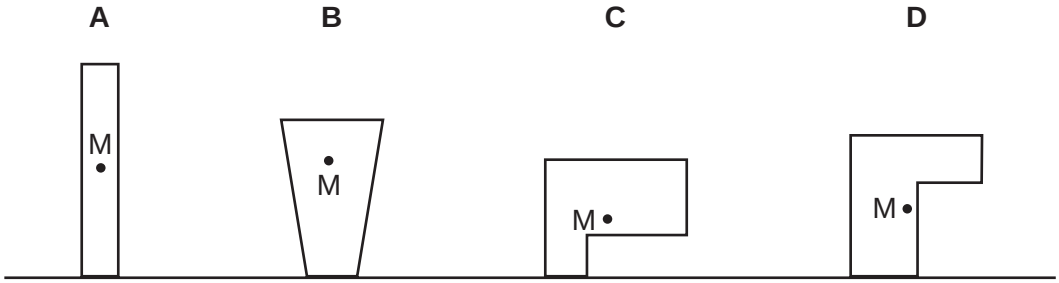
The speed-time graph for this journey is shown.

During which labelled part of the journey is the resultant force on the car zero?



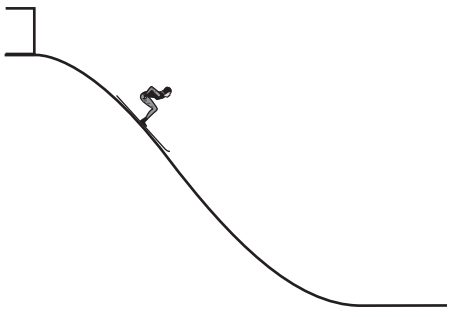
8 The diagrams show four objects **A**, **B**, **C** and **D**. The centre of mass M of each object is marked on the diagrams.

Which object is **not** in equilibrium?



9 A skier walks from the bottom of a ski slope to the top and gains 10 000 J of gravitational potential energy.

She skis down the slope. At the bottom of the slope, her kinetic energy is 2000 J.



How much energy is dissipated in overcoming friction and air resistance as the skier moves down the slope?

A 2000 J **B** 8000 J **C** 10 000 J **D** 12 000 J

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10 Which energy source is one that is used to boil water to make steam in power stations?

A energy from tides

B energy from waves

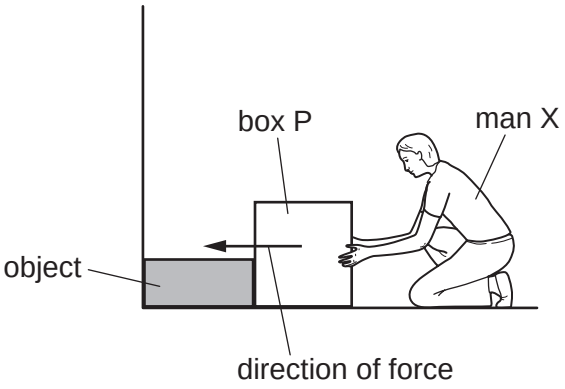
C hydroelectric energy

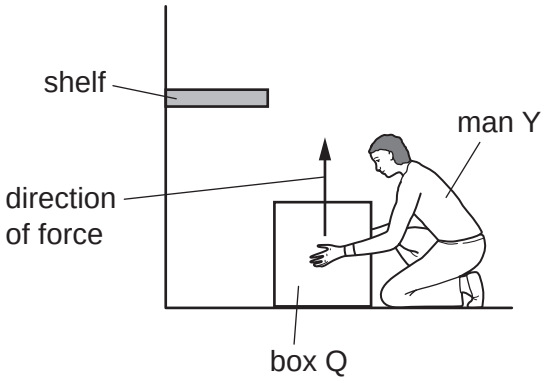
D nuclear energy

11 In a factory, two men X and Y try to move identical heavy boxes P and Q.

Man X tries to push box P along the floor. The box does not move because an object is in the way.

Man Y lifts box Q from the floor onto a shelf.

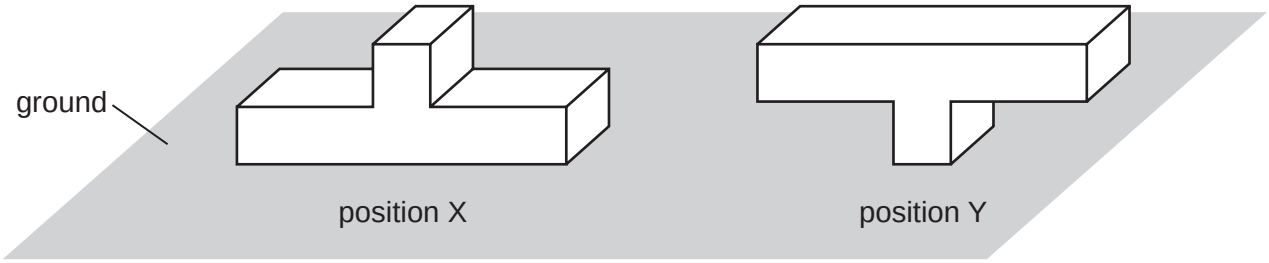




Which man does the most work on the box, and which box gains the most energy?

	man doing most work	box gaining most energy
A	X	P
B	X	Q
C	Y	P
D	Y	Q

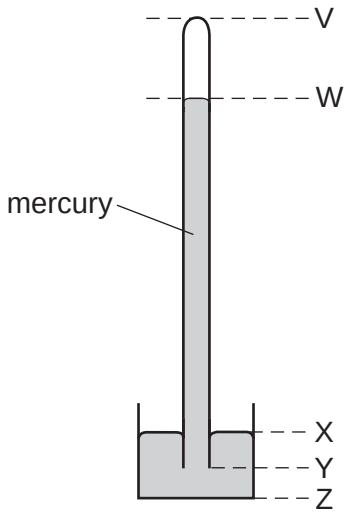
12 A T-shaped girder is placed on the ground in position X. It is then turned over to position Y.



What happens to the force on the ground and what happens to the pressure on the ground?

	force	pressure
A	increases	increases
B	increases	remains the same
C	remains the same	increases
D	remains the same	remains the same

13 The diagram shows a simple mercury barometer.



The atmospheric pressure increases.

Which distance increases?

A VW **B** WY **C** XY **D** XZ

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14 A liquid is evaporating. The liquid is not boiling.

Which statement about the liquid is correct?

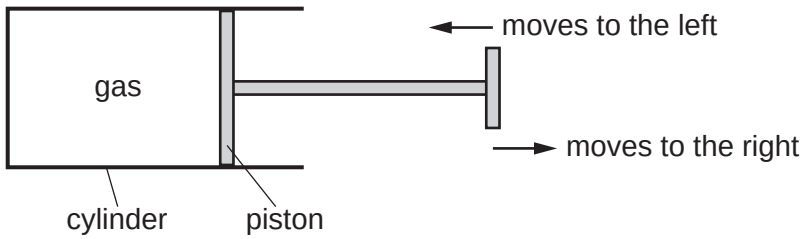
A Any molecule can escape, and from any part of the liquid.

B Any molecule can escape, but only from the liquid surface.

C Only molecules with enough energy can escape, and only from the liquid surface.

D Only molecules with enough energy can escape, but from any part of the liquid.

15 The diagram shows a quantity of gas enclosed in a cylinder by a piston.



The piston is moved to the left or to the right. The temperature of the gas is kept constant.

Which row describes the effect of moving the piston slowly in the direction shown in the table?

	movement of piston	speed of gas molecules	pressure of gas
A	to the left	increases	decreases
B	to the left	no change	increases
C	to the right	increases	decreases
D	to the right	no change	increases

16 Which statement describes what happens as ice at 0 °C starts to melt to become water?

A Energy is absorbed and the temperature remains constant.

B Energy is absorbed and the temperature rises.

C Energy is released and the temperature remains constant.

D Energy is released and the temperature rises.

17 What is meant by the *fixed points* of the scale of a liquid-in-glass thermometer?

A the distance between one scale division and the next

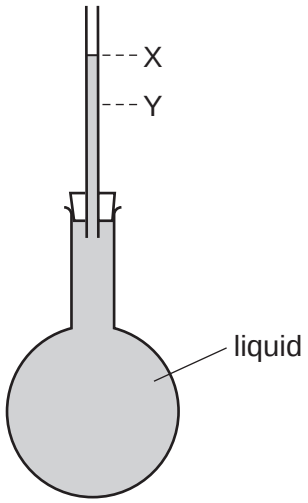
B the highest and lowest temperatures that the thermometer can record

C the maximum and minimum depth to which the thermometer should be submerged in a liquid

D the two agreed temperatures used for marking the temperature scale

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18 A liquid at room temperature fills a flask and a glass tube to level X.



The flask is now placed in ice, and the liquid level in the tube falls to level Y.

Why does the level fall?

A The flask contracts.

B The flask expands.

C The liquid contracts.

D The liquid expands.

19 Which process involves convection?

A bread toasting under a grill

B energy from the Sun warming a road surface

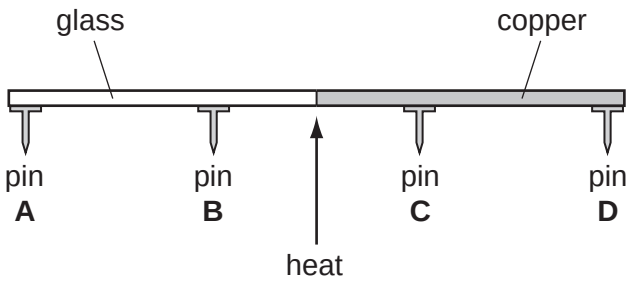
C hot air rising to the top of a cool room

D thermal energy transfer through a copper bar

20 A rod is made half of glass and half of copper. Four pins **A**, **B**, **C** and **D** are attached to the rod by wax. The rod is heated in the centre as shown.

The pins fall off when the wax melts.

Which pin falls off first?

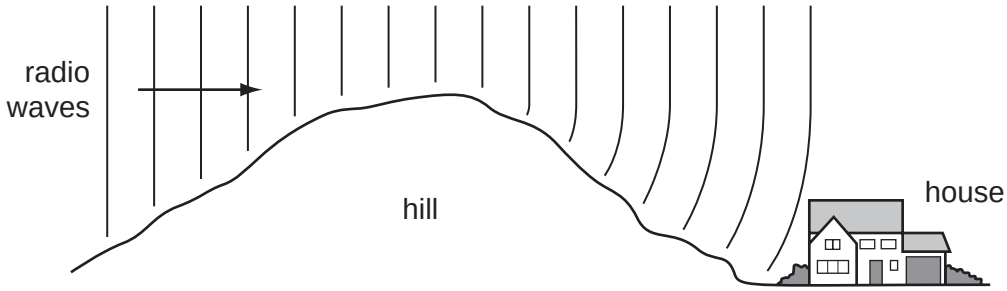


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21 Which row shows the natures of light waves, sound waves and X-rays?

	light waves	sound waves	X-rays
A	longitudinal	longitudinal	transverse
B	longitudinal	transverse	longitudinal
C	transverse	longitudinal	transverse
D	transverse	transverse	longitudinal

22 Radio waves are received at a house at the bottom of a hill.



The waves reach the house because the hill has caused them to be

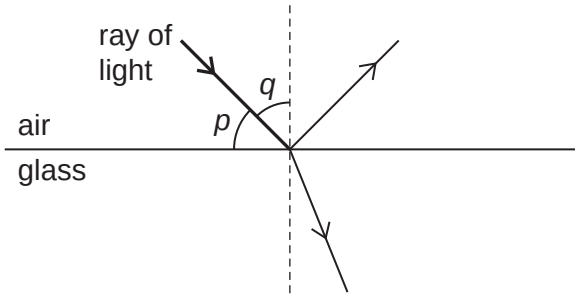
A diffracted.

B radiated.

C reflected.

D refracted.

23 The diagram shows a ray of light in air incident on a glass block. Some of the light is refracted, and some of the light is reflected. Two angles *p* and *q* are marked on the diagram.



Which row gives the angle of incidence and shows whether the ray undergoes total internal reflection?

	angle of incidence	total internal reflection
A	*p*	no
B	*p*	yes
C	*q*	no
D	*q*	yes

24 Visible light has a frequency of approximately 5.0×10^{14} Hz.

M and N are two other types of electromagnetic radiation.

The frequency of M is 5.0×10^{6} Hz.

The frequency of N is 5.0×10^{15} Hz.

Which types of radiation are M and N?

	M	N
A	radio waves	infra-red
B	radio waves	ultraviolet
C	ultraviolet	X-rays
D	X-rays	infra-red

25 What is the approximate range of hearing of a healthy human ear?

A 2.0 Hz to 2.0 kHz

B 2.0 Hz to 20 kHz

C 20 Hz to 2.0 kHz

D 20 Hz to 20 kHz

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26 A singer sings two notes. The first note is louder and lower in pitch than the second note.

Which statement about the two notes is correct?

A The first note has a larger amplitude and a larger frequency than the second note.

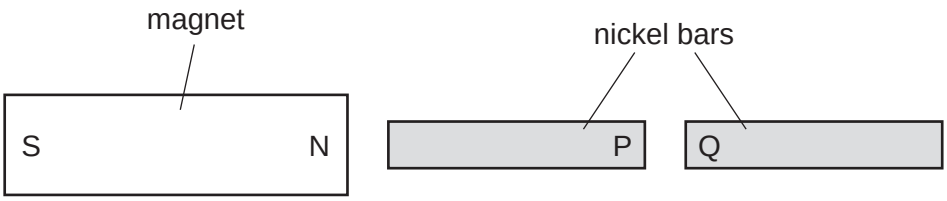
B The first note has a larger amplitude and a smaller frequency than the second note.

C The first note has a smaller amplitude and a larger frequency than the second note.

D The first note has a smaller amplitude and a smaller frequency than the second note.

27 Two nickel bars are placed close to the N-pole of a bar magnet.

The nickel bars become magnetised.



Which row states the pole induced at P, the pole induced at Q, and the type of magnetic force between P and Q?

	pole induced at P	pole induced at Q	force between P and Q
A	N	S	attraction
B	N	S	repulsion
C	S	N	attraction
D	S	N	repulsion

28 A student wishes to make a permanent magnet. She has an iron rod and a steel rod.

Which rod should she use to make the permanent magnet, and is this rod a hard magnetic material or a soft magnetic material?

	rod	type of magnetic material
A	iron	hard
B	iron	soft
C	steel	hard
D	steel	soft

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[Turn over

29 Two meters are connected in a circuit to measure the current in a component and the potential difference across the component.

Which meters are used and how are they connected to the component?

A an ammeter in parallel for current, a voltmeter in series for potential difference

B an ammeter in series for current, a voltmeter in parallel for potential difference

C a voltmeter in parallel for current, an ammeter in series for potential difference

D a voltmeter in series for current, an ammeter in parallel for potential difference

30 A wire has a certain electrical resistance.

The diameter and length of the wire may be changed.

Which pair of changes **must** cause the resistance of the wire to increase?

	change of diameter	change of length
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

31 P and Q are the circuit symbols for two electrical components.



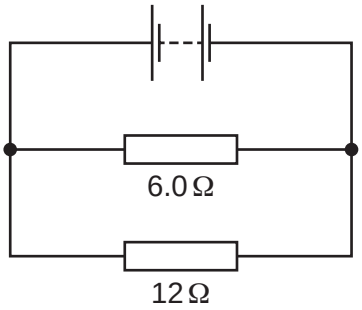
P Q

Which components are represented by P and by Q?

	P	Q
A	thermistor	fuse
B	thermistor	relay
C	variable resistor	fuse
D	variable resistor	relay

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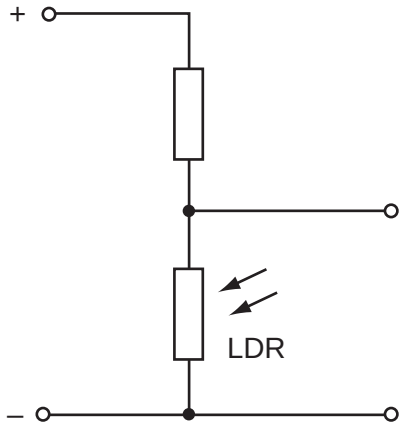
32 The diagram shows two resistors connected in a circuit.



What could be the combined resistance of this arrangement of resistors?

A 4.0 Ω **B** 6.0 Ω **C** 9.0 Ω **D** 18 Ω

33 The diagram shows part of a circuit used to switch street lamps on and off automatically.



In the evening it gets dark.

Which row shows the effect on the resistance of the light-dependent resistor (LDR) and on the potential difference (p.d.) across it?

	resistance of LDR	p.d. across LDR
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

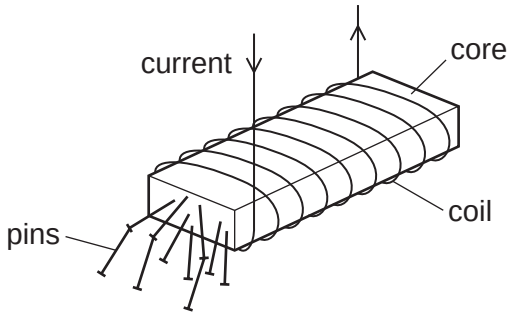
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34 A domestic circuit includes a 30 A fuse. This protects the wiring if there is too much current in the circuit.

In which wire is the 30 A fuse positioned, and what does it do when it operates?

	position	operation
A	live wire	disconnects the circuit
B	live wire	reduces the current to 30 A
C	neutral wire	disconnects the circuit
D	neutral wire	reduces the current to 30 A

35 A strong electromagnet is used to attract pins.



What happens when the current in the coil is halved?

A No pins are attracted.

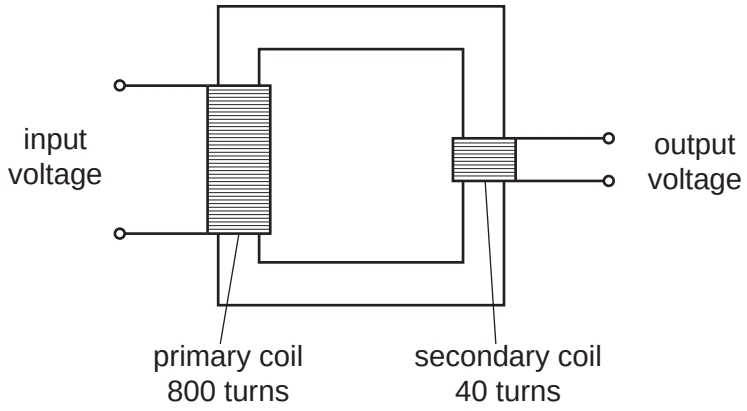
B Some pins are attracted, but not as many.

C The same number of pins is attracted.

D More pins are attracted.

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36 The diagram shows a transformer.



The input voltage is 240 V.

What is the output voltage?

A 6.0 V **B** 12 V **C** 20 V **D** 40 V

37 A neutral atom consists of electrons orbiting a nucleus. The nucleus contains protons and neutrons.

Which statement about the atom **must** be correct?

A The number of electrons is equal to the number of neutrons.

B The number of electrons is equal to the number of protons.

C The number of neutrons is equal to the number of protons.

D The number of electrons, neutrons and protons are all different.

38 Below are the symbols for five different nuclides.

$^{35}_{17}X$	$^{37}_{17}X$	$^{38}_{18}X$	$^{81}_{35}X$	$^{81}_{37}X$
nuclide 1	nuclide 2	nuclide 3	nuclide 4	nuclide 5

Which two nuclides are isotopes of the same element?

A nuclide 1 and nuclide 2

B nuclide 2 and nuclide 3

C nuclide 2 and nuclide 5

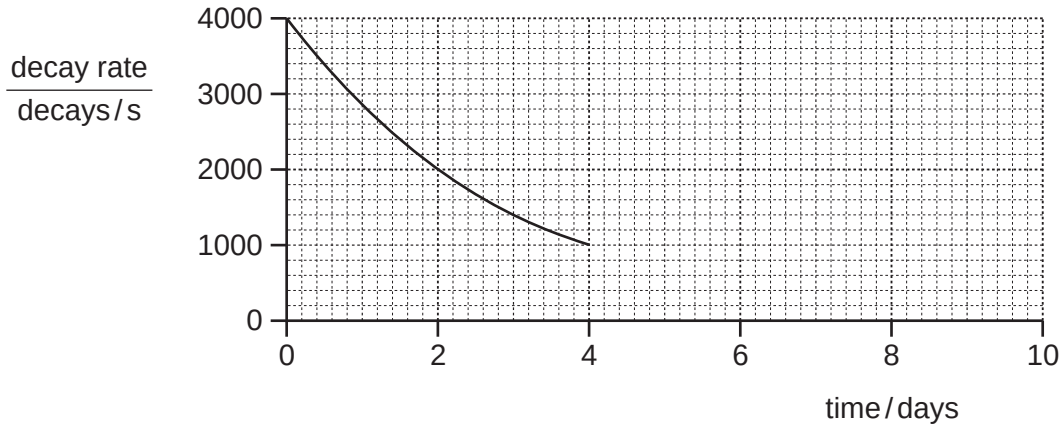
D nuclide 4 and nuclide 5

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39 Which row describes the nature and a property of all β-particles?

	nature	property
A	electrons	can travel through a vacuum
B	electrons	stopped by a thin sheet of paper
C	helium nuclei	can travel through a vacuum
D	helium nuclei	stopped by a thin sheet of paper

40 The graph shows how the decay rate of a radioactive source changes with time.



What will be the activity at 8 days?

A 0 decays / s

B 125 decays / s

C 250 decays / s

D 500 decays / s

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