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Examiners' report

PHYSICS B (ADVANCING PHYSICS)

H557

For first teaching in 2015

H557/01 Summer 2023 series

Version 1

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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 answers 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.

Paper 1 series overview

H557/01 'Fundamentals of Physics' component is worth 110 marks and assesses specification content from across all the teaching modules.

Section A consisted of thirty multiple choice questions, each worth one mark.

Section B included five structured short answer questions worth a total of 21 marks. Each question typically examined a single context. To do well on this section candidates needed to be comfortable answering questions that involved problem-solving and practical-based questions as well as performing calculations.

Section C consisted of five questions worth 59 marks in total. These longer questions included two opportunities for extended writing (Questions 36 (c) and 38 (a)) worth 6 marks each.

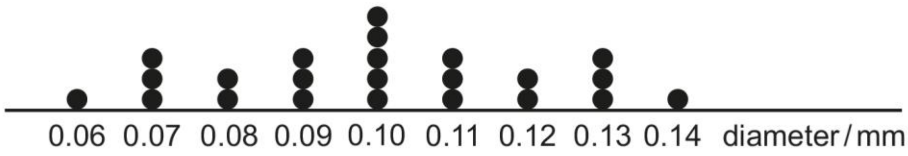
Candidates who did well on this paper generally:	Candidates who did less well on this paper generally:
• attempted all the multiple choice questions in Section A • performed the calculations required in Section B well • suggested and gave reasons to explain effects and phenomena, for example why conductivity changes as current increases for the filament lamp in Question 34 (c), and the possible amplitudes of oscillation of a molecule modelled as a mass-on-a-spring oscillator in Question 40 (c) (ii) • applied their knowledge to experimental situations, using data and information given in graphical form, for example the illuminance experiment in Question 37 • used sound physics, covering fully the required strands identified in the question, in a logical structure such as for the extended response Questions 36 (c) and 38 (a) • were able to find the energy released in the fusion reaction described in Question 39 (c) before going on to use calculations to explain that fusion is a better explanation for the source of the Sun's energy than gravitational contraction.	• found it difficult to explain physics concepts with the required depth and clarity – for example in Question 31 where they were asked to state the difference between a polarised and unpolarised wave and then explain how a polarising filter can be used to test for partial polarisation of reflected light • made mistakes interpreting graphs – for example by using data from a single point rather than calculating the gradient of the tangent in Question 37 (a) (ii) • lacked clarity in numerical reasoning and explanations of physics – for example by not making the test for exponentiality clear or the reason for calculations in their response to Question 37 (a) (iii) • covered just one of the required strands for the extended response Questions 36 (c) and 38 (a) and lacked structure in their reasoning

Section A overview

This section consisted of thirty multiple choice questions, each worth one mark. Candidates performed very well on Questions 1, 2, 3 and 7. Questions 12 and 20 were most challenging.

Question 1

1 The diagram shows a dot-plot of measurements of diameter at points along a wire.



Which of the following statements is correct?

A A value of 0.17 mm would be an outlier.

B The percentage uncertainty in the value is 4%.

C The range of the results is 0.08 mm.

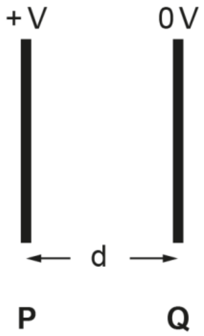
D The spread of the results is ±0.14 mm.

Your answer **[1]**

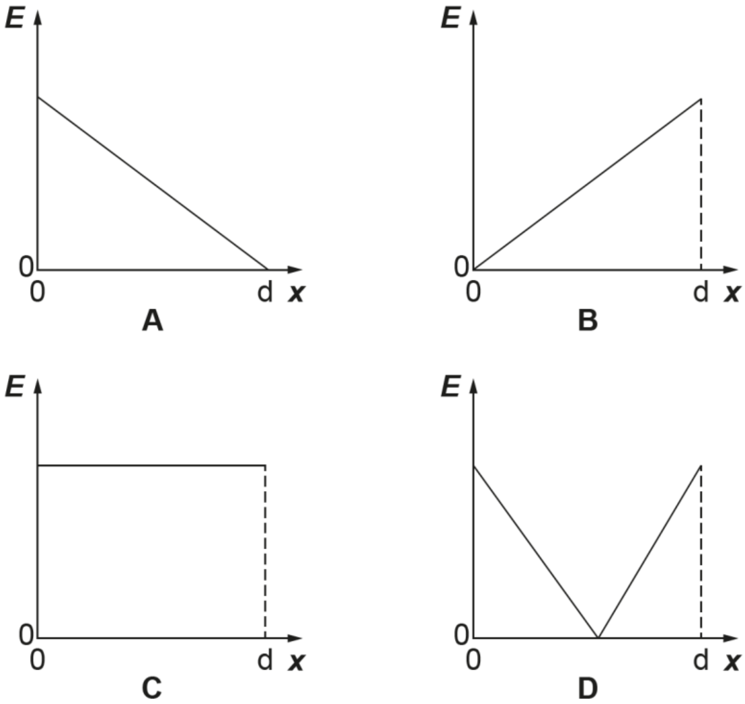
Candidates who could identify the correct response, C, quickly from their knowledge of data terminology saved valuable time for more challenging questions where they would need to evaluate and eliminate each statement.

Question 6

6 Two parallel conducting plates **P** and **Q** have a p.d. V between them. They are separated by distance d.



Which graph shows the variation of electric field strength *E* with distance *x* from plate **P**?



Your answer ☐ **[1]**

Most candidates could correctly identify that the field strength between the conducting plates is constant (answer C), however some appeared to confuse the concept with electric potential, incorrectly selecting A as their response.

Misconception

Candidates need to understand the difference between the key terms field strength, potential and potential difference.

Question 7

7 Here are some data for an ideal transformer:

number of turns on primary coil = 200

number of turns on secondary coil = 400

primary voltage = 18.0 V

output power = 12.0 W

What is the best estimate of the current in the secondary coil?

A 0.33 A

B 0.67 A

C 3.0 A

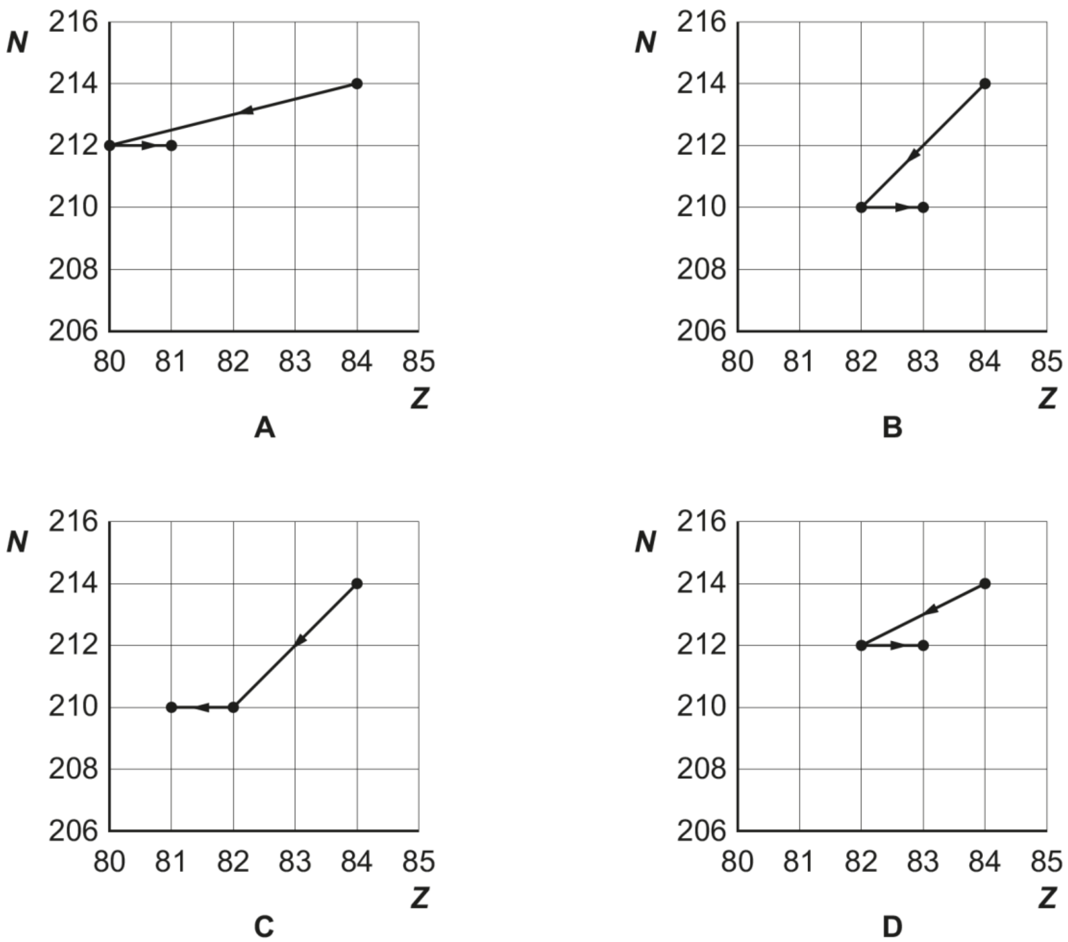
D 9.0 A

Your answer [ ] **[1]**

Candidates performed well on this question. Some candidates appeared unfamiliar with transformer equations. Those that were, and showed any working, substituted the given values into the relationship $V_s I_s / V_p I_p = N_s / N_p$, recognising that $V_s I_s$ is the output power, in order to evaluate the secondary current as 0.33 A.

Question 9

9 A nucleus decays by alpha emission. The nucleus formed then decays by beta emission. Which graph of nucleon number *N* plotted against proton number *Z* shows the two decays?



Your answer ☐ **[1]**

Successful candidates identified that the nucleon number reduces by four in the first (alpha) decay leading to a choice of responses B or C. Those that correctly selected B recognised that the proton number increases by one in the second (beta) decay as a result of a neutron transforming into a proton.

Question 10

10 The unit of capacitance is the farad F.

1 F is the same as:

A $1\,\mathrm{A\,s\,\Omega^{-1}}$

B $1\,\mathrm{V\,A^{-1}}$

C $1\,\mathrm{V\,C^{-1}}$

D $1\,\mathrm{\Omega^{-1}\,s}$

Your answer ☐ **[1]**

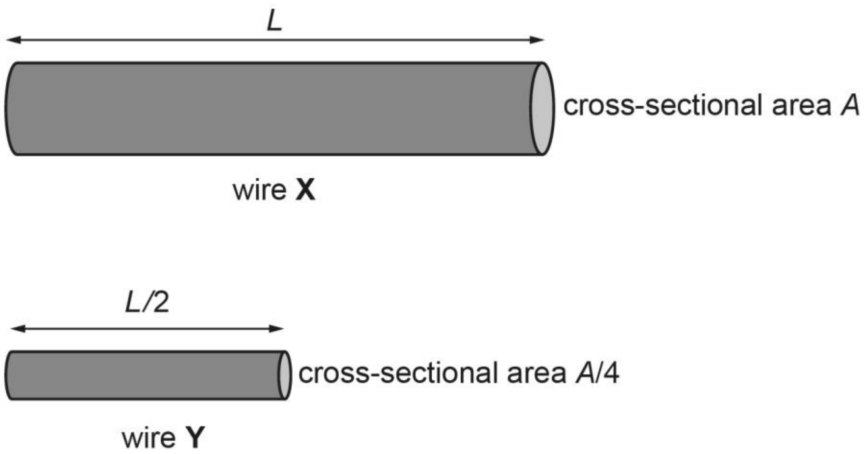
Many candidates' rough working showed that they combined the formulae $C = QV$ and $Q = It$ leading to $C = t/R$ which helped them to identify D as the correct response.

Question 14

14 Two wires **X** and **Y** are compared.

Wire **X** has resistivity ρ, length L and cross-sectional area A.

Wire **Y** has resistivity $\rho/2$, length $L/2$ and cross-sectional area $A/4$.



The resistance of wire **X** is 3.0 Ω.

What is the resistance of wire **Y**?

A 1.5 Ω

B 3.0 Ω

C 4.5 Ω

D 6.0 Ω

Your answer ☐ **[1]**

Successful candidates often adopted a process of logical reasoning to arrive at the correct answer, B. In doing so they showed that halving both resistivity and the length of wire X would lead to a reduction by a factor of four, but this was "balanced" by the increase of factor four as a result of the change to the cross-sectional area.

Question 17

17 A cable supports a lift of mass 900 kg.

At t = 0 s the lift is stationary. At t = 0.5 s the lift starts accelerating upwards at 2.0 ms^{-2} until t = 1.5 s when it maintains a constant vertical velocity for a further 2.0 s.

How does the tension in the cable change in this time?

A

Time / s	0.0	1.0	2.0	3.0
Tension / N	0	1800	1800	1800

B

Time / s	0.0	1.0	2.0	3.0
Tension / N	8820	10620	10620	10620

C

Time / s	0.0	1.0	2.0	3.0
Tension / N	8820	10620	8820	8820

D

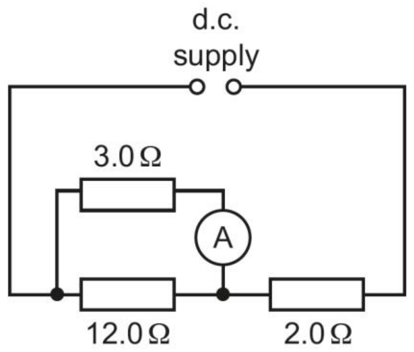
Time / s	0.0	1.0	2.0	3.0
Tension / N	10620	10620	10620	1800

Your answer ☐ **[1]**

Candidates who selected the correct response, C, used $T = mg$ to identify the cable tension for the stationary lift, and recognised that this is also the tension when the lift is moving at constant velocity after 1.5 seconds.

Question 22

22 A d.c. power supply is connected to a resistor combination as shown. The ammeter reads 2.0A. The p.d. across the 3.0 Ω resistor is 6.0 V.



What is the e.m.f. of the d.c. power supply?

Ignore the internal resistance of the power supply.

A 6.0 V

B 10.0 V

C 11.0 V

D 12.0 V

Your answer [ ] **[1]**

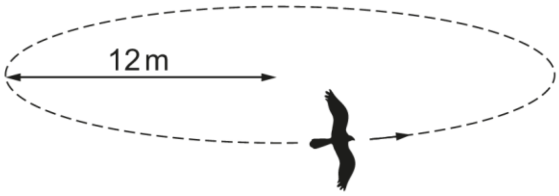
This question could be successfully completed by firstly working out the current through the 12 Ω resistor as 0.5 A and hence the total current as 2.5 A. It follows that the p.d. across the 2 Ω resistor is 5 V, giving a total p.d. of 11 V across the resistor combination. Candidates who read the question carefully recognised that this 11 V also represents the e.m.f. of the cell as they were instructed to "ignore the internal resistance of the power supply". Those that did not recognise or understand the implication of that instruction struggled with attempts to apply the $V = E - Ir_{internal}$ formula.

Question 26

26 A hawk glides in a horizontal circle of radius 12 m.

The speed of the hawk is 8.9 m s^{-1}.

What is the ratio $\dfrac{\text{weight of hawk}}{\text{centripetal force on hawk}}$?



A 1.0

B 1.5

C 2.0

D 2.5

Your answer ☐ **[1]**

In this question, candidates needed to recognise that they could not calculate either the weight of the hawk or the centripetal force acting on it as they were not given its mass. Instead they needed to manipulate the formulae for both (W=mg and F=mv^2/r), leading to the ratio that could be calculated as gr / v^2

Assessment for learning

Successful candidates can quickly recognise that, in questions such as this, they need to manipulate equations algebraically to eliminate unknown variables.

Section B overview

This section included five structured short answer questions worth a total of 21 marks.

Question 31 (a)

31 **(a)** Electromagnetic waves can be polarised.

State the difference between a polarised and an unpolarised wave.

....

.... **[1]**

Most candidates were able to explain that polarised waves only have one plane of oscillation. Only the least successful candidates gave vague answers or answers that implied the wave only travels in one direction.

Question 31 (b)

(b) It is suggested that visible light is partially polarised when it is reflected.

Describe how you can use a polarising filter to determine if this suggestion is correct.

....

....

....

.... **[2]**

The majority of candidates could explain the idea of rotating a polarising filter, with most explaining that the intensity of light will vary as the filter rotates.

Question 32 (a) (i), (ii) and (b)

32 A webcam is used to stream a lesson to students at home.

(a) The webcam has a sensor of 1280 × 720 pixels. Each pixel uses 24 bits to code light intensity.

(i) Calculate the number of bits in a single image uploaded from the webcam.

number = ... bits **[1]**

(ii) The number of bits per image is reduced by a process called compression.

The camera captures 30 images each second. A recording of a 40-minute lesson is uploaded from the webcam to a computer and stored. The stored file uses 0.74 Gbytes of memory.

Show that this suggests an average file size of about 82 kbits for each image.

[1]

(b) A second camera has a greater number of pixels. The teacher decides **not** to use this camera for streaming lessons.

Suggest **two** reasons for this decision.

1 ....

....

2 ....

....
[2]

Almost all candidates could successfully calculate the number of bits in a single image in part (i) and the average file size as 82.2 kbits for part (ii). Many candidates did not fully appreciate that the webcam is being used to stream live lessons – this led them to make suggestions in (b) that were not given credit since they referred to the space required to store the file on the teacher's computer.

Assessment for learning

Candidates should be aware that questions such as Question 32 (a) (ii) which tell them to "show that" require them to evaluate and state their own answer, not just substitute values into formulae and then approximate to the value given in the question.

Question 33 (a), (b) and (c)

33 An electron is accelerated from rest through a potential difference of 5000 V.

(a) Calculate the velocity of the accelerated electron, ignoring relativistic effects.

electron mass = 9.1×10^{-31} kg

velocity = ... $\mathrm{m\,s^{-1}}$ **[2]**

(b) A much greater potential difference is used to accelerate electrons which reach a relativistic factor γ of 1.7.

Calculate the accelerating potential difference.

rest energy of electron = 8.2×10^{-14} J

potential difference = ... V **[2]**

(c) Suggest why particles are accelerated to very high energies in nuclear scattering experiments.

....

.... **[1]**

Most candidates correctly calculated the velocity of the electron in part (a). Part (b) provided good discrimination with few candidates recognising that the relativistic factor is the ratio of total energy/rest energy, instead trying without success to manipulate the formula given on the data sheet in terms of the velocity and speed of light. In part (c) candidates often gave responses that were not relevant to scattering experiments, for example explaining that high energies are required to "smash" nuclei apart.

Section C overview

This section consisted of six questions worth 59 marks in total.

Question 36 (a), (b) (i) and (b) (ii)

36 This question is about the gravitational field between the Earth and the Moon.

(a) Show that the gravitational **potential** at the surface of the Moon is about -2.9×10^6 J kg^{-1}.

Ignore the effects of other masses in the Solar System.

mass of moon = 7.3×10^{22} kg
radius of moon = 1.7×10^6 m

[1]

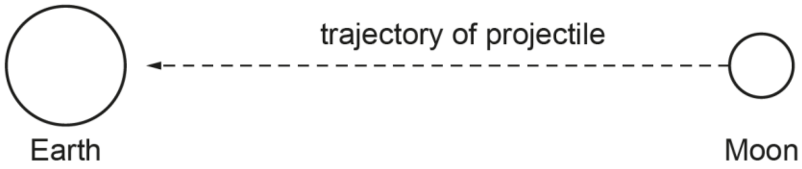
(b) **(i)** Show that the initial velocity needed for a projectile to leave the surface of the Moon and reach an infinite distance away is about 2.4×10^3 m s^{-1}.

Ignore the effects of other masses in the Solar System.

[2]

(ii) Explain why the initial velocity needed for a projectile to be sent from the Moon's surface to the Earth as shown in **Fig. 36.1** is less than the value given in **b(i)**.

Fig. 36.1



Not to scale

....

....

....

....

.... **[2]**

In part (a) most candidates correctly evaluated the gravitational potential as -2.86×10^6 J kg^{-1}. Only a very small number of candidates neglected to give the negative sign which was required to gain credit. The majority of candidates could answer part (b) (i) correctly but of those who did not, few gained any marks for substituting values into the formula as their working was often confused and unclear. In part (b) (ii) candidates' responses tended to lack structure with most gaining one mark for identifying that the gravitational attraction between the Earth and the projectile accelerates the projectile towards Earth.

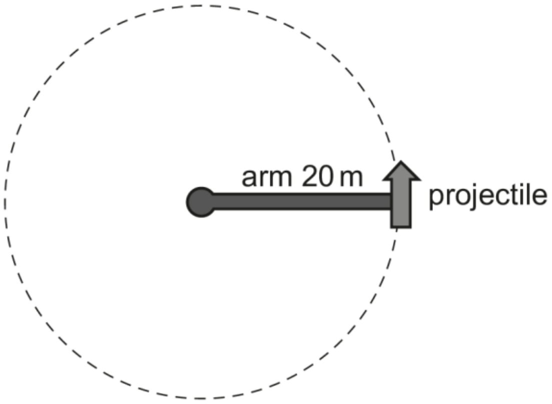
Assessment for learning

Candidates should be encouraged to show their working for calculations so that examiners can give credit identified in the mark scheme for work that leads towards the final answer even if there is a mistake in the final evaluation.

Question 36 (c)*

(c)* It is suggested that projectiles can be launched from the Moon to the Earth by spinning an arm at great speed. The projectile is attached to the end of the arm and released when at the necessary speed of 1900 m s^{-1}. **Fig. 36.2** represents this system. The length of the arm is 20 m.

Fig. 36.2



Calculate the number of rotations per second when the speed of the projectile is 1900 m s^{-1}.

Suggest and explain **two** changes to the system that would reduce the stress on the cross-section of the arm when the speed of the projectile is 1900 m s^{-1}.

Explain which change you think is the better method of reducing the stress on the arm.

The mass of the projectile cannot be changed.

....

....

....

....

....

.... **[6]**

Exemplar 1

- $F = \frac{mv^2}{r}$ $a = \frac{v^2}{r}$

- Circumference of circle = 40π
- time taken for 1 rotation = $\frac{40\pi}{1900}$ = 0.0661 seconds

- frequency = $\frac{1}{\text{time period}}$ = 15.1 rotations per second

- increasing the cross sectional area of the arm would decrease stress as stress = force / crosssectional area and force is constant

as $f = \frac{mv^2}{r}$

~~reducing~~
∴ increasing ~~m~~ radius would decrease stress as it [6]

Additional answer space if required:

would reduce F ($F = \frac{mv^2}{r}$) for a constant speed (velocity)
- Therefore this would reduce stress as stress = $\frac{\text{force}}{\text{crosssectional area}}$

- ~~reduce increasing crossectional radius would be most effective as it's effect is doubled~~

~~as F = mv~~

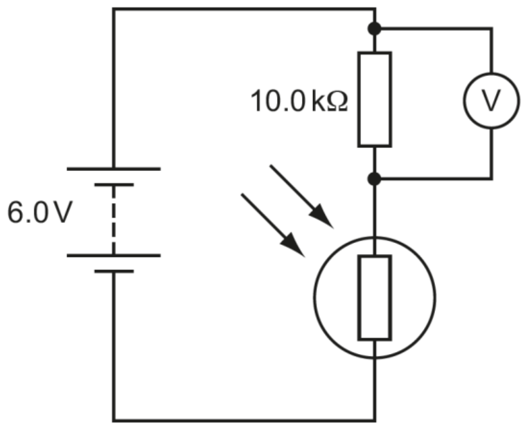
This question expected candidates to calculate the number of rotations per second of the projectile, then identify two changes that would reduce the stress on the arm and explain which change they think is the better method.

Exemplar 1 has a clear and correct calculation for the number of rotations per second; the candidate has also identified two methods for reducing the stress – increasing the cross-sectional area or the radius (i.e. length) of the arm. The response is typical in that both methods are explained through the use of supporting formulae. The candidate has not identified which they believe to be the better method so the response is limited to Level 2 and was given 4 marks. Had the candidate included a comparison, for example "increasing cross-sectional area would be preferred as having a longer arm would make the machine too big", then the response would be sufficient to be given Level 3.

Question 37 (a) (i) and (ii)

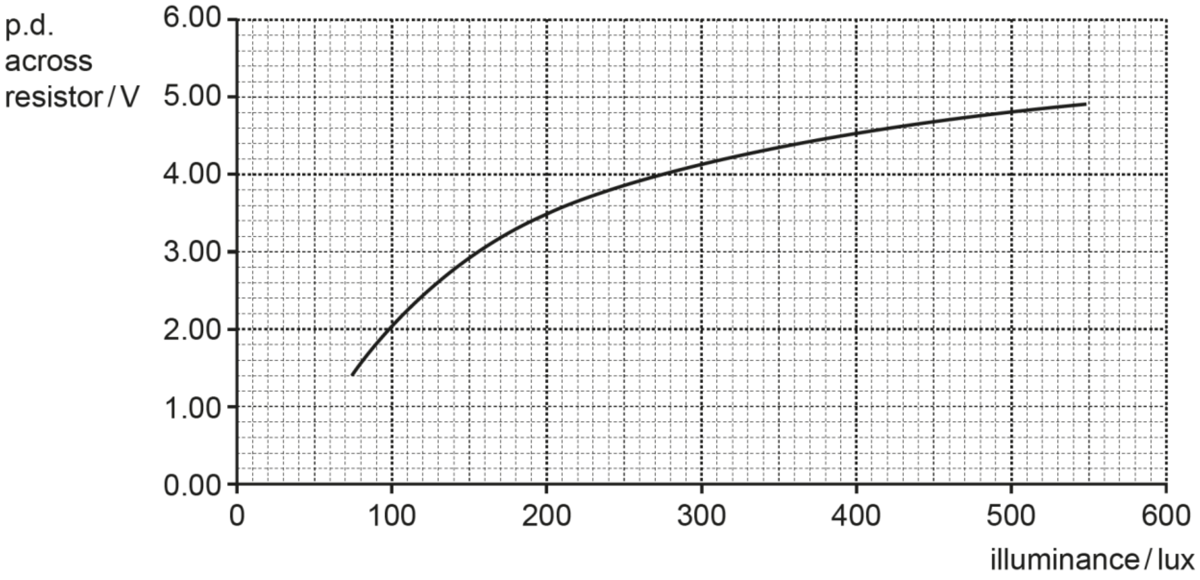
37 A student constructs a light sensor circuit as shown in **Fig. 37.1**.

Fig. 37.1



The student records the p.d. across the fixed resistor as the brightness of the light incident on the LDR is measured with a lux meter. This measure of brightness is called illuminance. A graph of the data is shown in **Fig. 37.2**.

Fig. 37.2



(a) (i) Use data from the circuit diagram and the graph to show that the resistance of the LDR is about 7 kΩ when the illuminance of the light is 200 lux.

[2]

(ii) Use **Fig. 37.2** to determine the sensitivity of the sensor at an illuminance of 200 lux.

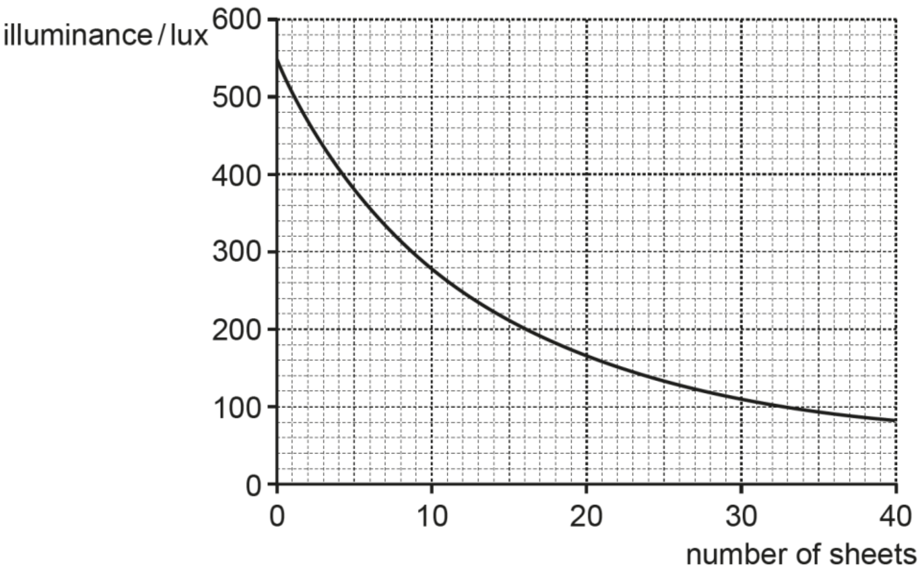
sensitivity = ... V / lux **[2]**

Candidates found reading a value of p.d. from the graph and the subsequent calculation of LDR resistance in part a(i) straightforward. In a(ii) some candidates made the mistake of using a single point at 200 lux from the graph, rather than evaluating the gradient of the tangent.

Question 37 (a) (iii)

(iii) The student places transparent sheets between the light source and the lux meter. The graph in **Fig. 37.3** shows how the illuminance detected varies with the number of sheets.

Fig. 37.3



Use data from **Fig. 37.3** to test the suggestion that the illuminance falls exponentially as the number of sheets increases.

[3]

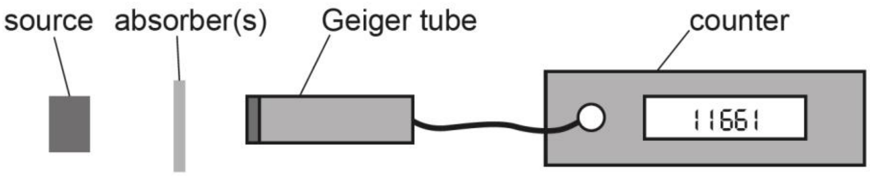
This question was answered well by only the most successful candidate who were clear about what they were calculating and how they would test for exponentiality. Most candidates read some values from the graph and attempted calculations to show a constant half-life – this is an acceptable alternative to showing a constant ratio property – but they were not clear about the process or the values obtained.

Question 37 (b) (i)

(b) As gamma rays pass through a dense material such as lead, the intensity of the beam I varies exponentially as described by the equation $I = I_0 e^{-\mu x}$ where I_0 is the original intensity, x the thickness of the absorbing material and μ is a constant called the absorption coefficient.

Fig. 37.4 represents the apparatus used to determine the absorption coefficient of lead.

Fig. 37.4



(i) Describe how this apparatus can be used to gather data to determine the absorption coefficient of the absorbing material.

....

....

....

....

.... **[3]**

This part-question provided good discrimination; candidates were not often clear about the steps required although many were able to correctly identify the graph that needs to be drawn to determine the absorption coefficient. Many less-successful candidates were not clear that the thickness of each absorber needs to be measured, or that the apparatus shown can only measure count, not count rate. Candidates also used the term "intensity" without being clear how it is determined from the simple counter given in the experimental setup.

Misconception

Candidates should make sure that they know the difference between count and count rate.

Question 37 (b) (ii)

(ii) The intensity of a gamma-ray beam is reduced to 15% of its original value after passing through 3.2 cm of lead.

Calculate the absorption coefficient of the lead.

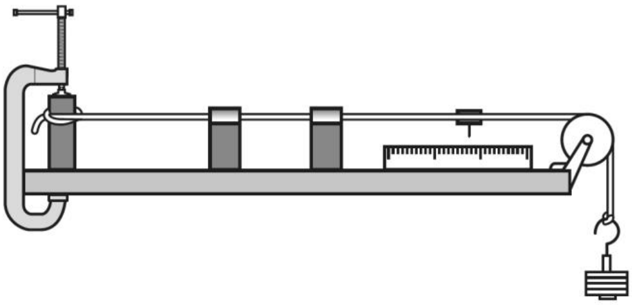
absorption coefficient = ... cm^{-1} **[2]**

A common error for this question was to quote the absorption coefficient as 59 cm^{-1} not 0.59 cm^{-1}.

Question 38 (a)*

38 (a)* **Fig. 38.1** shows equipment used to determine the Young Modulus of a wire.

Fig. 38.1



Describe how the equipment can be used to determine the Young Modulus. Describe how the data collected is used to find the value of the Young Modulus. State **two** sources of experimental uncertainty and how these can be estimated. Explain how the uncertainty in the value for the Young Modulus can be estimated.

....

....

....

....

....

.... **[6]**

Candidates were given an experimental set up and asked to explain how it could be used to determine the Young Modulus. They were expected to cover three aspects in their response: the procedure itself, an identification of sources of uncertainty, and an explanation of how the uncertainty in the value of Young Modulus can be estimated.

Exemplar 2

- Young Modulus is the stifness of a material
- Y.M = Stress ÷ strain
- Stress = Tension ÷ cross sectional area
 Tension can be calculated by multiplying mass of the "weights" by the gravity. Cross sectional area can be calculated by measuring the diameter of the wire, and
- ~~To reduce~~ using the equation πr^2
- ~~Uncert~~ To reduce uncertanity you should mesure the diameter using a ruler with low % uncertanity. Like the vernier ruler.
- ~~Stress~~ = Strain = extension ÷ original length
- You'll mesure the wire before the experiment
- During the experiment you should mesure the extension ~~at different~~ ~~with different weights~~ by checking how much a marked point in the wire has shifted. [6]

Additional answer space if required:

- ~~To reduce uncertanit~~ ~~A ...~~ To reduce uncertanity you should do the experiment with different masses.

and plot the ~~exten~~ stress and strain ~~for differ~~ in
a graph. ~~X~~ If the experiment is correct you should
attain a graph with a straight line ~~x~~ (gradient)
which is the YM
Another source of uncertainty ~~a~~ could be the wire plastically
deforming. Uncertainty for Y.M can be determined by adding all
the % uncertainties

Exemplar 2 is a typical response of those candidates who were able to give an overview of the procedure including some formulae that they would use along with a statement of the graph that would be plotted. There is also some mention of sources of uncertainty – and adding percentage errors - but uncertainty is confused with sources of experimental errors/difficulties (e.g. the wire deforming plastically). While the response is superficial, it is communicated in a clear enough manner to be given the full 2 marks for a Level 1 response.

Exemplar 3

- Measure the original length of the wire
- ~~at a set amount~~ add weight in set increments to the hook on the end of the pulley
- at each weight increment record (in a table) extension (from starting point) against force (mg), in meters and Newtons respectively
- record the extension to the nearest 1×10^{-3} m
- do this for 5 or more increments
- before applying weight the diameter of wire should be measured using micrometers. Measure at 5 different points ~~at~~ along the wire and calculate a mean and uncertainty (spread of values
- use this value of diameter to find crosssectional area (πr^2) or ($\pi(\frac{d}{2})^2$)
- Then a table can be made of Stress (~~tension~~ $\frac{force}{crosssectionalarea}$) against strain **[6]**

Additional answer space if required:

(~~extension / original length~~) ($\frac{extension}{original\ length}$)

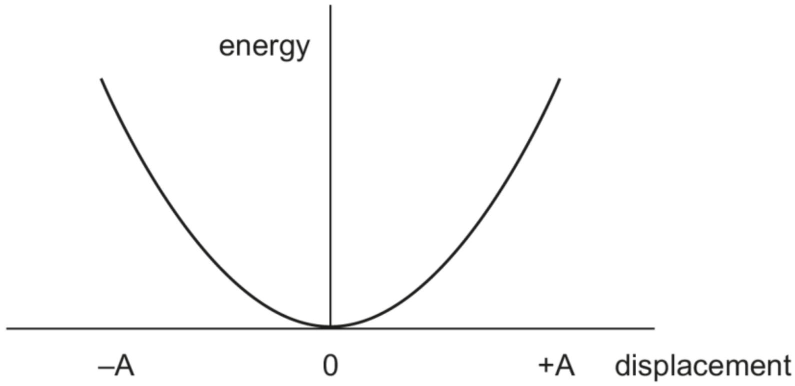
38. a)* - then plot a graph of stress on the y-axis and strain on the x axis with a straight line of best fit
- The gradient of this graph is youngs modulus
- uncertanty comes from both the measurement of extension and the measurment of diameter with the gratest uncertainty in extension.
- uncertainty in extension is likely ± 1mm as this is the resolution of the ruler used
- these uncertainties can be used to plot error bars
- use these error bars to draw lines of worst fit and use their gradients to find uncertainty in youngs modulus

In contrast to this, Exemplar 3 is a typical response of the more successful candidates who gave a good description of the procedure – often using technical terms such as "fiducial marker" – and how to process the results in graphical form to determine the Young Modulus. The level of response given tended to be restricted by the candidate's approach to identifying and estimating uncertainty – strong responses included a description of how to calculate and then add percentage errors to determine the overall absolute uncertainty or drawing error bars on the graph and calculating maximum and minimum gradients. This exemplar was given Level 3 and the full 6 marks, with the bullet-point style aiding the logical structure.

Question 40 (a)

40 **Fig. 40.1** shows how the potential energy of a mass-on-a-spring oscillator varies with distance from the equilibrium point (zero displacement) to the amplitude A.

Fig. 40.1



(a) Draw a curve on **Fig. 40.1** showing the kinetic energy of the oscillator.

Label this curve 'kinetic energy'. **[1]**

Almost all candidates could correctly draw the curve showing the kinetic energy of the oscillator. Some, however, drew curves that were not sufficiently clear – peaking too high or too low, for example.

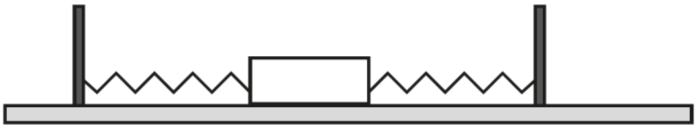
Missing part-questions where candidates are required to add to a graph

This question, which did not take long to attempt, was sometimes omitted - candidates should take care to make sure they do not rush and inadvertently miss questions that require them to add lines or points to a graph.

Question 40 (b)

(b) A mass oscillates between two springs as shown in **Fig. 40.2**.

Fig. 40.2



It is released from its maximum displacement of 0.050 m at t = 0.0 s. The frequency of the oscillation is 0.80 Hz.

The velocity v of a simple harmonic oscillator is given by the equation:
$v = \pm 2\pi f\sqrt{A^2 - x^2}$ where A is the amplitude of oscillation and x the displacement.

Calculate the velocity of the oscillator at t = 0.25 s.

velocity = ... m s^{-1} **[3]**

Candidates' working was often unclear in response to this question. Common mistakes were to inadvertently use their calculator in degrees mode, or to try to substitute values directly into the given formula for v without first calculating x from $x = A\cos(\omega t)$ which is given in the formula booklet.

Assessment for learning

Candidates should be aware of how to change their calculator settings to work in degrees or radians.

Question 40 (c) (i)

(c) The hydrogen chloride molecule can be modelled as a mass-on-a-spring oscillator. The chlorine ion remains stationary as the much less massive hydrogen ion oscillates (**Fig. 40.3**).

Fig. 40.3

(not to scale)

The spring constant k of the system is $520\,N\,m^{-1}$. The mass of the hydrogen ion is 1.7×10^{-27} kg.

(i) Calculate the frequency of the oscillation of the molecule.

f = ... Hz **[2]**

This question was successfully answered by those candidates who did not confuse frequency and time-period of the oscillator.

Question 40 (c) (ii)

(ii) The hydrogen chloride molecule only absorbs and emits photons of specific frequencies.

Suggest and explain what this shows about the possible amplitudes of oscillation of the molecule.

[3]

Candidates who successfully responded to this question were clear that the photons have specific energies and linked this to the idea that the oscillator and/or molecule can only have specific values. Candidates did not gain credit for explanations in terms of specific frequencies as this is stated in the question itself. Credit was not given for explanations that lacked clarity – for example "a certain range of energies" is not the same as "specific energies"

Assessment for learning

Candidates should take care to make sure their choice of language is not ambiguous as this leads to a lack of clarity in their responses.

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