Qualification Accredited

Oxford Cambridge and RSA

GCSE (9-1)

Examiners' report

TWENTY FIRST CENTURY SCIENCE COMBINED SCIENCE B

J260

For first teaching in 2016

J260/07 Summer 2024 series

Version 1

ocr.org.uk/science

Contents

Introduction

Our examiners' reports are produced to offer constructive feedback on candidates' performance in the examinations. They provide useful guidance for future candidates.

The reports will include a general commentary on candidates' performance, identify technical aspects examined in the questions and highlight good performance and where performance could be improved. A selection of candidate responses is also provided. The reports will also explain aspects which caused difficulty and why the difficulties arose, whether through a lack of knowledge, poor examination technique, or any other identifiable and explainable reason.

Where overall performance on a question/question part was considered good, with no particular areas to highlight, these questions have not been included in the report.

A full copy of the question paper and the mark scheme can be downloaded from OCR.

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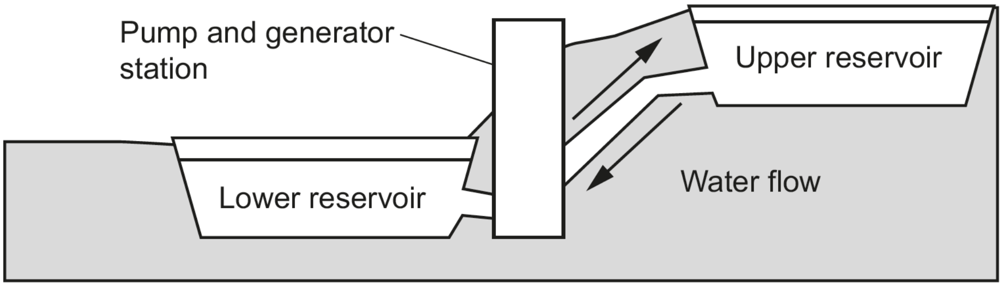
Paper 7 series overview

J260/07 is one of the four examination components for the Higher tier GCSE (9-1) Twenty First Century Science Combined Science B. This component assesses the contents of the physics chapters P1 to P6 and the practical skills in chapter BCP8. The question styles used include objective, short response and one extended Level of Response.

Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
• carefully read the question and followed the instructions given by it including what to include in the response • stated the correct equation in calculation questions and included full substitution of numbers and working towards their answer • used relevant physics equations when answering written questions to explain how quantities link together • used specific examples when describing and explaining • demonstrated the ability to analyse information to draw conclusions and presented them concisely • used scientific terminology appropriately when applying knowledge • applied knowledge of correct scientific units, conversion of units, standard form and rearrangement of equations.	• misinterpreted the question and did not follow the instructions given • did not state the equation used in calculations • did not show correct substitution of numbers in calculation questions • gave responses that were too vague or ambiguous • did not attempt to convert units to the correct SI unit in calculation questions • did not use scientific terminology in responses or used scientific terminology incorrectly.

Question 1*

1* The diagram shows a pumped storage system.



Electricity is used to pump water from the lower reservoir to the upper reservoir. When the water flows back down, its kinetic energy store is used to generate electricity.

Describe the benefits and risks of replacing fossil fuel power stations with wind farms and solar panels **and** explain how pumped storage systems can help to reduce the risks.

....

....

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....

....

.... **[6]**

Candidates were expected to describe benefits of using these renewable energy resources, such as the idea that they are renewable resources or the idea that they do not contribute to global warming by releasing greenhouse gases. Many candidates described these benefits by describing the drawbacks of using fossil fuels and stating that wind and solar do not have these drawbacks and this often worked well. Candidates were also expected to describe the risks associated with the use of wind and solar power and many candidates did describe these resources as being 'unreliable' or 'weather dependent', which did gain credit. However a better response is one that gives specific risks such as 'wind power only generates electricity when the wind is blowing and it is not always windy' or 'solar panels do not generate electricity at night'. Finally, candidates were expected to explain how pumped storage could help reduce the risks. Not as many candidates managed to do this clearly, but some did and a fairly succinct explanation such as, 'the water could be stored and used to generate electricity when wind and solar cannot meet the demand' is enough here to gain the credit.

It is also worth noting that this question is also on the Foundation tier paper and therefore candidates were not expected to provide much detail in order to satisfy each of the level criteria given on the mark scheme.

Exemplar 1

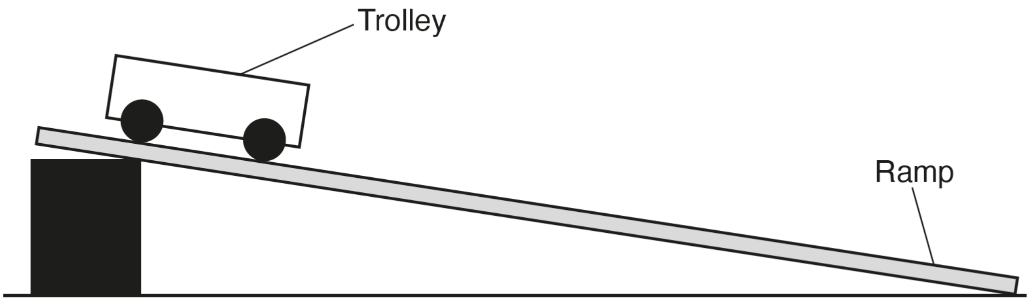
- A benefit is it is renewable energy. This means it ~~can~~ can be used as many times as possible compared to fossil fuels which are finite resources
- A risk is solar panels and wind farms are very dependent on the weather as they use it to generate electricity
- A benefit is it doesn't harm the environment. This is because they don't ~~emi~~ release greenhouse gases that harm our atmosphere.
- A risk of wind farms is a death of birds as they get hit or harmed by the windmills
- ~~An advantage~~ A disadvantage of pumped storage systems is it can **[6]** control the amount of water entering and leaving which can sometimes cause floods around the area and death of wildlife
- Another disadvantage is renewable energy sources are expensive to build and maintain whereas fossil fuels are easy to generate electricity and is much cheaper

This is a Level 2 response since it clearly gives both the benefits and risks of wind and solar power production. However, there is no mention of how pumped storage could help reduce the risks, just comments on the perceived disadvantages of them. A sentence on the end such as 'pumped storage can help reduce the risks of using solar and wind by generating electricity when the output from wind and solar is low due to unsuitable weather' would be enough to get this into Level 3.

Question 2 (a)

2
(a) A student is investigating the motion of a trolley travelling down a ramp, using the equipment shown in **Fig. 2.1**.

Fig. 2.1



Describe how the student can use a metre ruler and a stopwatch to find out the average speed of the trolley down the ramp.

Use the idea that average speed = $\frac{\text{distance}}{\text{time}}$

....

....

....

.... **[2]**

The first mark was for measuring the distance travelled and the second for measuring the time to travel that distance. Some candidates did not score marks here because their response was too vague. Common incorrect responses were 'measure the distance' and 'use a stopwatch to time it'. Candidates who were clear about the measurement being taken scored the marks here.

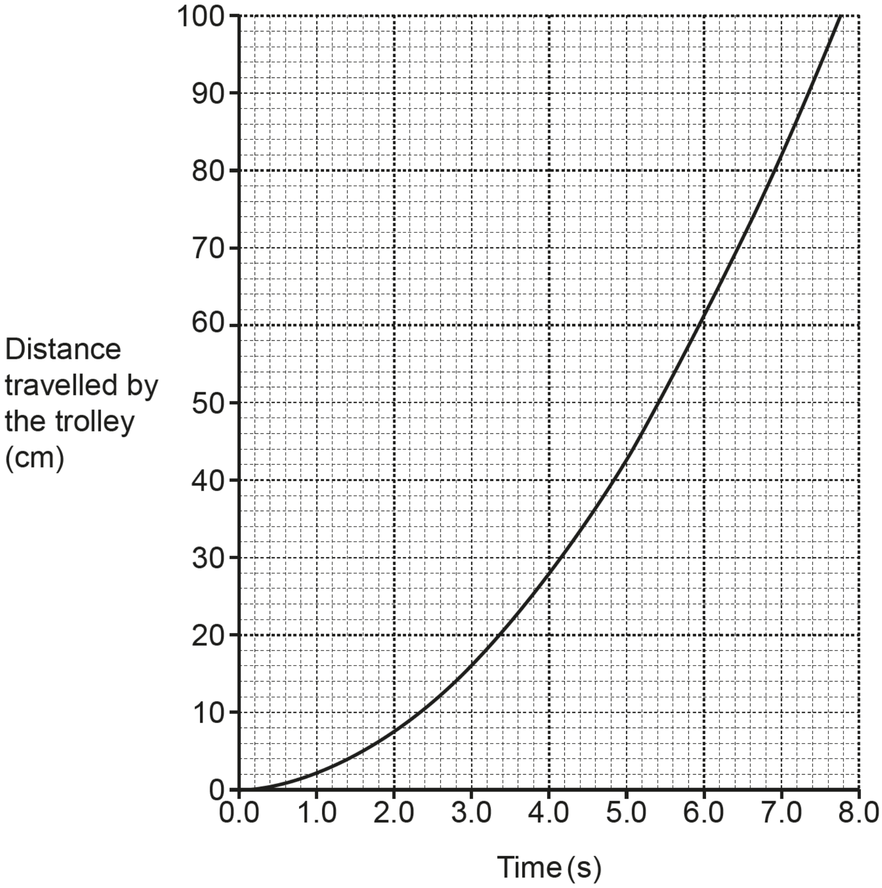
Assessment for learning

Questions such as this one that assess practical skills are included in the GCSE Science exams every year. It is important to make time for lessons in which candidates take measurements with measuring devices, analyse their data and also describe their method.

Question 2 (b) (i)

(b) **Fig. 2.2** shows how far the trolley travels down the ramp in a given time.

Fig. 2.2



(i) Explain how **Fig. 2.2** shows that the trolley accelerates down the slope.

Use the idea that acceleration = $\frac{\text{change in speed}}{\text{time taken}}$

....

....

....

.... **[2]**

Many candidates did not refer to the graph in their response and therefore scored zero. The question asks to explain how the graph shows that the trolley is accelerating. The best explanations referred to the increasing gradient of the line.

Question 2 (b) (ii)

(ii) **Draw** a tangent on **Fig. 2.2** at Time = 5.0 s and use it to **calculate** the gradient at this time.

Gradient = ... cm/s **[4]**

Many candidates did not seem familiar with the idea of a tangent and many others were not able to correctly read the change in y and change in x values in order to correctly calculate the gradient. Some candidates just counted the number of squares on the grid in each direction. The GCSE Science papers have to test the mathematical skills detailed in the specification, and adding a tangent to a curve is one of those to be tested along with calculating the gradient of a straight line.

Assessment for learning

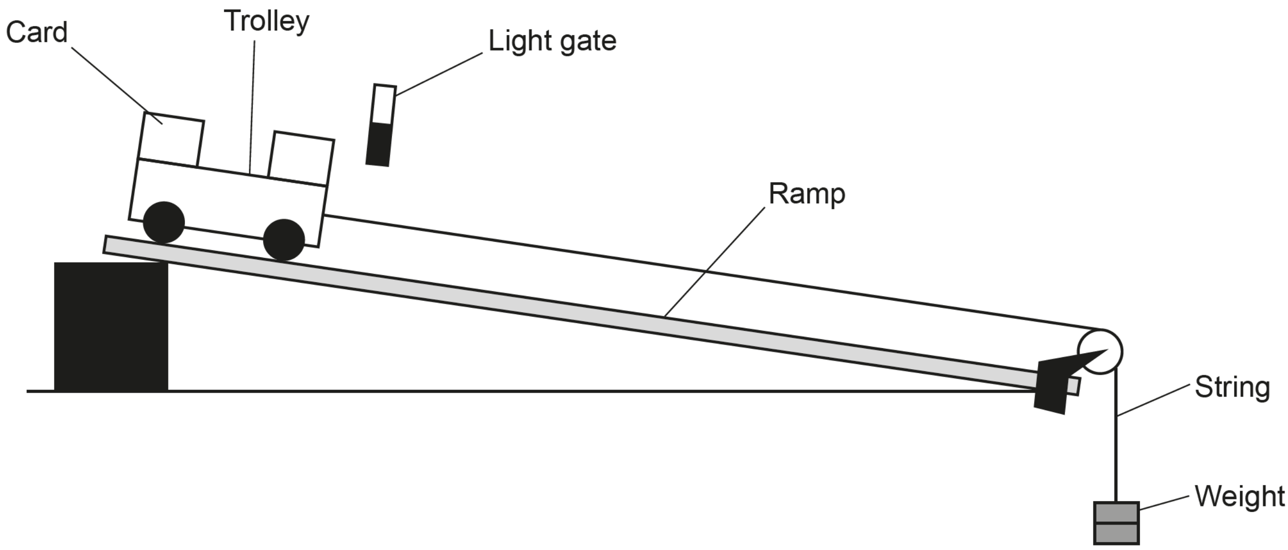
There are many opportunities, within the physics part of the specification, for candidates to plot a graph and then calculate the gradient from the line in order to determine a physical quantity or add a tangent to calculate the gradient at a point. Consider adding this step on to the end of a graph drawing task or conduct lessons where a graph is already produced and students have to add a tangent or calculate the gradient from the line.

Question 2 (c) (i)

(c) The student then investigates how the size of a pulling force affects the motion of the trolley down the ramp.

Fig. 2.3 shows the equipment used.

Fig. 2.3

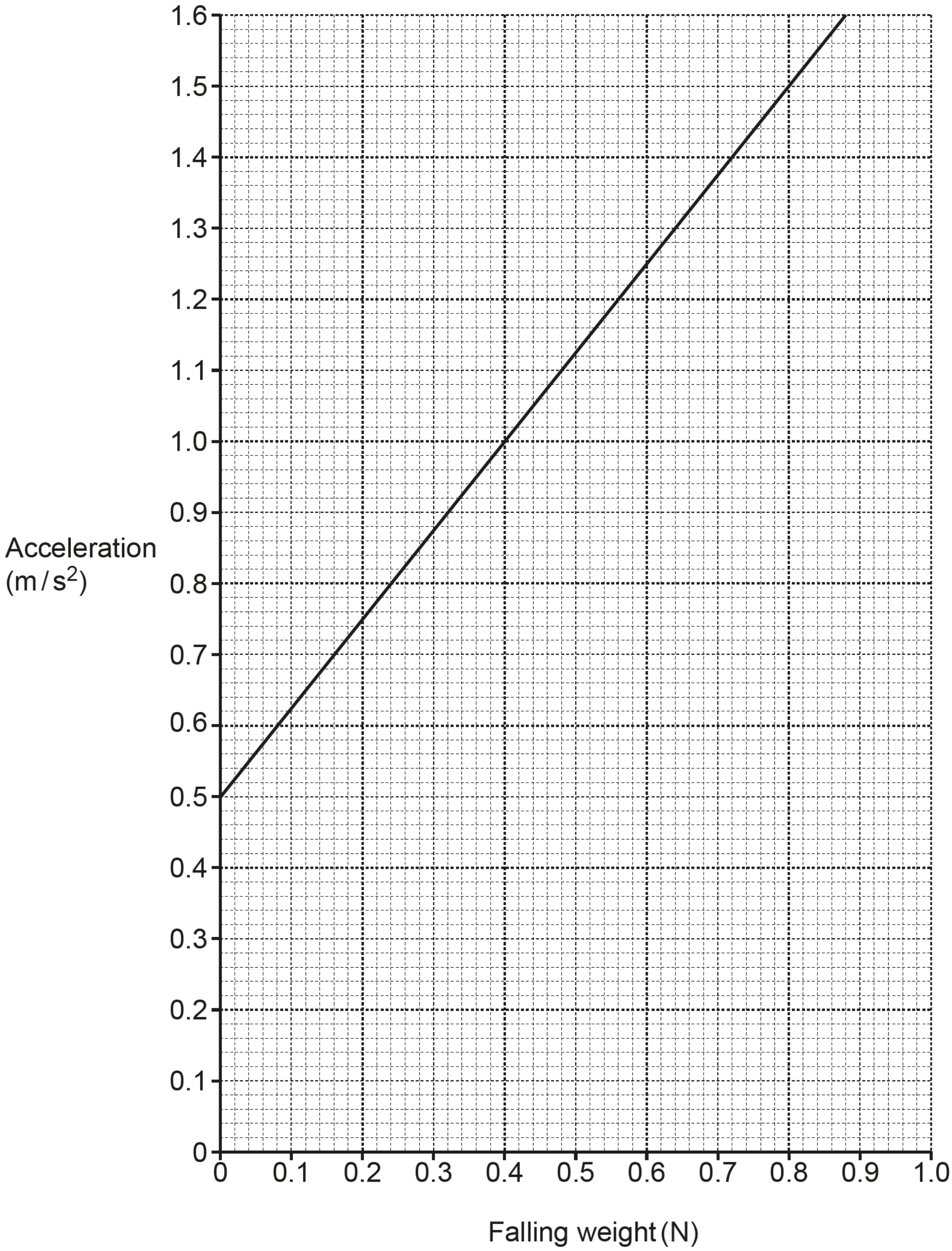


The pulling force on the trolley is provided by a falling weight attached to the trolley by a string.

The student measures the acceleration of the trolley when different weights are used.

Fig. 2.4 shows the student's results.

Fig. 2.4



(i) Calculate the resultant force acting on the trolley when the falling weight is 0.50 N.

The mass of the trolley is 0.80 kg.

Use **Fig. 2.4** and the Equation Sheet.

Resultant force = ... N **[4]**

Many candidates selected the wrong equation here. The use of the term 'resultant force' led many to try to use the equation including momentum instead suggesting that many candidates do not recognise that the force in the equation is a resultant force. Again, this question was also on the Foundation tier paper and once the correct equation was selected the remaining marks were very accessible. Candidates should be encouraged to clearly write down the equation they are using first and to clearly state the value they have read from the graph, even if they aren't sure what to do with it.

Question 3 (a) (i)

3 Two students learn about waves.

(a)
(i) Which **two** statements are true for light waves?

Tick (✓) **two** boxes.

Light waves are electromagnetic waves. ☐

Light waves are longitudinal waves. ☐

Light waves are transverse waves. ☐

Light waves only travel through a vacuum. ☐

Light waves travel faster through water than through a vacuum. ☐

[2]

Common incorrect choices were 'light waves are longitudinal waves' and 'light waves only travel through a vacuum'.

Question 3 (a) (ii)

(ii) When white sunlight shines on grass, the grass looks green.

Complete the sentences to explain why.

Put a (ring) around each correct option.

The green light in sunlight has different **amplitudes / electrons / wavelengths** to the other colours.

Those from the green region are **absorbed / transmitted / reflected**

and those from other regions are **absorbed / transmitted / reflected**.

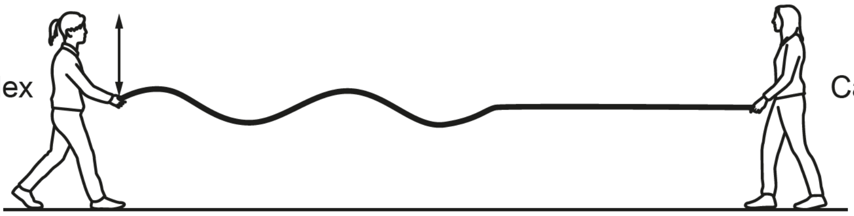
[2]

If a mark was lost here it was usually mixing up the order of absorbed and reflected.

Question 3 (b) (i)

(b) The diagram shows the two students, **Alex** and **Casey**, with a rope.

Each student holds one end of the rope.



Alex moves the end of the rope up and down to send waves along the rope to Casey.
Alex also talks to Casey. This sends sound waves through the air.

(i) Describe the differences between the **waves on the rope** and the **sound waves in the air**.

....

....

....

....

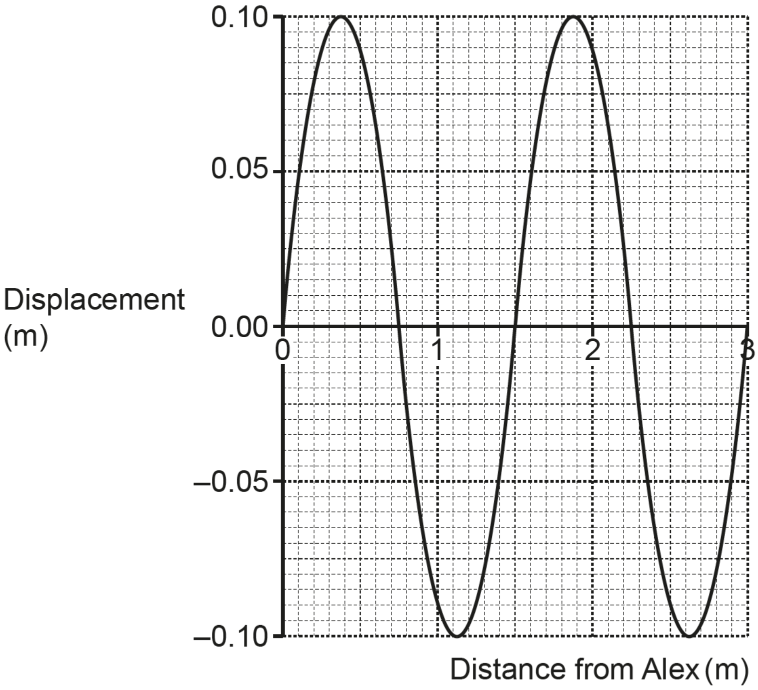
....

.... **[3]**

Many candidates identified the waves on the rope as transverse and the sound wave as longitudinal but were less successful at accurately describing these wave types. Many responses included remembered descriptions of oscillation directions such as 'the wave moves at 90°' or 'the wave is parallel'. A correct description of the oscillation direction must include reference to the wave direction to be correct.

Question 3 (b) (ii)

(ii) The graph shows how the displacement of the rope changes with the distance along the rope from Alex.



Complete the table, using information from the graph.

Amplitude (m)	
Wavelength (m)	

[2]

Incorrect responses included double the amplitude and incorrect wavelength values due to trying to read peak to peak from the graph.

Question 4 (a) (i)

4 (a) (i) A student investigates the reflection of light from a plane mirror.

These are the steps in the investigation. They are **not** in the correct order:

A Direct the ray from a ray box at the mirror, so that it hits the mirror where the normal and the mirror line cross.

B Mark the rays on the paper with crosses.

C Measure the angles of incidence and reflection with a protractor.

D Remove the ray box.

E Stand a plane mirror on the line.

F Use a pencil and ruler to join the crosses.

G Use a ruler to draw a line on a piece of paper, and a protractor to draw a normal at right angles to the line.

Write the letters in the boxes to show the correct order of the steps.

Two have been completed for you.

G						**C**

[2]

The mark scheme allows a mark if a few of the letters are in the wrong order. As with the practical question earlier in the paper, candidates are more likely to do well here if they have worked through this investigation themselves in lessons.

Question 4 (a) (ii)

(ii) It is a sunny day so the student cannot see the rays clearly.

Suggest **two** ways the student could improve the experiment to see the rays more clearly.

1 ....

....

2 ....

....

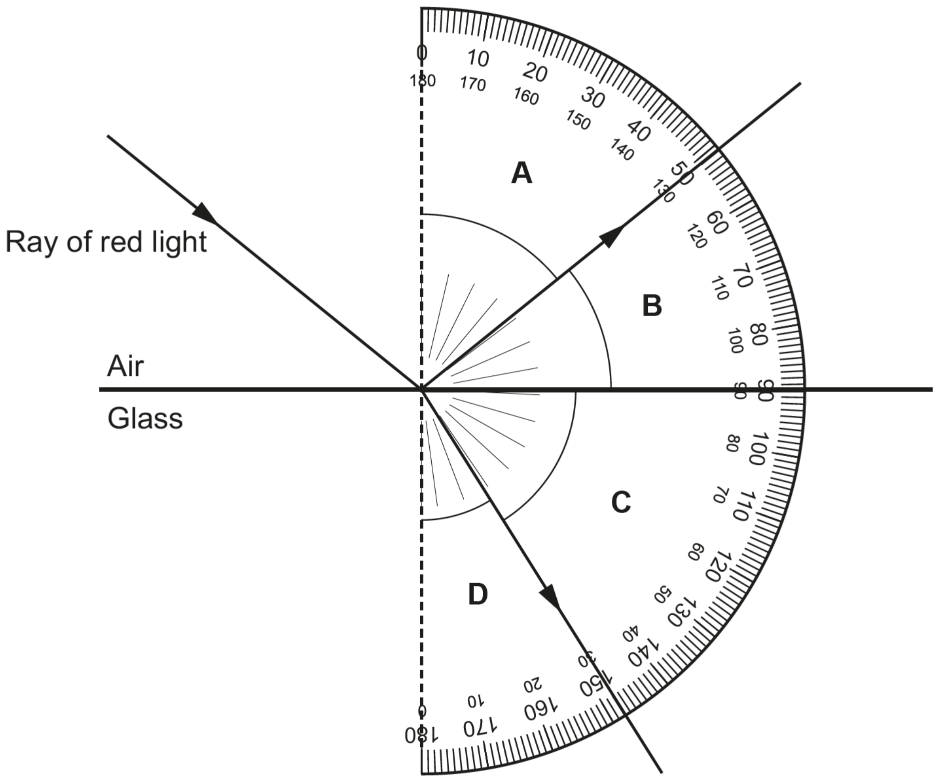
[2]

The marks here were for practical methods to improve the visibility of the rays. Responses such as 'make the room dark' did not receive as much credit as responses that gave a practical method for making the room dark, such as turning off lights and closing window blinds.

Question 4 (b) (i)

(b) The diagram shows a ray of red light incident on a glass surface. Some of the incident light is reflected and some is refracted.

A protractor is used to measure the angles of reflection and refraction.



(i) Which angles in the diagram are the angles of reflection and refraction?

Choose from **A**, **B**, **C** or **D**.

Angle of reflection = ☐

Angle of refraction = ☐

[2]

Few candidates obtained both marks here. On refraction ray diagrams candidates should be encouraged to identify the normal line and then make sure that all angles are measured between the ray and the normal.

Misconception

Refraction and reflection angles on ray diagrams are always between the ray and the normal line.

Question 4 (b) (ii)

(ii) Measure the angle of **refraction** on the diagram.

Angle of refraction = ... ° **[1]**

Candidates could score the mark here as ECF (error carried forwards) for the incorrect angle identified as the refraction angle. But many candidates still did not get this mark due to incorrectly reading the protractor, usually coming close but not correctly reading the value.

Question 4 (c)

(c) The speed of the red light is 2.0×10^8 m/s in the glass block.
The frequency is 4.7×10^{14} Hz.

Calculate the wavelength of the light in the glass block.

Use the equation: $\text{wavelength} = \frac{\text{wave speed}}{\text{frequency}}$

Give your answer to **2** significant figures.

Wavelength = ... m **[3]**

This question was generally well answered, although many candidates lost a mark through either not correctly dealing with the powers of ten and therefore obtaining an answer with a power of ten error, or not successfully rounding their answer to two significant figures.

Question 4 (d)

(d) Complete the sentences to explain what happens to the wavelength of the red light when it enters the glass block from the air.

Put a (ring) around the correct option to help you complete the first sentence.

When it enters the glass block, the wavelength of the red light

decreases / does not change / increases.

This is because ....

....

....

....

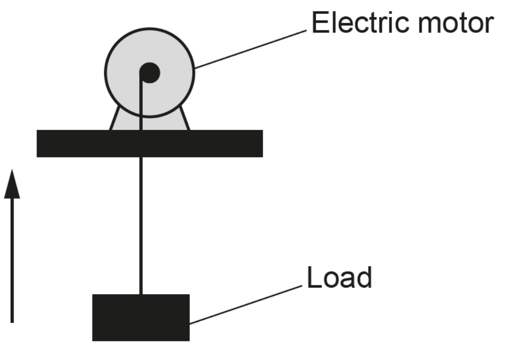
....

.... **[3]**

This question was generally well answered with the best responses coming from a considered use of the equation relating wave speed, frequency and wavelength coupled with the knowledge that the speed will decrease when the light enters the glass. The commonly missed mark was the fact that the frequency remained constant, and even among those candidates who reasoned the wavelength decrease was due to the speed decrease using the equation, many still omitted the fact that the frequency was constant.

Question 5 (a) (i)

5 The diagram shows an electric motor lifting a load.



(a)
(i) Describe the **useful** energy transfers that take place while the electric motor lifts the load.

....

....

....

.... **[2]**

This question tested candidates' understanding of energy transfers. Many candidates had difficulty describing the start of the energy transfer process with some referring to an electrical energy store. High scoring responses often referred to electrical working or work done on the load by a force.

Misconception

There was a common misconception here that energy is stored electrically. An electric motor transfers energy through electrical working, in this case increasing the gravitational potential energy of the load.

Question 5 (a) (ii)

(ii) Describe how some energy is **wasted** in the electric motor.

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....

....

.... **[2]**

When asked about wasted energy it is important for candidates to describe both the location of the energy and the energy store that is filled when the energy is transferred out of the system. Here energy is transferred to the thermal store of the motor parts and surroundings. This is due to both electrical work by the electric current and mechanical work by friction.

Question 5 (b) (i)

(b) A student investigates how the upward speed of the load changes with the mass of the load.

The student measures:

- the time taken for the mass to be lifted a vertical height of 1 m.
- the potential difference across the electric motor and the current through it when it is lifting the mass.

The table shows one set of results:

Mass (kg)	0.1
Time for load to rise 1m (s)	1.8
Potential difference (V)	3.0
Current (A)	2.0

(i) Calculate the total energy transferred by the electric motor.

Use: power = potential difference × current

and energy transferred = power × time.

Total energy transferred = ... J **[3]**

This question was very well answered, but there were some candidates who substituted the wrong numbers into the equations. Candidates should be encouraged to write the equation out algebraically first and then substitute the numbers underneath the equations to make it less likely for errors in substitution to occur.

Question 5 (b) (ii)

(ii) The gravitational potential energy store of the load increases by 8.1 J when it is lifted 1 m.

Calculate the efficiency of the electric motor.

Use the equation: efficiency = $\frac{\text{useful energy transferred}}{\text{total energy transferred}}$

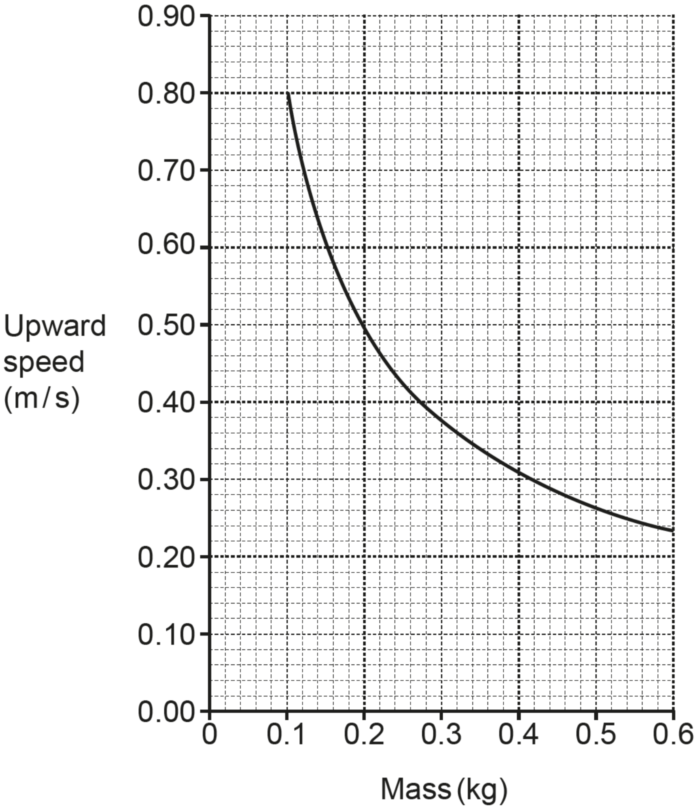
and your answer to **(b)(i)**.

Efficiency = ... **[2]**

Efficiency can be represented as a percentage or a decimal number. Candidates must be careful to include the percentage symbol if they are giving the efficiency as a percentage.

Question 5 (c)

(c) The student repeats the experiment with different masses and measures the upward speed of the load each time. The graph shows the results.



The student writes this conclusion based on the graph:

> The speed is proportional to $\frac{1}{\text{mass}}$ used.
>
> speed $\propto \frac{1}{\text{mass}}$

Evaluate the student's conclusion.

Use data from the graph.

....

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....

.... **[3]**

It was clear from the low scoring nature of this question that most candidates did not have a clear understanding of inverse proportionality. To test the student's conclusion, candidates should select a coordinate from the curve and multiply the mass value by the speed value to calculate the constant that relates the two. Candidates should then select a second point from the curve and repeat the process. If the two calculated numbers are equal it shows that speed is inversely proportional to mass. Most incorrect responses just attempted to divide 1 by a mass value and show that it did not equal the corresponding speed value.

Question 6 (a) (i)

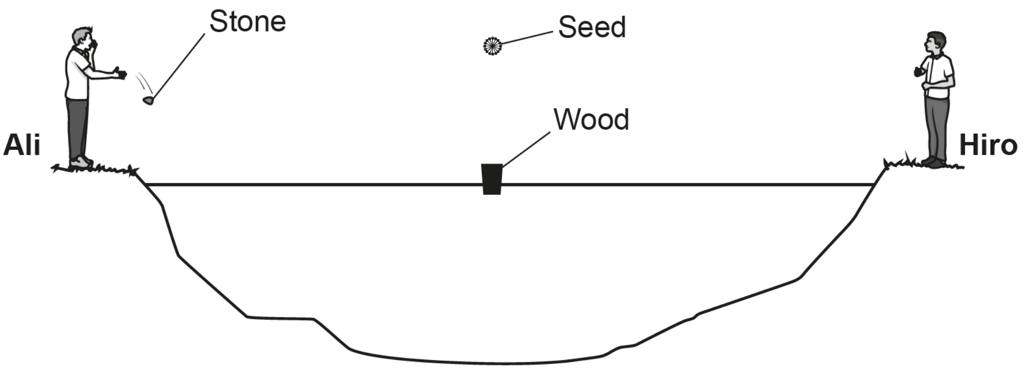
6

(a) **Ali** and **Hiro** stand on opposite sides of a lake.

A small piece of wood floats on the surface of the lake and a small seed floats in the air above the lake.

Ali shouts to **Hiro**. This starts the seed moving.

At the same time **Ali** drops a stone into the water, which sends ripples across the surface of the lake. This starts the wood moving.



The arrows show some possible ways for the wood and the seed to move.

(i) Which arrow shows the movement of the piece of wood when the ripples on the surface of the water reach it?

Put a (ring) around the correct option.

A **B** **C** **D**

[1]

Most candidates chose correctly here but did not choose correctly in Question 6 (a) (ii), showing that many were familiar with the object floating on water with a wave passing through, yet a similar example with a longitudinal wave was not well understood.

Question 6 (a) (ii)

(ii) Which arrow shows the movement of the seed when the sound waves reach it?

Put a (ring) around the correct option.

A **B** **C** **D**

[1]

In this example the most common response was D.

Question 6 (b) (i)

(b) Ali and Hiro do another experiment to determine the speed of sound in air.

(i) The steps of their experiment are listed below, but not in the correct order.

A Ali claps two pieces of wood together.

B Hiro starts the stopwatch when he sees the two pieces of wood clapped together.

C They repeat the experiment at 100 m, 150 m, 200 m and 250 m.

D They stand 50 m apart on a flat field.

E When he hears the sound, Hiro stops the stopwatch.

Write the letters in the boxes to show the correct order of the steps.
The first one has been completed for you.

D				

[2]

This was another example where experimental experience (including thoughtful discussion of related practical activities) helps the candidate put the steps in the correct order.

Question 6 (b) (ii)

(ii) Ali and Hiro repeat the experiment three times for each distance and calculate the speed of sound. The table shows their results:

Distance (m)	**Time** (s)				**Speed** (m/s)
	Repeat 1	Repeat 2	Repeat 3	Mean	
50	0.25	0.21	0.31	0.26	190
100	0.33	0.35	0.31	0.33	300
150	0.49	0.51	0.48	0.49	310
200	0.64	0.62	0.62	0.63	320
250	0.81	0.75	0.77	0.78	320

The speed of sound in air is approximately 330 m/s.

Describe how the measured distance affects the accuracy of the calculated speed **and** suggest a reason for this effect.

....

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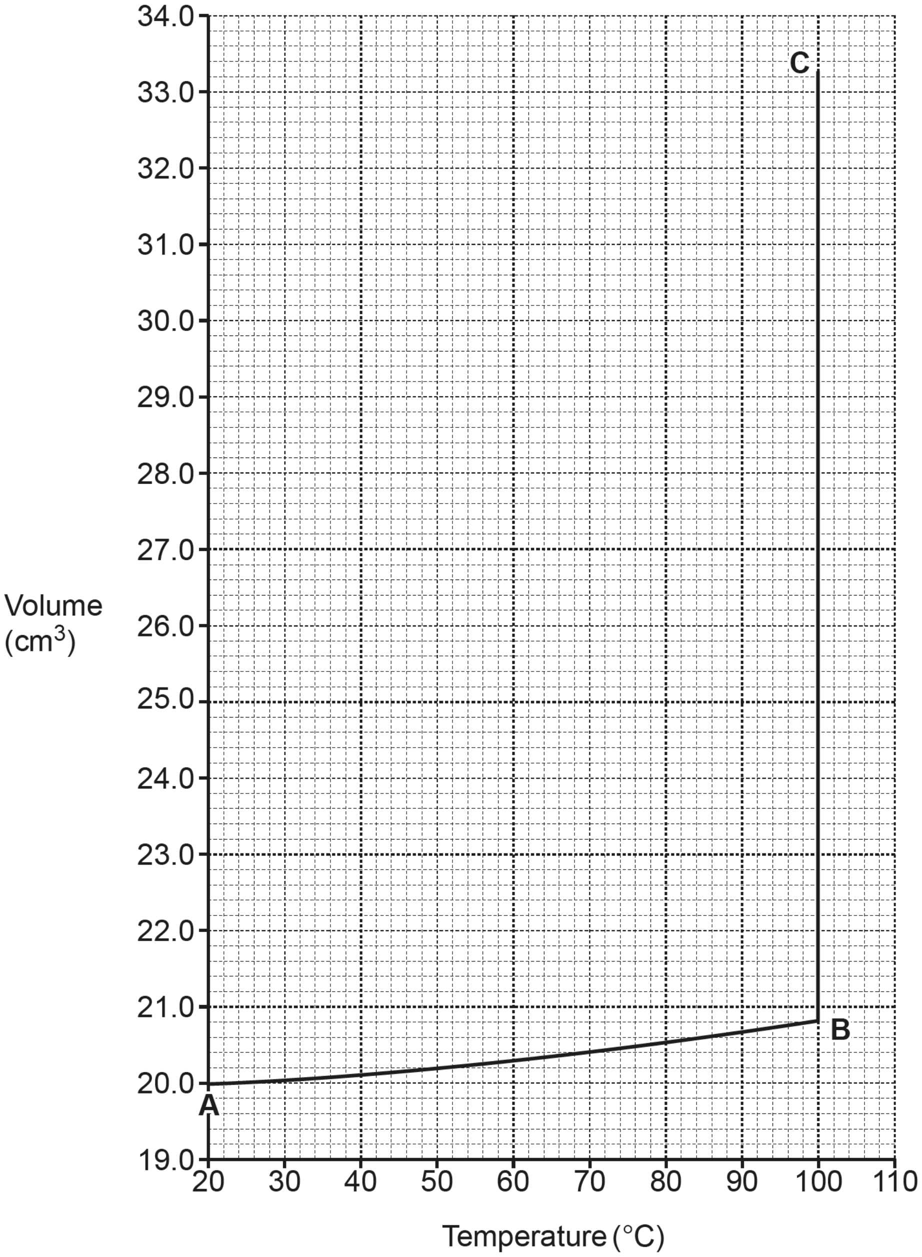
....

.... **[3]**

Many low scoring candidates misinterpreted this question as a question asking about why the speed of sound was changing and giving responses such as 'at longer distances the sound had more time to accelerate and so go to a greater speed'. Part of the issue here is the understanding of the physics involved, but also, a candidate with more experience in data analysis and method evaluation is more likely to understand the question. Accuracy is about judging how close a calculated value is to the true value and in this example the accuracy increases with distance. To score the mark for the reason, a candidate needs to make it clear that they understand that the reaction time of the student is more significant when measuring smaller time intervals.

Question 7 (b) (i)

(b) A constant mass of water is heated from 20 °C until it boils. The graph shows how the volume of the water changes with temperature.



(i) The mass of the water is 20 g.

The density of the water at point **A** is 1 g / cm^3.

Calculate the change in density of the water between **A** and **B**.

Use the graph and the equation: density = $\frac{\text{mass}}{\text{volume}}$

Change in density = ... g / cm^3 **[4]**

Understanding how to calculate a change was crucial to scoring the marks in this question. Some candidates read the volume from the graph correctly, but then subtracted the volumes and so tried to calculate the change in density by doing 20 ÷ 0.8, which is incorrect.

Assessment for learning

When calculating a change in a quantity you should calculate or measure the initial value then calculate or measure the final value and then subtract the smaller from the larger – here the final from the initial.

Question 7 (b) (ii)

(ii) Describe how the mass of the water is conserved as the volume changes between **B** and **C**.

Use the particle model.

....

....

....

.... **[2]**

The question instructs the candidates to use the particle model. Responses that do not use the particle model score zero marks.

Question 7 (b) (iii)

(iii) Explain what happens to the density between points **B** and **C** on the graph.

You do **not** need to calculate the density.

....

....

....

....

....

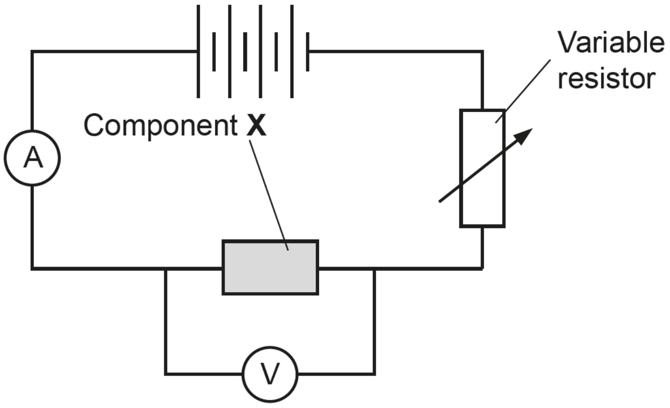
.... **[3]**

As with Question 4 (d), candidates who started with the relevant equation generally scored well on this question. Looking at the graph we can see that the volume has increased. The equation relating density and volume is density = mass ÷ volume and so if volume increases (and mass remains constant) density must decrease.

Question 8 (a)

8 A student is given an unknown electrical component **X**. The student investigates how the current through **X** varies with the potential difference across it.

The diagram shows the circuit used by the student.



(a) Explain the effect of the student changing the resistance of the variable resistor.

....

....

....

.... **[2]**

If a question asks for the effect of changing a variable, the clearest way to answer is to pick a direction for the variable to change and then state its effect(s).

Exemplar 2

- Changing the resistance will change the current.
- As resistance decreases, current increases.

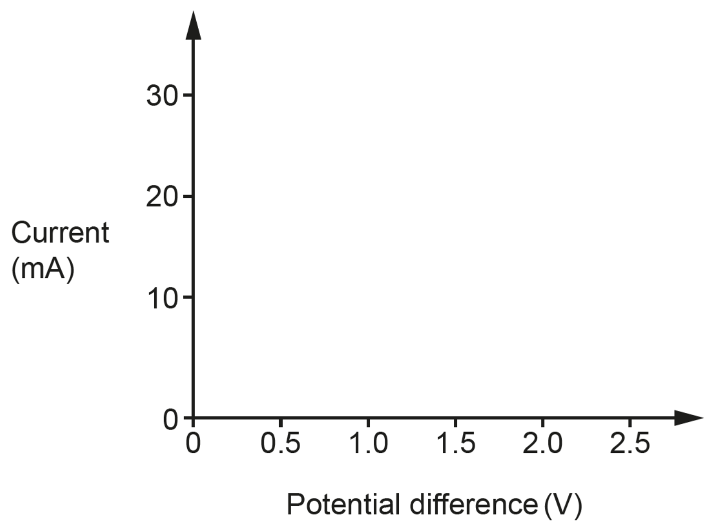
This response starts by vaguely describing a change in the resistance causing a change in current which does not score any marks as this is not specific enough. The final sentence gives an example of the effect and scores the first mark.

Question 8 (b) (i)

(b) The table shows the student's results.

Potential difference (V)	**Current (mA)**
0	0
0.5	0
1.0	4.8
1.5	12.8
2.0	20.8
2.5	28.8

(i) Sketch the graph of current against potential difference for these results.



[2]

Candidates who took care over the drawing of the line generally scored both marks here. Those with lines that rose up from the x-axis too soon or were not clearly at zero before 0.5 V did not score both marks.

Question 8 (b) (ii)

(ii) Suggest what component **X** is.

.... **[1]**

A large range of electrical components were given here, with the most common incorrect responses of lamp / bulb and resistor.

Question 8 (c)

(c) Calculate the charge that flows through component **X** in 300 seconds when the potential difference across it is 1.5 V.

Use the equation: charge = current × time

Charge = ... C **[3]**

Most candidates managed to calculate the correct answer here, but with a power of ten error. This was due to not converting the mA into A for the current value or trying to convert but doing so incorrectly.

Assessment for learning

Unit conversions are assessed on every GCSE physics paper and so it is a good idea to regularly test candidates on unit prefixes and conversions.

For example, give out a list of the commonly used prefixes at the start of the year and regularly build them into questions used in lessons.

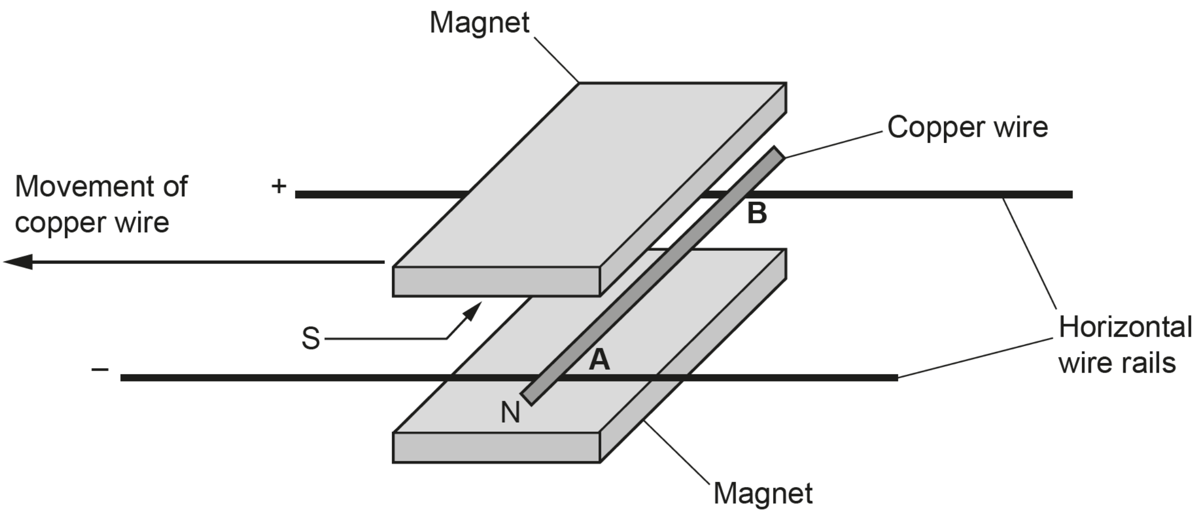
Question 9 (a)

9 A machine accelerates an object to a high speed. The machine uses the force experienced by a conductor carrying a current in a magnetic field. This is the motor effect.

Fig. 9.1 shows the machine. This is how it works:

- Two horizontal straight wire rails are connected to the positive and negative terminals of a d.c. power supply.
- The two wire rails pass between two flat magnets.
- The two flat magnets provide a vertical magnetic field.
- A piece of copper wire sits on the two wire rails, making contact with the wire rails at points **A** and **B**.

Fig. 9.1



(a) When the power supply is switched on, the copper wire moves to the left as shown.

Explain why the wire moves to the left.

Use Fleming's left hand rule.

....

....

....

.... **[2]**

In order to describe the direction of the field and current clearly here a candidate must use a reference. For example, 'the current direction is forwards' is an ambiguous statement and so will not score, however 'the current direction is from B to A' is clear and will score. Referencing information already given often results in a clearer response.

Question 9 (b)

(b) Suggest **two** ways in which the student could increase the force applied to the copper wire.

1 ....

....

2 ....

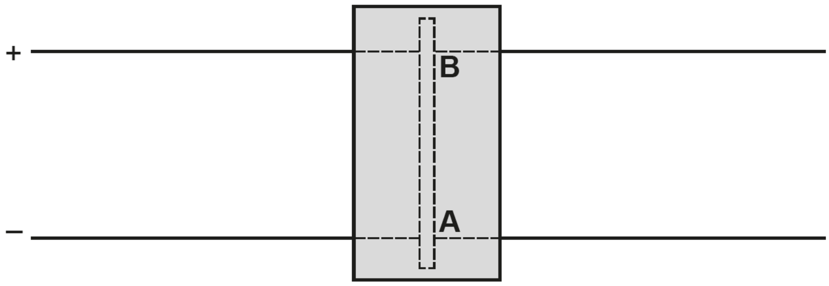
....
[2]

Candidates who considered the quantities that affect the force will score better on this question. The relevant equation here is $F = BIl$, and once a candidate realises this they can state that they will increase any two quantities from the equation with the caveat that sometimes it does need to be attached to the context. Here they would need to say increase the length of the wire rather than just increase the length. But it does again highlight that starting with the relevant equation is usually the best method.

Question 9 (c) (i)

(c) **Fig. 9.2** shows the machine when viewed from above.

Fig. 9.2



The strength of the magnetic field between the two flat magnets is 0.10 T.
The mass of the copper wire is 0.20 g.
The current in the copper wire is 1.5 A.
The force on the copper wire is 0.0060 N.

You can assume there is no friction between the copper wire and the two wire rails.

(i) Calculate the length of the copper wire between points **A** and **B**.

Use the equation: force = magnetic flux density × current × length of conductor

Length = ... m **[3]**

Many candidates lost marks here due to incorrectly rearranging the given equation. It should be noted that most opted to attempt an algebraic rearrangement before substituting rather than the other way around. When using this equation it would be easier for some candidates to substitute first allowing them to multiply two values together before they have to rearrange.

Question 9 (c) (ii)

(ii) Calculate the acceleration of the copper wire while it is in the magnetic field.

Use the equation: force = mass × acceleration

Acceleration = ... m/s^2 **[4]**

As with Question 8 (c) most candidates managed to calculate the correct answer here but with a power of ten error due to not converting or incorrectly converting g into kg.

Question 9 (c) (iii)

(iii) The current is changed so the new acceleration is 36 m/s^2.
When the current is switched on the copper wire accelerates from rest.

Calculate the speed of the copper wire after it has accelerated through a distance of 0.02 m.

Use the Equation Sheet.

Speed = ... m/s **[3]**

Candidates often did not select the correct equation here, but those who did often scored all three marks. Candidates should be encouraged to list the quantities they have and the one they need to help them select the correct equation.

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