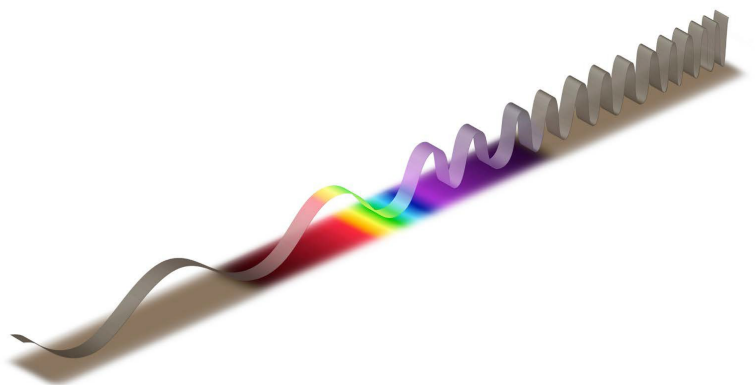


Specimen Paper Answers – Paper 1
Cambridge IGCSE™ / IGCSE (9–1)
Physics 0625 / 0972

For examination from 2023



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Introduction

The main aim of this booklet is to exemplify standards for those teaching Cambridge IGCSE / IGCSE (9-1) Physics 0625 / 0972, and to show examples of very good answers.

In this booklet, we have provided answers for all questions with examiner comments. This paper requires candidates to answer multiple choice questions. Candidates are awarded a maximum of 40 marks for this paper and the mark scheme provides the answers required to gain the marks.

Each question and answer is followed by an examiner comment on how each answer should be determined. Additionally, the examiner has set out a number of common mistakes that occur when candidates answer the questions. In this way, it is possible to understand what candidates have done to gain their marks and how they could avoid errors.

The mark schemes for the Specimen Papers are available to download from the School Support Hub at www.cambridgeinternational.org/support

2023 Specimen Paper 1 Mark Scheme

Past exam resources and other teaching and learning resources are available on the School Support Hub www.cambridgeinternational.org/support

Assessment at a glance

The syllabus for Cambridge IGCSE Physics 0625 is available at www.cambridgeinternational.org

All candidates take three papers. Candidates who have studied the Core syllabus content, or who are expected to achieve a grade D or below, should be entered for Paper 1, Paper 3 and either Paper 5 or Paper 6. These candidates will be eligible for grades C to G.

Candidates who have studied the Extended syllabus content (Core and Supplement), and who are expected to achieve a grade C or above, should be entered for Paper 2, Paper 4 and either Paper 5 or Paper 6. These candidates will be eligible for grades A* to G.

Core assessment

Core candidates take Paper 1 and Paper 3. The questions are based on the Core subject content only:

Paper 1: Multiple Choice (Core)	
45 minutes	
40 marks	30%
40 four-option multiple-choice questions	
Externally assessed	

Paper 3: Theory (Core)	
1 hour 15 minutes	
80 marks	50%
Short-answer and structured questions	
Externally assessed	

Extended assessment

Extended candidates take Paper 2 and Paper 4. The questions are based on the Core and Supplement subject content:

Paper 2: Multiple Choice (Extended)	
45 minutes	
40 marks	30%
40 four-option multiple-choice questions	
Externally assessed	

Paper 4: Theory (Extended)	
1 hour 15 minutes	
80 marks	50%
Short-answer and structured questions	
Externally assessed	

Practical assessment

All candidates take one practical paper from a choice of two:

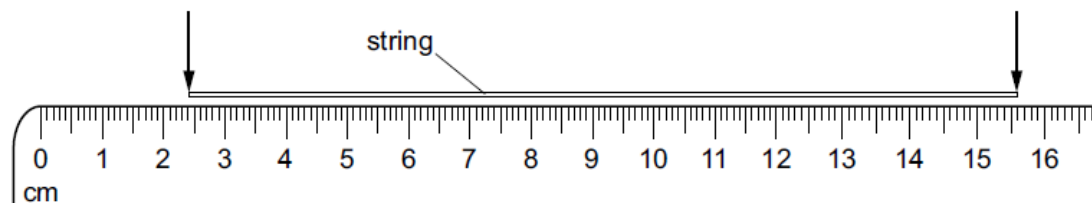
Paper 5: Practical Test	
1 hour 15 minutes	
40 marks	20%
Questions will be based on the experimental skills in Section 4	
Externally assessed	

Paper 6: Alternative to Practical	
1 hour	
40 marks	20%
Questions will be based on the experimental skills in Section 4	
Externally assessed	

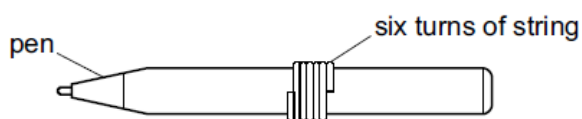
Specimen answers

Question 1

- 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

Candidate answer: A

Mark awarded = 1

Examiner comment

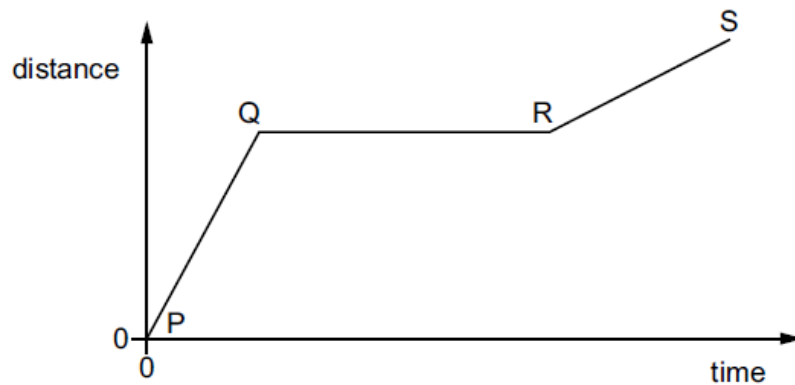
Measure length and divide by 6.

Common mistakes

Failure to allow for false origin.

Question 2

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

Candidate answer: A

Mark awarded = 1

Examiner comment

Gradient of distance/time graph is speed.

Common mistakes

Treats gradient as acceleration.

Question 3

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.

Candidate answer: C

Mark awarded = 1

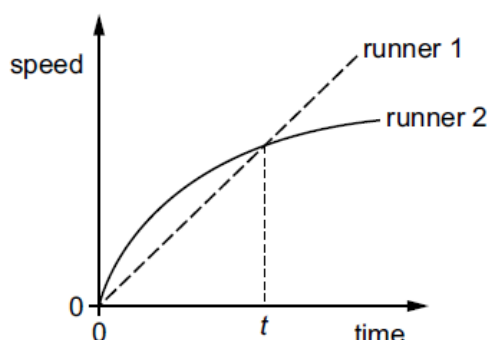
Examiner comment

Recall

Question 4

- 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.

Candidate answer: A

Mark awarded = 1

Examiner comment

Same speed at t .

Common mistakes

Curve for runner 2 indicates slowing down.

Question 5

- 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?

	<u>density of object P</u> g/cm ³	<u>density of object Q</u> g/cm ³	<u>density of liquid</u> 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

Candidate answer: D

Mark awarded = 1

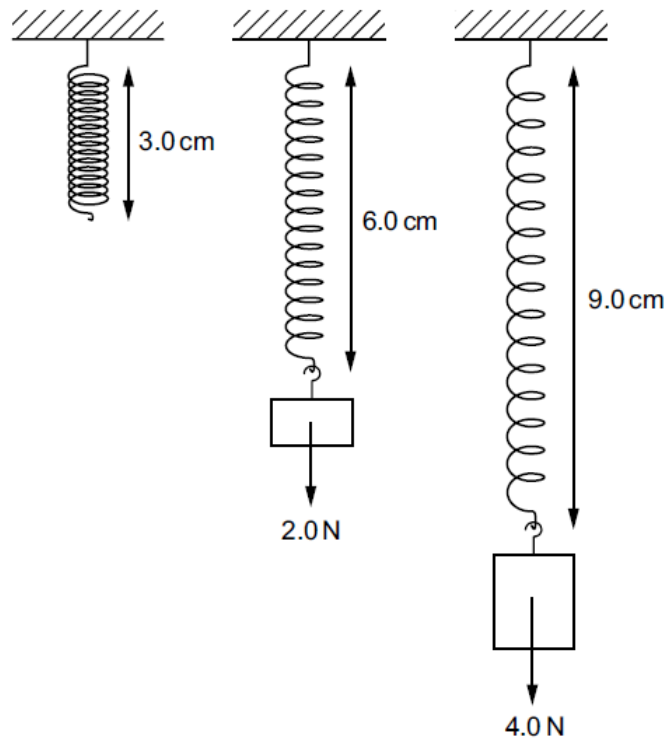
Examiner comment

Recall.

Question 6

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

Candidate answer: B

Mark awarded = 1

Examiner comment

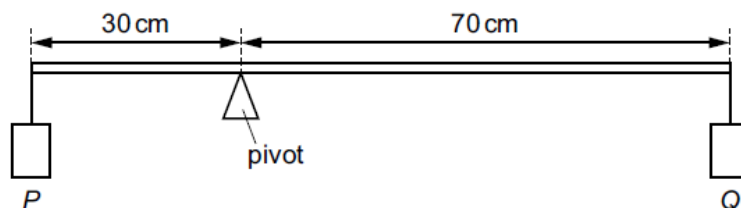
Extension is change in length.

Common mistakes

Option C - change in extension.

Question 7

- 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

Candidate answer: B

Mark awarded = 1

Examiner comment

Moment = $F \times d$

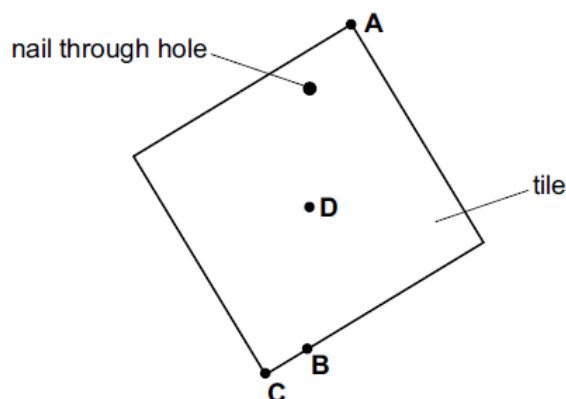
Common mistakes

Inverts ratio of lengths.

Question 8

- 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?



Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Common mistakes

Option B since it is below the pivot.

Question 9

9 Which source of energy is renewable?

- A coal
- B natural gas
- C oil
- D wind

Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Question 10

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

Candidate answer: C

Mark awarded = 1

Examiner comment

power = (work done) / time

Common mistakes

Confusion of power with work done.

Question 11

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.

Candidate answer: D

Mark awarded = 1

Examiner comment

Same force, larger area and $p = F/A$

Common mistakes

Smaller area so smaller force.

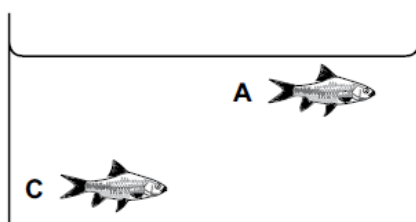
Question 12

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

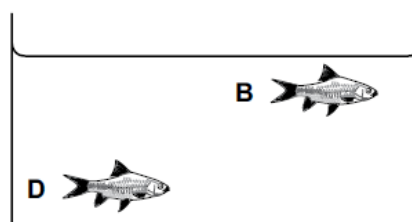
One tank contains fresh water. The other tank contains sea water.

Sea water is more dense than fresh water.

Which fish experiences the greatest pressure?



fresh water



sea water

Candidate answer: D

Mark awarded = 1

Examiner comment

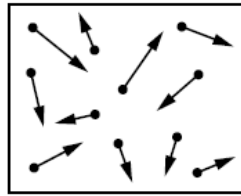
Pressure depends on *depth x density*.

Common mistakes

Confusion of 1.3 factor.

Question 13

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.

Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Question 14

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.

Candidate answer: A

Mark awarded = 1

Examiner comment

Recall.

Question 15

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.

Candidate answer: B

Mark awarded = 1

Examiner comment

Metals expand more than glass.

Common mistakes

C – glass contracts.

Question 16

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

Candidate answer: B

Mark awarded = 1

Examiner comment

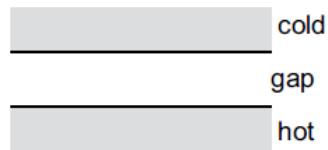
Recall.

Common mistakes

Misunderstanding of the term condensation.

Question 17

- 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)

Candidate answer: B

Mark awarded = 1

Examiner comment

Recall.

Question 18

- 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.

Candidate answer: A

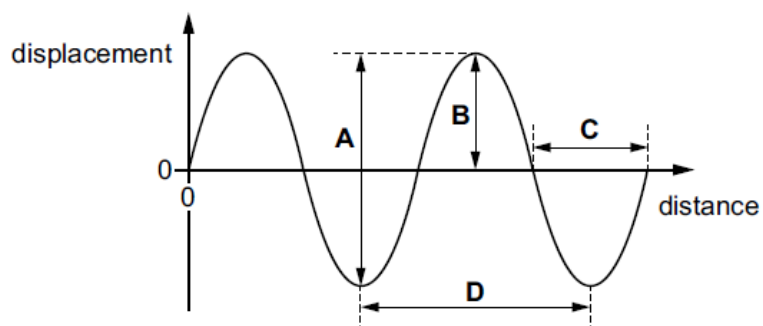
Mark awarded = 1

Examiner comment

Recall of different properties of materials.

Question 19

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



Candidate answer: B

Mark awarded = 1

Examiner comment

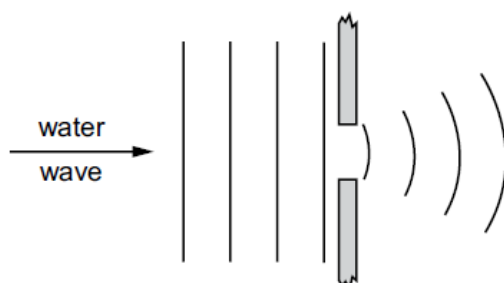
Recall.

Common mistakes

Peak-to-peak as amplitude.

Question 20

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

Candidate answer: D

Mark awarded = 1

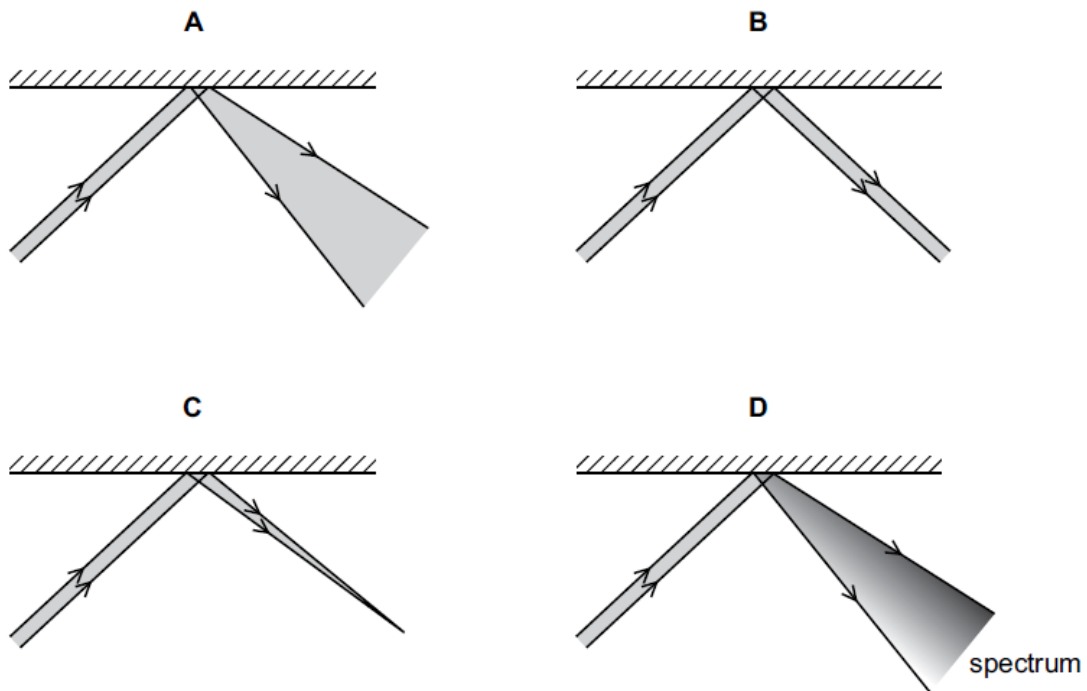
Examiner comment

Recall.

Question 21

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

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



Candidate answer: B

Mark awarded = 1

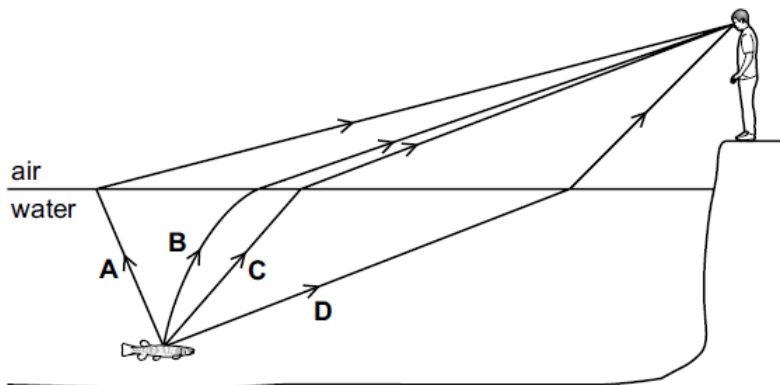
Examiner comment

Recall angles of incidence and reflection are equal.

Question 22

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?



Candidate answer: C

Mark awarded = 1

Examiner comment

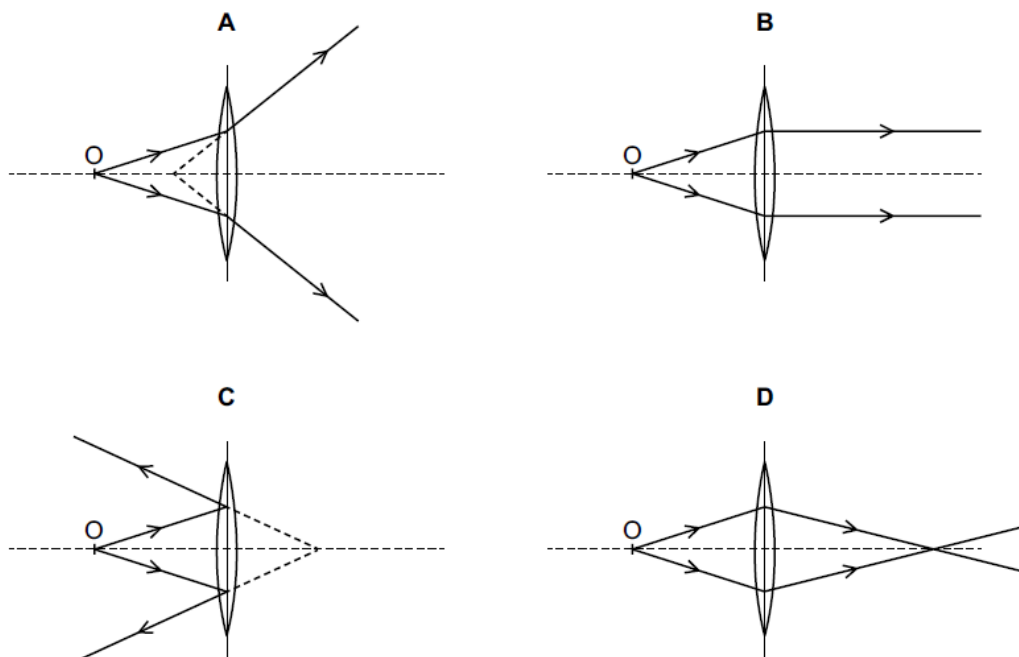
Laws of refraction.

Common mistakes

Option D – deviation in 'wrong' direction.

Question 23

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



Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Question 24

- 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.

Candidate answer: B

Mark awarded = 1

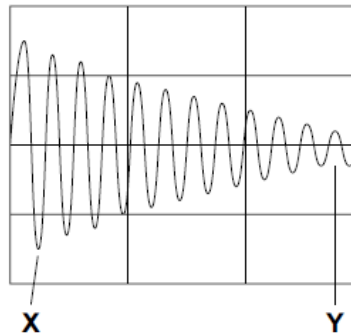
Examiner comment

Recall.

Question 25

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.

Candidate answer: D

Mark awarded = 1

Examiner comment

Recall amplitude/loudness connection.

Common mistakes

Confuses amplitude with frequency.

Question 26

26 What material can a temporary magnet be made from?

- A plastic
- B soft iron
- C steel
- D wood

Candidate answer: B

Mark awarded = 1

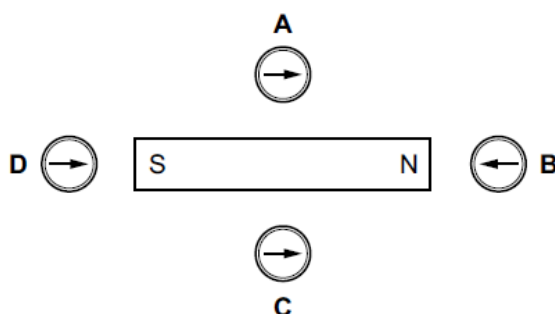
Examiner comment

Recall.

Question 27

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?



Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Common mistakes

Option B is a common incorrect choice.

Question 28

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

Candidate answer: C

Mark awarded = 1

Examiner comment

Recall charge on electron and electron movement.

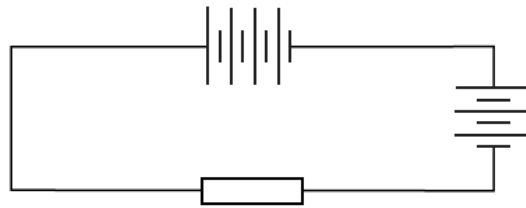
Common mistakes

Electrons are not conserved.

Question 29

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

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



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

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

Candidate answer: D

Mark awarded = 1

Examiner comment

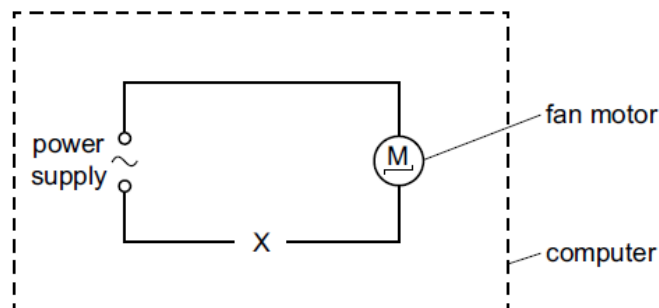
Recall that total e.m.f. is the sum of the individual e.m.f.s.

Common mistakes

Incorrect consideration of the orientation of the cells.

Question 30

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

Candidate answer: B

Mark awarded = 1

Examiner comment

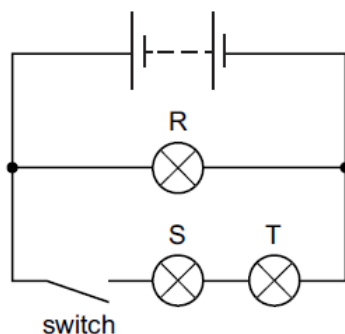
Resistance of thermistor is temperature dependent.

Common mistakes

Variable resistor.

Question 31

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

Candidate answer: D

Mark awarded = 1

Examiner comment

Action of a switch.

Question 32

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

Candidate answer: B

Mark awarded = 1

Examiner comment

Recall purpose of earthing.

Common mistakes

Some reference to overheating.

Question 33

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

Candidate answer: C

Mark awarded = 1

Examiner comment

Recall.

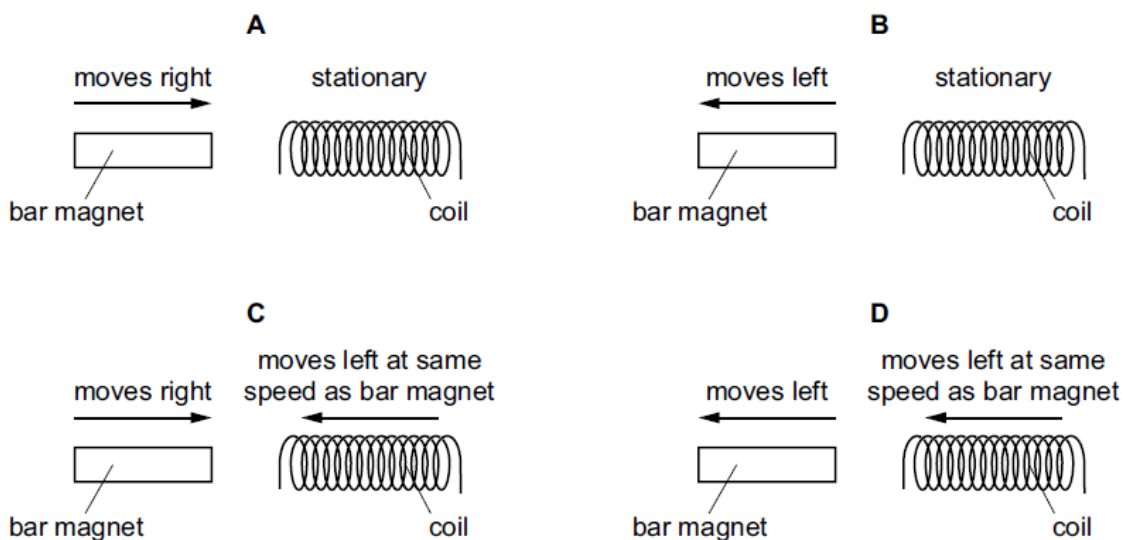
Common mistakes

Confusing relay with transformer.

Question 34

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?



Candidate answer: C

Mark awarded = 1

Examiner comment

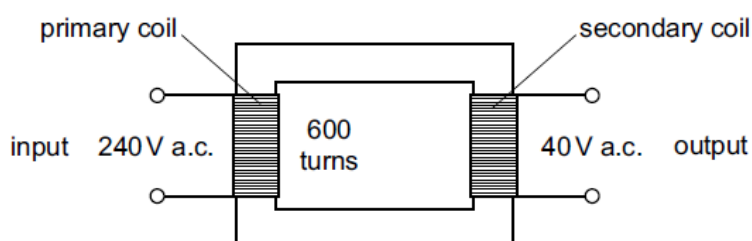
Interpretation of diagrams to give greatest rate of cutting of lines

Common mistakes

Consideration of direction of induced e.m.f.

Question 35

- 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

Candidate answer: A

Mark awarded = 1

Examiner comment

$$N_P / N_S = V_P / V_S$$

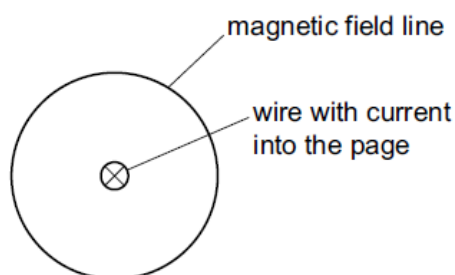
Common mistakes

Inverts ratio.

Question 36

- 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

Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Common mistakes

Failure to appreciate spacing and/or direction.

Question 37

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

Candidate answer: B

Mark awarded = 1

Examiner comment

Losing electron means loss of negative charge.

Common mistakes

Atom is neutral and so resultant charge is zero.

Question 38

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.

Candidate answer: C

Mark awarded = 1

Examiner comment

Recall.

Common mistakes

Effect of degree of ionisation.

Question 39

- 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

Candidate answer: B

Mark awarded = 1

Examiner comment

Recall.

Question 40

- 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.

Candidate answer: D

Mark awarded = 1

Examiner comment

Recall.

Common mistakes

Realisation that all wavelengths are redshifted.

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