Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/01**

Paper 1 Multiple Choice (Core) **For examination from 2023**

SPECIMEN PAPER **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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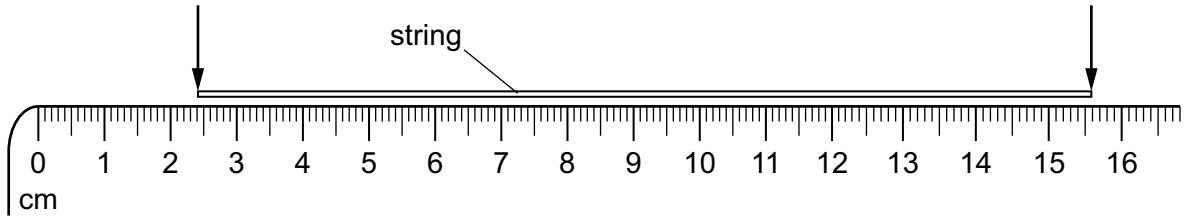
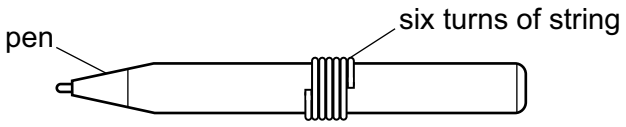
[Turn over

1 A length of string is measured between two points on a ruler.



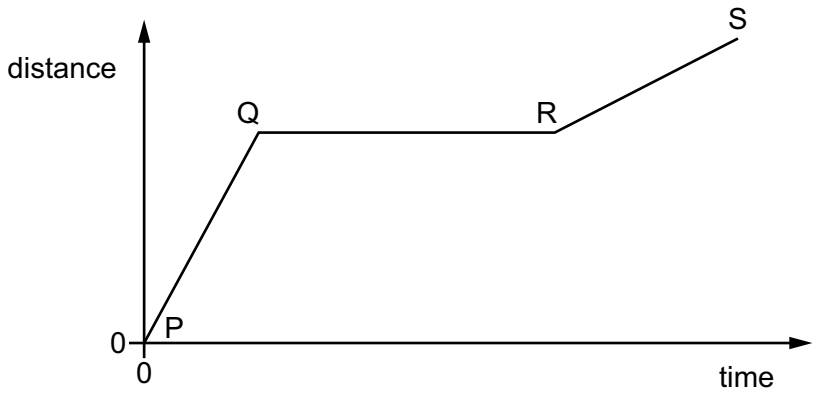
When the length of string is wound closely around a pen, it goes round six times.



What is the distance once round the pen?

A 2.2 cm **B** 2.6 cm **C** 13.2 cm **D** 15.6 cm

2 The graph shows how the distance travelled by a vehicle changes with time.



Which row describes the speed of the vehicle in each section of the graph?

	P to Q	Q to R	R to S
A	constant	zero	constant
B	constant	zero	decreasing
C	increasing	constant	decreasing
D	increasing	zero	constant

3 Which statement about the mass and the weight of an object is correct?

A They are both affected by changes in the acceleration of free fall.

B They are both forces.

C They have different units.

D Weight is calculated by dividing mass by the acceleration of free fall.

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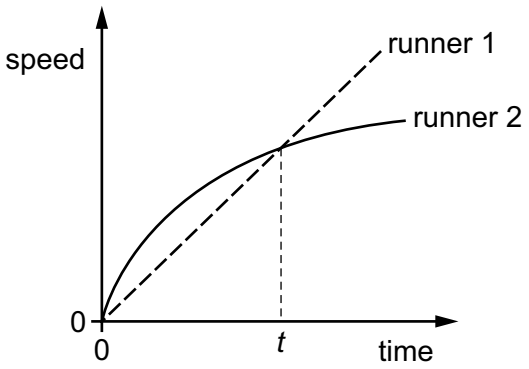
4 Two runners take part in a race.

The graph shows how the speed of each runner changes with time.



What does the graph show about the runners at time *t*?

A Both runners are moving at the same speed.

B Runner 1 has zero acceleration.

C Runner 1 runs ahead of runner 2.

D Runner 2 is slowing down.

5 Two objects P and Q are placed in a beaker containing a liquid.

Object P floats in the liquid and object Q sinks.

Which row for the densities of object P, object Q and the liquid is possible?

	$\frac{\text{density of object P}}{\text{g/cm}^3}$	$\frac{\text{density of object Q}}{\text{g/cm}^3}$	$\frac{\text{density of liquid}}{\text{g/cm}^3}$
A	1.2	0.6	0.8
B	1.2	1.4	1.0
C	11.3	8.9	13.6
D	11.3	19.3	13.6

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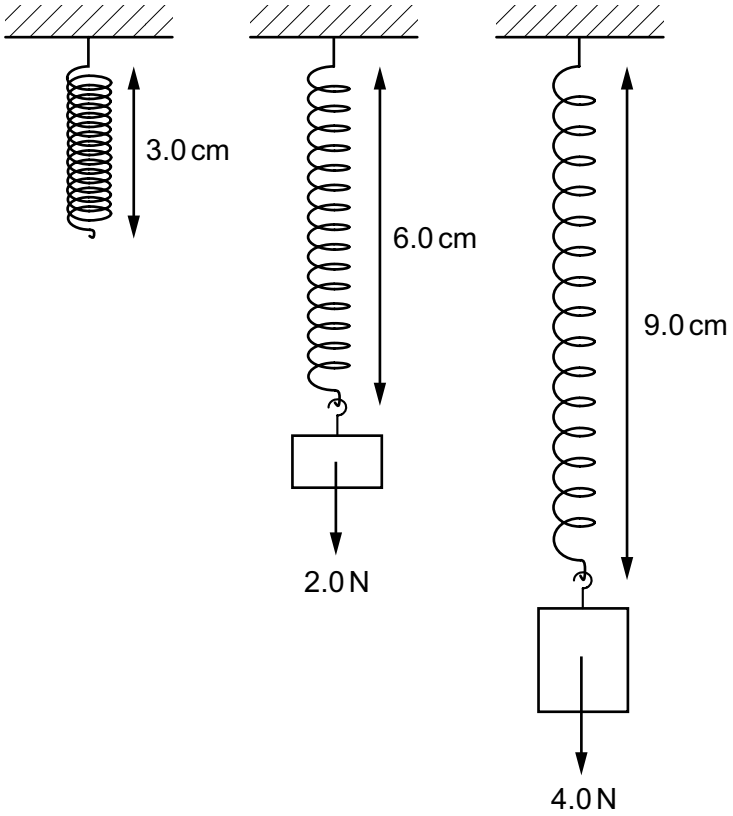
6 A student hangs different loads on a spring.

The diagrams show the lengths of the spring with different loads.



Which row gives the correct extensions of the spring?

	extension / cm when the load is 0 N	extension / cm when the load is 2.0 N	extension / cm when the load is 4.0 N
A	0	3.0	3.0
B	0	3.0	6.0
C	3.0	3.0	3.0
D	3.0	6.0	9.0

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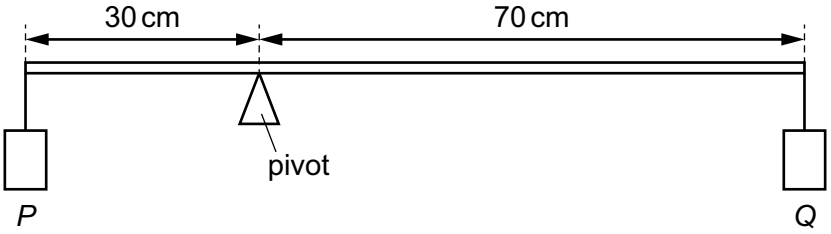
7 A beam on a pivot supports a load *P* at one end and a load *Q* at the other end. The weight of the beam can be ignored.



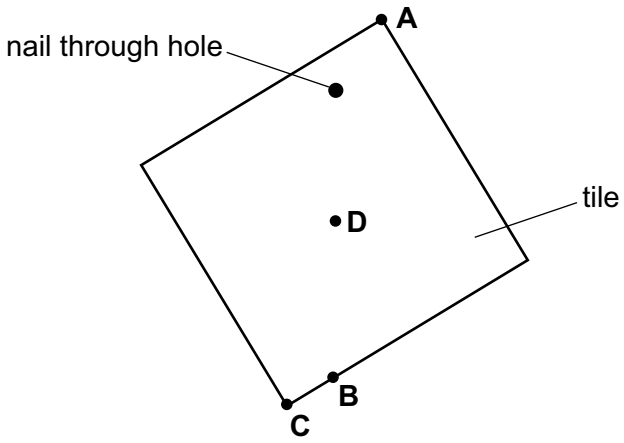
The beam is balanced.

Which row gives possible values for *P* and for *Q*?

	P/N	*Q*/N
A	21	7
B	21	9
C	30	10
D	30	70

8 A hole is made in a square tile of uniform thickness. The diagram shows the tile hanging loosely on a nail.

Where is the centre of gravity of the tile?



9 Which source of energy is renewable?

A coal

B natural gas

C oil

D wind

10 A man climbs a ladder.

Which quantities can be used to calculate the useful power of the man?

A the weight of the man and the time taken only

B the weight of the man and the vertical distance moved only

C the work done by the man and the time taken only

D the work done by the man and the vertical distance moved only

11 A student uses her thumb to push a drawing pin (thumb tack) into a notice board.

The pin goes into the board but does not penetrate her thumb.

Which statement explains this?

A The force exerted by the pin on her thumb is greater than the force exerted by the pin on the notice board.

B The force exerted by the pin on the notice board is greater than the force exerted by the pin on her thumb.

C The pressure of the pin on her thumb is greater than the pressure of the pin on the notice board.

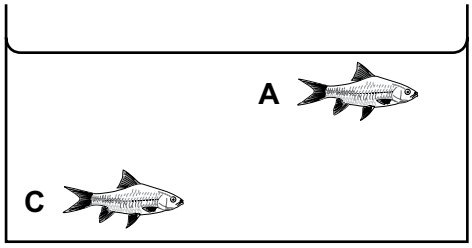
D The pressure of the pin on the notice board is greater than the pressure of the pin on her thumb.

12 Two identical fish tanks are filled with water to the same level.

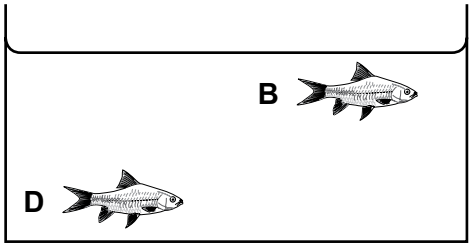
One tank contains fresh water. The other tank contains sea water.

Sea water is more dense than fresh water.

Which fish experiences the greatest pressure?

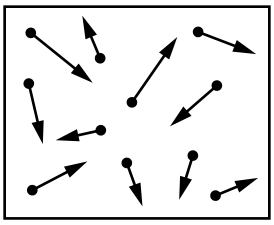


fresh water



sea water

13 The diagram represents particles of a gas inside a closed container of constant volume.



The gas is heated.

What happens to the particles of the gas?

A They expand.

B They get closer together.

C They hit the container walls with less force.

D They move faster.

14 When using a microscope to look at smoke particles in air, Brownian motion is observed.

What causes the smoke particles to move at random?

A Smoke particles are hit by air particles.

B Smoke particles are moved by convection currents in the air.

C Smoke particles have different weights and fall at different speeds.

D Smoke particles hit the walls of the container.

15 A glass bottle has a metal cap. The cap fits very tightly and is difficult to remove.

The cap and the neck of the bottle are lowered into a bowl of hot water. The cap can be removed more easily.

What happens to allow the cap to be removed more easily from the bottle?

A The metal cap contracts.

B The metal cap expands.

C The glass bottle contracts.

D The glass bottle expands.

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16 A substance can exist in three different states: solid, liquid or gas.

Each of the two statements below describes a change of state.

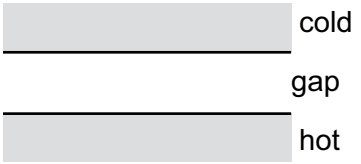
change 1: Particles move much closer together but continue to travel throughout the substance.

change 2: Particles stop travelling throughout the substance and just vibrate about fixed positions.

Which changes of state do these statements describe?

	change 1	change 2
A	condensation	melting
B	condensation	solidification
C	solidification	condensation
D	solidification	melting

17 The diagram shows the gap between a hot surface and a cold surface. The gap can contain air (gas), iron (solid), a vacuum or water (liquid).



Which material in the gap allows the quickest transfer of thermal energy between the surfaces by conduction?

A air (gas)

B iron (solid)

C vacuum

D water (liquid)

18 On a cold day, a metal door handle X and a similar plastic door handle Y are at the same temperature.

Why does X feel cooler to the touch than Y?

A X is a better thermal conductor than Y.

B X is a better thermal convector than Y.

C X is a better thermal insulator than Y.

D X is a better radiator of thermal energy than Y.

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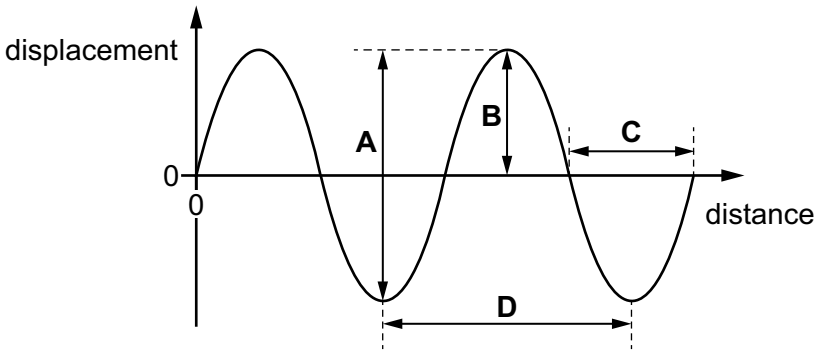
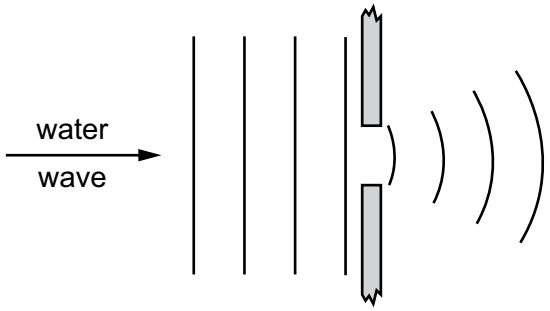
19 Which arrow on the graph shows the amplitude of the wave?



20 In a shallow tank, a water wave moves through a barrier with a narrow gap. The diagram shows the waves on the left-hand side and the right-hand side of the barrier.



Which term describes the effect shown?

A reflection

B dispersion

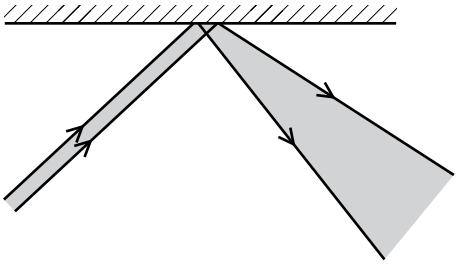
C refraction

D diffraction

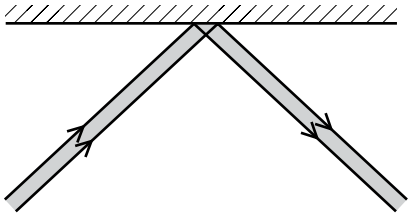
21 A parallel beam of light is incident on a plane mirror.

Which diagram shows how the beam is reflected by the mirror?

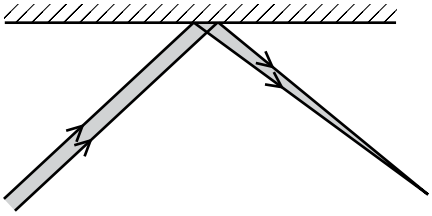
A



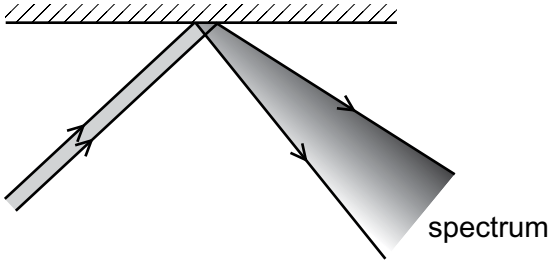
B



C

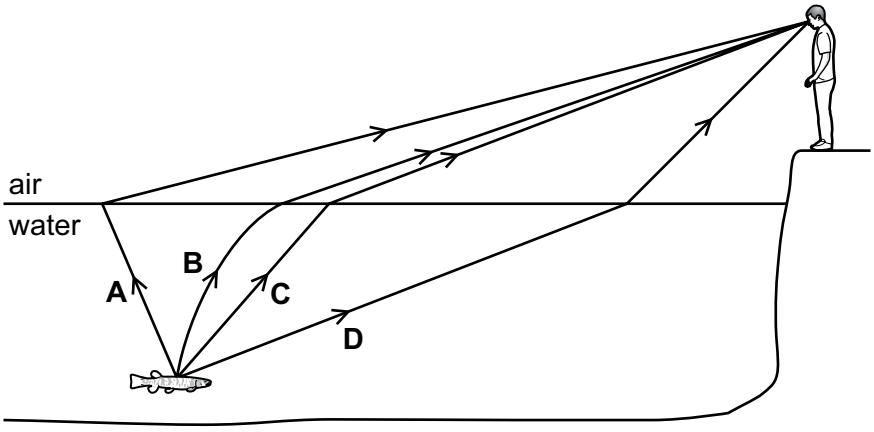


D



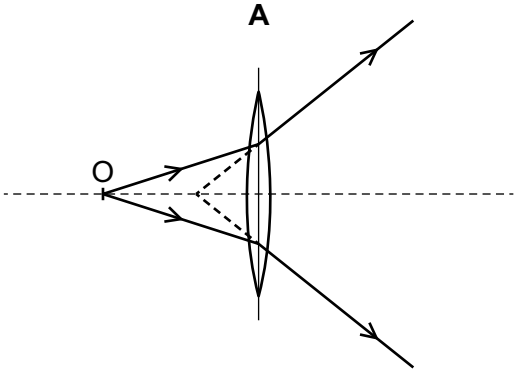
22 A boy sees a fish in a lake.

Which labelled path is taken by the light travelling from the fish to the boy's eye?

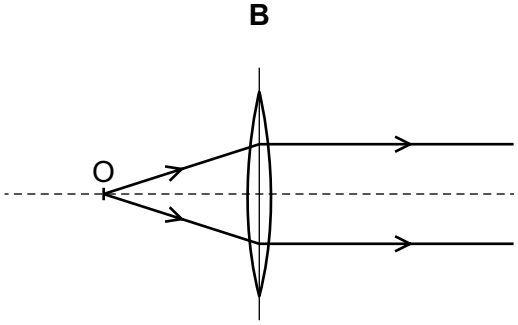


23 Which diagram shows the formation of a real image of an object O placed in front of a converging lens?

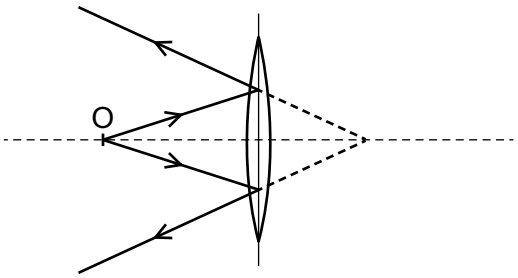
A



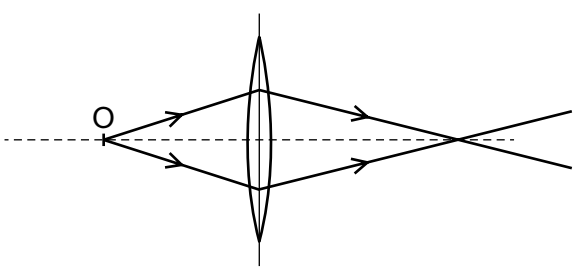
B



C



D



24 Which statement is **correct**?

A Infrared radiation is used in medical scanning of bones.

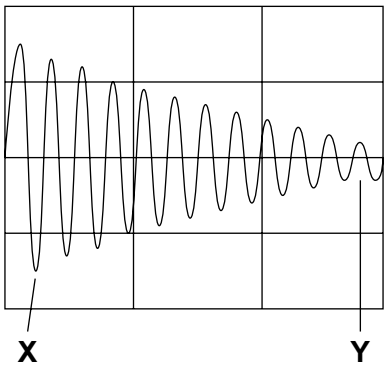
B Microwaves are used in telecommunications.

C Ultraviolet light is used in night vision photography.

D X-rays are used in thermal imaging.

25 The diagram represents a sound wave.

The sound wave changes from X to Y.



Which statement about the sound wave is correct?

A The amplitude of the wave is increasing.

B The frequency of the wave is decreasing.

C The pitch of the sound is increasing.

D The volume of the sound is decreasing.

26 What material can a temporary magnet be made from?

A plastic

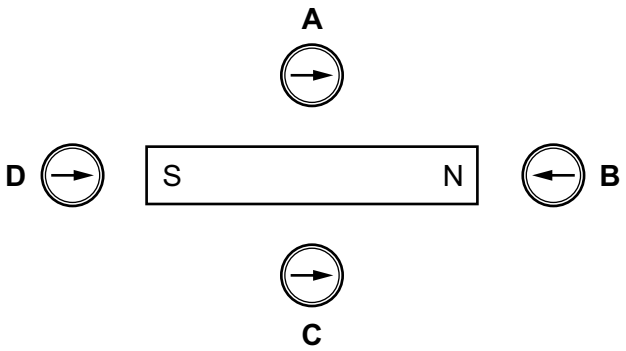
B soft iron

C steel

D wood

27 The diagram shows a bar magnet and four plotting compasses.

Which compass correctly shows the direction of the magnetic field due to the magnet?



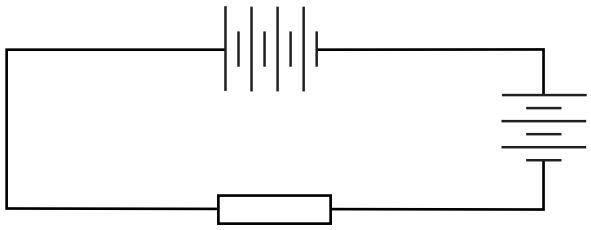
28 A plastic rod is rubbed with a cloth. The rod becomes positively charged.

What happens to the plastic rod and what is the charge on the cloth?

	plastic rod	charge on cloth
A	gains electrons	negative
B	gains electrons	positive
C	loses electrons	negative
D	loses electrons	positive

29 The circuit diagram shows cells connected with a resistor in a series circuit.

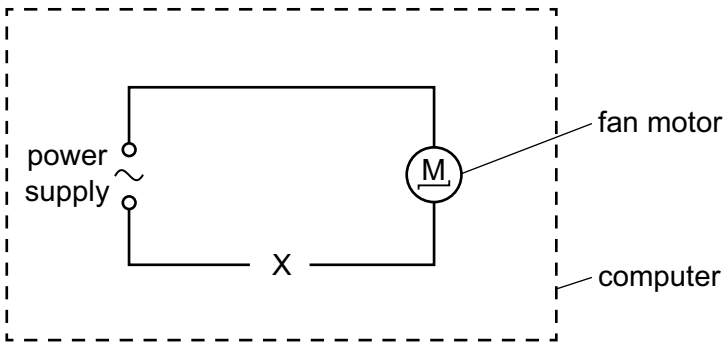
Each cell has an electromotive force (e.m.f.) of 1.5 V.



What is the total e.m.f. in the circuit?

A 1.5 V **B** 4.5 V **C** 6.0 V **D** 10.5 V

30 A computer engineer wants the speed of a fan to increase when the temperature inside a computer increases. The engineer knows that a larger current causes the fan to turn more quickly.



Which component should be placed at X to make this happen?

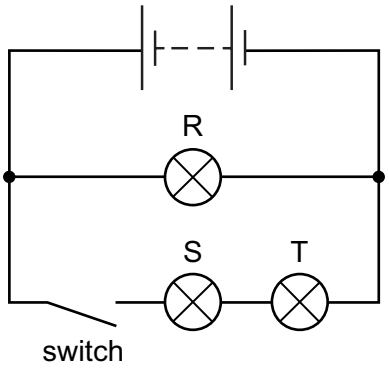
A a relay

B a thermistor

C a transformer

D a variable resistor

31 The diagram shows an electric circuit.



When the switch is open, which lamp(s) are **not** lit?

A R only

B S only

C R, S and T

D S and T only

32 An electric kettle has a metal casing. The cable for the kettle contains a wire that is connected to the earth pin of the plug.

Which danger does this guard against?

A the cable to the kettle becoming too hot

B the casing of the kettle becoming live

C the casing of the kettle becoming wet on the outside

D the casing of the kettle overheating

33 An electric current can produce a heating effect and a magnetic effect.

Which row shows the effect that a relay uses and one application of a relay?

	effect used by a relay	one application of a relay
A	heating effect	allowing a small current to switch on a large current
B	heating effect	changing the voltage of an a.c. supply
C	magnetic effect	allowing a small current to switch on a large current
D	magnetic effect	changing the voltage of an a.c. supply

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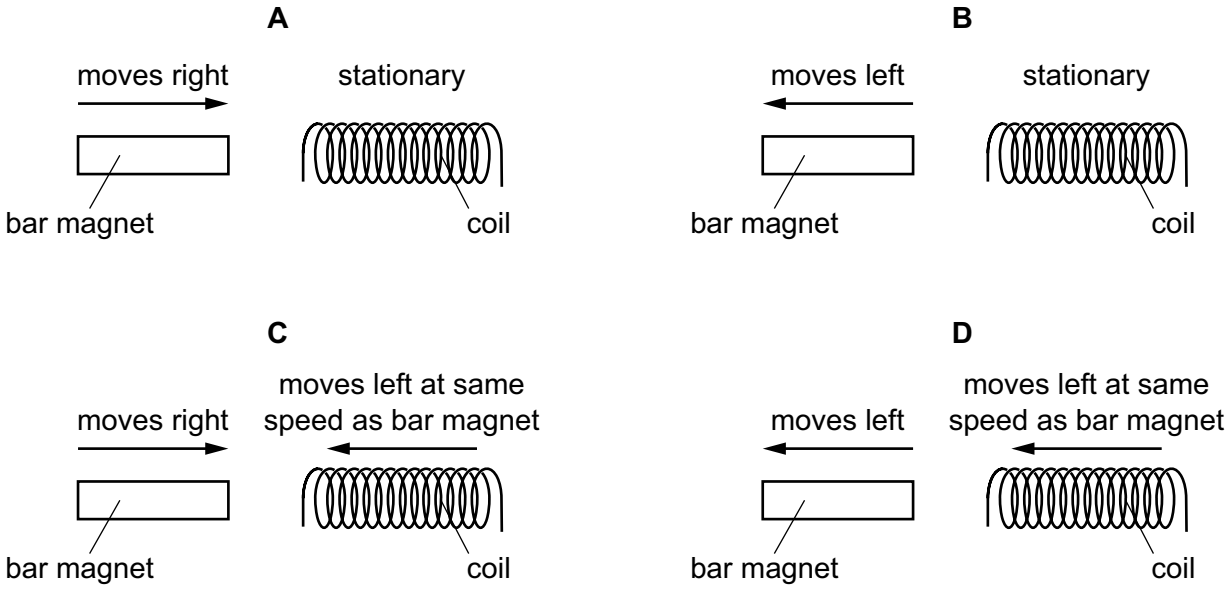
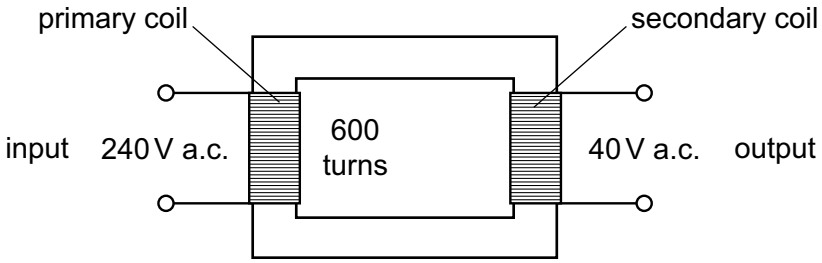
34 The diagram shows a bar magnet and a coil of wire. The bar magnet is moved at the same speed in each experiment.

In which situation is the largest electromotive force (e.m.f.) induced?



35 The diagram shows a simple transformer with an input of 240 V a.c. and an output of 40 V a.c.

There are 600 turns on the primary coil.

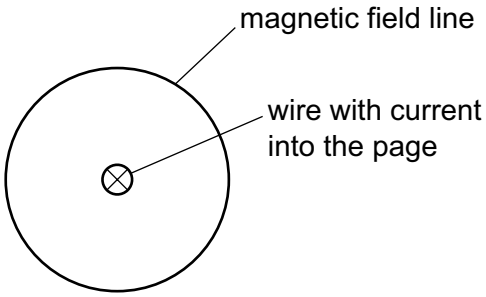


How many turns are there on the secondary coil?

A 100 **B** 320 **C** 400 **D** 3600

36 There is an electric current in a straight wire in the direction into the page. This produces a magnetic field around the wire.

All the field lines are circles but only one field line is shown.



Which row describes the magnetic field?

	direction of the field lines	spacing of the field lines
A	anti-clockwise	equally spaced over the whole field
B	anti-clockwise	more widely spaced further from the wire
C	clockwise	equally spaced over the whole field
D	clockwise	more widely spaced further from the wire

37 Atom X loses an electron to form an ion.

Atom Y gains an electron to form an ion.

Which row in the table is correct?

	charge on the ion of atom X	charge on the ion of atom Y
A	positive	positive
B	positive	negative
C	negative	positive
D	negative	negative

38 Which statement about α-particles and β-particles is correct?

A α-particles are less ionising than β-particles.

B α-particles are more penetrating than β-particles.

C α-particles have greater mass than β-particles.

D α-particles have the same charge as β-particles.

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39 Which type of object orbits the Sun?

A an interstellar cloud of gas and dust

B a comet

C a galaxy

D another star

40 Which statement describes redshift?

A All the light emitted from all distant galaxies is at the red end of the spectrum.

B All the light emitted by a star in the Milky Way is at the red end of the spectrum.

C The light from all the stars in the Milky Way is moved towards the red end of the spectrum.

D The light from stars in all distant galaxies is moved towards the red end of the spectrum.

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