National 5
Coursework
Assessment Task

National 5 Physics
Assignment
Assessment task

Valid from session 2020–21 and until further notice.

This edition: June 2020 (version 4.0)

Contents

Introduction

This document contains instructions for teachers and lecturers, marking instructions and instructions for candidates for the National 5 Physics assignment. It must be read in conjunction with the course specification.

This assignment is worth 20 marks (scaled to 25). The marks contribute 20% of the overall marks for the course assessment.

This is one of two course assessment components. The other component is a question paper.

Instructions for teachers and lecturers

General information

This information applies to the assignment for National 5 Physics.

The purpose of the assignment is to assess the application of skills of scientific inquiry and related physics knowledge and understanding.

The assignment gives candidates an opportunity to demonstrate the following skills, knowledge and understanding:

- applying knowledge of physics to new situations, interpreting information and solving problems
- planning, designing and safely carrying out experiments/practical investigations to test given hypotheses or to illustrate particular effects
- selecting information from a variety of sources
- presenting information appropriately in a variety of forms
- processing the information (using calculations and units, where appropriate)
- making predictions based on evidence/information
- drawing valid conclusions and giving explanations supported by evidence/justification
- suggesting improvements to experiments/practical investigations
- communicating findings/information

The assignment offers challenge by requiring skills, knowledge and understanding to be applied in a context that is one or more of the following:

- unfamiliar
- familiar but investigated in greater depth
- integrates a number of familiar contexts

Candidates research and report on a topic that allows them to apply skills and knowledge in physics at a level appropriate to National 5.

The topic must be chosen with guidance from teachers or lecturers and must involve experimental work.

The assignment has two stages:

- research
- report

The research stage must involve an experiment that allows measurements to be made. Candidates must also gather data from the internet, books and/or journals to compare against their experimental results. The candidate's research may also involve gathering extracts from internet/literature sources to support their descriptions and/or explanations of the underlying physics.

Candidates must produce a report on their research.

Assessment should take place when candidates are ready to be assessed. It is not advisable to undertake the assignment too early, as it is important that candidates are adequately prepared in the skills needed to undertake all parts of the assignment.

Conditions of assessment

Setting, conducting and marking the assignment

Setting
The assignment is:

- set by centres within SQA guidelines
- set at a time appropriate to the candidate's needs
- set within teaching and learning and includes experimental work at a level appropriate to National 5

Conducting
The assignment is:

- an individually produced piece of work from each candidate
- started at an appropriate point in the course
- conducted under controlled conditions

Marking
The report is submitted to SQA for external marking.

All marking is quality assured by SQA.

Controlled assessment conditions
Controlled assessment is designed to:

- ensure that all candidates spend approximately the same amount of time on their assignments
- prevent third parties from providing inappropriate levels of guidance and input
- mitigate concerns about plagiarism and improve the reliability and validity of SQA awards

- allow centres a reasonable degree of freedom and control
- allow candidates to produce an original piece of work

There are two levels of control.

Under a high degree of supervision and control	Under some supervision and control
♦ the use of resources is tightly prescribed ♦ all candidates are within direct sight of the supervisor throughout the session(s) ♦ display materials that might provide assistance are removed or covered ♦ there is no access to e-mail, the internet or mobile phones ♦ candidates complete their work independently ♦ interaction with other candidates does not occur ♦ no assistance of any description is provided	♦ candidates do not need to be directly supervised at all times ♦ the use of resources, including the internet, is not tightly prescribed ♦ the work an individual candidate submits for assessment is their own ♦ teachers and lecturers can provide reasonable assistance

The assignment has two stages.

Stage	Level of control
♦ research	conducted under some supervision and control
♦ report	conducted under a high degree of supervision and control

Instructions

Teachers and lecturers must exercise their professional responsibility to ensure that the report submitted is the candidate's own work.

It is recommended that no more than 8 hours is spent on the **whole** assignment.

A maximum of 1 hour and 30 minutes is allowed for the report stage.

Teachers and/or lecturers must ensure candidates understand the requirements of the task. The instructions for candidates outline the requirements for the assignment and teachers and/or lecturers must give these to candidates at the outset. These must not be altered or supplemented by centre-devised materials.

It is not permitted **at any stage** to provide candidates with a template or model answers.

Research stage

The research stage is conducted under some supervision and control. See conditions of assessment section.

Choosing the topic

The teacher and/or lecturer must ensure that a **range** of topics is available for candidates to choose from.

At the start of the research stage, the teacher or lecturer must agree the choice of topic with the candidate to ensure that it:

- is commensurate with National 5 Physics
- has associated experimental work that can generate numerical data
- will allow candidates the opportunity to access all of the available marks

Teachers and/or lecturers must minimise the number of candidates investigating the same topic within a class.

A range of topics chosen for investigation will create the climate in which candidates can produce original work within the conditions for assessment.

Once the topic has been agreed, the candidate must formulate an aim.

Formulating the aim

The teacher or lecturer must provide advice on the suitability of the candidate's aim, taking into account the factors below:

- health and safety considerations
- availability of resources
- availability of literature/internet data

Any advice on the suitability of an aim is only to ensure that it is achievable, taking into account the factors identified above.

Teachers and lecturers are **not** permitted to provide an aim.

After the candidate has formulated an aim, they can progress through the research stage.

The order in which the research is carried out need not be the order outlined below.

Experimental research
Teachers and lecturers can supply instructions for the experimental procedure. This must **only** be a basic list of instructions. These instructions must not include the range and interval of measurements, and reference to repeats; candidates must decide on these for themselves. Where there is a safety issue, a maximum value for the range can be provided.

It is the responsibility of teachers and lecturers to ensure that appropriate risk assessment has been carried out and to provide guidance on the safe and correct use of equipment.

Teachers and lecturers must not provide candidates with a set of experimental data.

Teachers and lecturers must not provide candidates with a blank or pre-populated table for experimental results.

The experimental work must be carried out either individually or as part of a small group (a small group is defined as having two, three or four candidates).

Group work may be an appropriate approach in a number of circumstances, for example:

- to encourage diversity of research topic
- where experiments are labour- or time-intensive
- where resources are limited

Where group work is undertaken, teachers and lecturers must ensure every candidate participates in the experimental work. Within the small group, it is acceptable for candidates to share experimental data but experimental data must not be shared between groups. Where candidates in a small group have the same raw data, any calculations and analysis must be done individually.

A teacher or lecturer must not provide feedback to candidates on their data. However, where **candidates** identify a problem with their results and indicate that they wish to repeat the experimental work, candidates may do so.

Internet/literature research
The internet/literature research must be the work of the individual candidate; candidates cannot work in a group to carry out this research.

Candidates may carry out research to find comparative data and information on underlying physics outwith the direct supervision of teachers or lecturers.

Candidates must undertake research using **only** websites, journals and/or books, to find comparative data.

Candidates must not have access to lists of potential sources of comparative data or underlying physics. Candidates must not be directed to specific websites, journals or textbooks. Candidates must not be provided with whole articles or extracts from websites, journals or textbooks, selected by a third party.

Candidates must find internet/literature data to compare against their experimental data and record the reference to the source.

This can be data that:

- matches the sample range used
- is not an exact match for the sample range used
- is generic and illustrates a trend or pattern expected in the experimental data

Teachers and lecturers must not provide candidates with a set of experimental data to compare with the candidates' own data.

Teachers and lecturers must not provide feedback to candidates on their research.

Report stage

The report stage is conducted under a high degree of supervision and control. See 'conditions of assessment' section.

Candidates must be given a maximum of 1 hour and 30 minutes to produce the report.

- This can be a continuous period of time or split over a number of successive subject lessons.
- It is the responsibility of the centre to ensure candidates are given no more than the maximum time.
- If the report is produced over a number of successive lessons, then the teacher or lecturer must retain candidates' work and store it securely between lessons to ensure that candidates do not add any additional materials to those they had at the start of the report stage. Teachers and

lecturers must not provide any additional teaching or coaching in relation to the assignments between reporting sessions.

Reports can be word-processed and graphs may be produced using appropriate software packages, provided that the assessment conditions are met.

The teacher or lecturer must check that the materials (in any format) to be used by each and every candidate in the report stage fit the criteria below.

The only materials that **can** be used in the report stage are:

- the instructions for candidates, which must not have been altered
- the experimental method, if appropriate
- the candidate's raw experimental data, which may be tabulated, but must not have additional blank or pre-populated columns for mean and derived values
- numerical and/or graphical data from an internet/literature source, which must not include sample calculations
- a record of the source of data from the internet/literature
- extracts from internet/literature sources to support the description of the underlying physics, which must not include sample calculations

An extract must be:

- chosen by the candidate — they must select what information to extract
- verbatim — it must be a direct copy, which can be a printout, photocopy or handwritten (and word for word)
- from an internet/literature source — not from centre-devised course material or class notes. Candidate notes of any description are not permitted
- checked by the teacher or lecturer to ensure that it is an extract (unannotated), and not notes or a draft

There is no limit to the size of an extract; however, it must be the extract and not the full document.

Candidates **must not** have access to a previously prepared draft of a report or any part of a report.

In addition, candidates must not have access to the assignment marking instructions during the report stage.

Candidates must not have access to the internet during the report stage.

Teachers and/or lecturers must not provide any form of feedback to candidates on their report.

Following completion of the report stage candidates must not be given the opportunity to redraft their report.

Teachers and/or lecturers must not read the reports before they are submitted to SQA.

Evidence to be gathered
The following candidate evidence is required for this assessment:

- a report

The report is submitted to SQA, within a given time frame, for marking.

The same report cannot be submitted for more than one subject.

Marking instructions

In line with SQA's normal practice, the following marking instructions for the National 5 Physics assignment are addressed to the external marker. They will also be helpful for those preparing candidates for course assessment.

Candidates' evidence is submitted to SQA for external marking.

General marking principles

Always apply these general principles. Use them in conjunction with the detailed marking instructions, which identify the key features required in candidates' responses.

a Always use positive marking. This means candidates accumulate marks for the demonstration of relevant skills, knowledge and understanding; marks are not deducted for errors or omissions.

Read the whole report before assigning any marks.

Credit should be given for appropriate information wherever it is given in the report.

Section	Max mark	Expected response and marking instructions
1 Aim (1 mark)		
	1	**An aim that describes clearly the purpose of the investigation.** The word 'aim' is not required but the statement of the aim should be separate from the title. Acceptable versions of an aim could be: ♦ 'to investigate how the resistance of a lamp filament varies with applied voltage' ♦ 'to investigate how the angle of launch of a projectile affects its range' ♦ 'to investigate Boyle's Law' ♦ 'to determine the specific heat capacity of water' Note: 'to investigate filaments' or 'to investigate angles of launch' would **not** be acceptable. 'to investigate **if** the resistance of a filament lamp varies with applied voltage' or 'to investigate **if** the angle of launch of a projectile affects its range' — would also **not** be acceptable.

Section	Max mark	Expected response and marking instructions
2 Underlying physics (3 marks)		
	3	**An account of physics relevant to the aim of the investigation.** This section is marked holistically and is an opportunity to give marks for the 'quality' of underlying physics at a depth appropriate to National 5. Underlying physics may be found anywhere in the assignment report but the marks are awarded in this section. Candidates must demonstrate an understanding of relevant physics and use their own words wherever possible. It is acceptable, however, to include complex diagrams from a literature/internet source. ♦ 3 marks should be awarded for demonstrating a good understanding of relevant physics. The account does not need to be what might be termed 'excellent' or 'complete'. ♦ 2 marks should be awarded for demonstrating a reasonable understanding of relevant physics. ♦ 1 mark should be awarded for demonstrating a limited understanding of relevant physics. ♦ 0 marks should be awarded for demonstrating no understanding of relevant physics. Credit should only be given for underlying physics not general information, eg historical or socio-economic.

Section	Max mark	Expected response and marking instructions
3 Data collection and handling (6 marks)		
3(a)	**1**	**A brief description of the approach used to collect experimental data.** The description need only include sufficient detail for a marker to be able to visualise the nature of the experiment. Details, such as the range of the independent variable and the number of repeats, do not need to be included in the description. A diagram on its own is insufficient to gain this mark. Where the candidate has not demonstrated the ability to summarise the method, for example if only a full procedure is provided, the mark should not be awarded. Acceptable descriptions of an experimental approach would include: ♦ 'The resistance of the filament of a lamp was determined using measurements of current and voltage for different applied voltages.' ♦ 'A ball was launched at different angles and the range of the ball measured for each angle.'

Section	Max mark	Expected response and marking instructions
3(b)	**1**	**Sufficient raw data from the candidate's experiment.** Where appropriate, repeated measurements must be included. The number and range of values must be appropriate to the aim. While a minimum of three values will be appropriate in some investigations, the number will depend on the aim of the investigation. For example: ♦ Where the aim was to establish a quantitative relationship between variables, at least five values would be required. ♦ Where the aim was to show how the variables qualitatively relate to each other, a minimum of three values would be acceptable. Errors in the presentation of the data, such as missing headings or units from tables are not penalised in this section. This mark is awarded for raw, unprocessed data and not for mean or derived values calculated from raw data.

Section	Max mark	Expected response and marking instructions
3(c)	**1**	**Data presented in a correctly produced table.** Experimental data must be tabulated with correct headings and units of measurement. Every column in the table must have a clear heading. Units must be indicated in the heading of the columns or given after every data entry.
3(d)	**1**	**Mean and/or derived values calculated correctly.** Mean and derived values must be based on the candidate's experimental data. If the aim includes a derived variable then this derived variable must be calculated.
3(e)	**1**	**Data relevant to the experiment from an internet/literature source.** This could be data that: ♦ matches the sample range used in the experimental data ♦ is not an exact match for the sample range ♦ is generic and illustrates a trend or pattern expected in the experimental data

<table>
<tr><th>Section</th><th>Max mark</th><th>Expected response and marking instructions</th></tr>
<tr><td>3(f)</td><td>1</td><td>
A reference for the source of the internet/literature data.

A reference to the source of the internet/literature data must be given in sufficient detail to allow it to be retrieved by a third party.

The reference must appear beside the internet/literature data or be cited and referenced later in the report.

<table>
<tr><th>Source</th><th>Reference</th></tr>
<tr><td>website</td><td>full URL for the page or pages,
ie the URL ‘www.bbc.co.uk’ is not acceptable, but www.bbc.co.uk/education/subjects/z6fsgk7 is an acceptable reference</td></tr>
<tr><td>journal</td><td>title, author, journal title, volume and page number</td></tr>
<tr><td>book</td><td>title, author, page number and either edition or ISBN</td></tr>
</table>
</td></tr>
</table>

Section	Max mark	Expected response and marking instructions
4 Graphical presentation (4 marks)		
		The candidate's graph must be based on their own experimental data. Computer-generated graphs are marked in the same way as hand-drawn graphs. Graphs should be of a size that allows the scaling and labelling of the axes, and the accuracy of the plotting of the data points, to be readily checked. It may not be possible to check the accuracy of plotting if data points are excessively large, minor gridlines are omitted or graph paper has not been used.
4(a)	**1**	**An appropriate format from the options of scatter graph, line graph or bar graph.**
4(b)	**1**	**The axis/axes of the graph has/have suitable scale(s).**

Section	Max mark	Expected response and marking instructions
4(c)	**1**	**The axes of the graph have suitable labels and units.** Spelling mistakes or the use of abbreviations must not be penalised if the meaning of an axis label can be clearly understood within the context of the investigation.
4(d)	**1**	**Accurately plotted data points and, where appropriate, a line of best fit.** If it is not possible to check the accuracy of plotting, this mark must not be awarded.
5 Analysis (1 mark)		
	1	**A valid comparison of the experimental data with data from the internet/literature source.**

Section	Max mark	Expected response and marking instructions
6 Conclusion (1 mark)		
	1	**A valid conclusion that relates to the aim and is supported by all the data in the report.** If the candidate has stated multiple aims then the conclusion must relate to all of the aims. Where no aim has been stated, this mark cannot be awarded.
7 Evaluation (2 marks)		
	2	**An evaluation of the experimental procedure.** 1 mark should be awarded for identifying a factor that can be expected to have a **significant** effect on the reliability, accuracy or precision of the experiment. 1 mark should be awarded for an explanation of: ♦ what could have been done to minimise the effect of the identified factor or ♦ what was done to minimise the effect of the identified factor or ♦ the evidence supporting the identification of the factor

Section	Max mark	Expected response and marking instructions
8 Structure (2 marks)		
8(a)	**1**	**An informative title.**
8(b)	**1**	**A clear and concise report.** The structure of the report does not need to follow the structure suggested in the marking instructions or instructions for candidates, but should flow in a logical manner.
Total	**20**	

Instructions for candidates

These instructions apply to the assignment for National 5 Physics.

This assignment is worth 20 marks. The marks contribute 20% of the overall marks for the course assessment.

It assesses the following skills, knowledge and understanding:

- applying knowledge of physics to new situations, interpreting information and solving problems
- planning, designing and safely carrying out experiments/practical investigations to test given hypotheses or to illustrate particular effects
- selecting information from a variety of sources
- presenting information appropriately in a variety of forms
- processing the information (using calculations and units, where appropriate)
- making predictions based on evidence/information
- drawing valid conclusions and giving explanations supported by evidence/justification
- suggesting improvements to experiments/practical investigations
- communicating findings/information

Your teacher or lecturer will tell you how the assignment will be carried out and any required conditions for doing it.

In this assignment you have to investigate a topic in physics by doing research.

Your research involves gathering data from an experiment and comparative data from internet/literature sources. In addition, you may gather extracts about the underlying physics from internet/literature sources.

You then produce a report on your investigation.

Your report is not marked at any point by your teacher or lecturer. It is sent to SQA for marking.

Your assignment has two stages:

- research
- report

Research stage

Choosing your topic

- You need to choose a relevant topic in physics to investigate.
- Your topic must be agreed with your teacher or lecturer.

Deciding your aim

- Once you have chosen your topic you need to decide what the aim of your investigation is. Remember that you need to do an experiment **and** find data to compare with your experimental results.
- Your teacher or lecturer will provide advice on the suitability of your aim in terms of safety and availability of resources. They will not assess your aim.

Experimental research

- When choosing your experiment, remember it must allow measurements to be taken.
- When carrying out your experiment, you must either work on your own or as part of a small group. If you are working as part of a small group, you must take an active part.
- Make sure you take a sufficient number of measurements over a wide enough range to meet the aim of your investigation.
- You must repeat measurements.
- Your raw experimental data may be tabulated. However tables must not have additional blank or pre-populated columns for mean and derived values.
- You will use your raw experimental data during the report stage.

Internet/literature research

You must carry out your own internet/literature research.

- You need to find data from the internet, books and/or journals that you can compare to your experimental data. This could be a table or a graph, or information from diagrams or text. This does not need to exactly match your experimental data, but could illustrate the trend or pattern expected.
- It is important that you record where you get your data from in enough detail that another person could find it. This is known as a reference.
- In your report you need to describe the physics relevant to your aim. You can gather extracts from the internet, books and/or journals to help you write your account of the underlying physics. Extracts must be from an internet/literature source — not from centre-devised material or class notes. An extract must be a direct copy, which can be a printout, photocopy or handwritten (word for word) and must not be annotated. There is no size limit on an extract, but it must be an extract and not the full document.
- Your extracts can include any formulae or relationships you may need but must not include sample calculations.
- During the report stage you will need to show your understanding by writing your description of the physics relevant to your aim using your own words.

Report stage

Producing the report

- The report must be all your own work.
- When producing your report, you are supervised by your teacher or lecturer at all times.
- You have 1 hour and 30 minutes to complete your report.

Resources

In the report stage, the only materials you are allowed to have are:	In the report stage, you cannot have
♦ these instructions for candidates ♦ extracts you have gathered from the internet, books and/or journals to help you describe the physics relevant to your aim ♦ the experimental method ♦ your raw experimental data, which may be tabulated ♦ your internet or literature data, including the reference to the source of the data	♦ a draft of your report ♦ a draft of any part of your report ♦ sample calculations from any source ♦ a previously prepared table containing additional blank or pre-populated columns for mean and derived values

Your teacher or lecturer cannot provide you with feedback or tell you how to improve your report.

Guidance on producing your report

Your report must be easy to follow.
You may find that using headings will help to make your report clear.

Title

- Your title must tell the reader what your report is about.

Aim

- Your aim must describe clearly the purpose of your investigation.

Underlying physics

- You must describe the physics relevant to your aim.
- You must use your own words as much as possible.
- You may choose to include:
  - relationships or equations
  - definitions of symbols used
  - explanations or justifications of relationships or equations
  - explanations of physical properties
  - copies of diagrams which you would find difficult to draw
- You can quote from extracts as long as you also give a description or explanation, in your own words, showing that you understand the physics.
- Other than quoting from your extracts, you must not copy directly from them. Copying directly from your extracts would not show that you understand the physics.

Description of experiment

- You must give only a **brief** description of the experiment you carried out.
- You must show that you can summarise your experimental method and must not give a full description.

Experimental data

- You must include a table showing **all** of the measurements you recorded in your experiment.
- Make sure you include column headings. You must also include units, where appropriate.
- You must use the data from your table to carry out calculations.
- If you have repeated measurements, you should calculate average values. These can be included in your table of results.
- If you've used the results from your experiment to determine further values, you should show at least one sample calculation.

Graphical presentation

- You must produce a graph of your experimental results.
- The graph must:
  - be a scatter graph, line graph or a bar graph, whichever is appropriate for your data
  - be large enough to allow points to be read accurately
  - have suitable scales, labels and units on the axes
- You must use graph paper or a computer graphing package.
- If you are using a computer graphing package, you must include both major and minor gridlines, and use plotting symbols that are clear but not too large.
- If you are plotting a scatter graph, a line or curve of best fit should usually be drawn. However, if there is no obvious pattern to your plotted data points, you should not draw a line or curve of best fit.

Data from an internet/literature source

- You must include data obtained from an internet/literature source that you can compare with the data from your experiment.
- You must include a reference to this source of data, which would allow another person to find it. For example:

Source	Reference
website	full URL for the page or pages
journal	title, author, journal title, volume and page number
book	title, author, page number and either edition or ISBN

Analysis

- You must compare your experimental data with the data from your internet/literature source.

Conclusion

- You must state a conclusion that relates to your aim. The conclusion must be based on **all** the data in your report.

Evaluation

- You must identify a factor in your experiment that had a significant effect on the reliability, accuracy or precision of your experiment.
- You must then explain:
  - what you did to minimise the effect of this factor

  or
  - what you could have done to minimise the effect of this factor

  or
  - how you know this factor had a significant effect

You do not need to use the words reliability, accuracy or precision in your explanation, but if do use them they must be used correctly.

Summary

You can use this table to check you have covered all sections in your report.

Section	Description	Marks
Title	The report has an informative title.	1
Aim	A description of the purpose of your investigation.	1
Underlying physics	A description of the physics relevant to your aim, which shows your understanding.	3
Data collection and handling	A brief description of your experimental method.	1
	Sufficient data from your experiment.	1
	Data from your experiment presented in a table with headings and units.	1
	Values correctly calculated from your experimental data.	1
	Comparative data from an internet/literature source.	1
	A reference for the internet/literature source.	1
Graphical presentation	Appropriate type of graph used to present your experimental data.	1
	Suitable scales.	1
	Suitable labels and units on axes.	1
	All data plotted accurately, with line or curve of best fit if appropriate.	1
Analysis	Experimental data compared to data from internet/literature source.	1
Conclusion	A conclusion relating to your aim, based on **all** the data in your report.	1
Evaluation	Identification of a factor affecting the reliability, accuracy or precision of your experiment **and** a related explanation.	2
Structure	A report that can be easily followed.	1
Total		**20**

Once complete, your report should be given to your teacher or lecturer for submission to SQA.

Administrative information

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History of changes

Version	Description of change	Date
2.0	'Instructions for teachers and lecturers' and 'Instructions for candidates' sections: minor amendments throughout to clarify the research and report stages. 'Marking instructions' section: minor clarifications throughout based on 2017–18 exam diet.	October 2018
3.0	'Instructions for teachers and lecturers' section updated as follows: ♦ 'General information' sub-section: — topic 'must' be chosen with guidance, rather than 'should' ♦ 'Instructions' sub-section: — clarification that instructions for candidates must not be altered or supplemented by centre-devised materials ♦ 'Choosing the topic' sub-section: — information added that there must be a range of topics available for candidates to choose from and that teachers/lecturers must minimise the numbers investigating the same topic within a class ♦ 'Experimental research' sub-section: — candidates can be given only a basic list of instructions for the experimental procedure and must decide on range, interval and number of repeats for themselves — information amended from 'A teacher or lecturer must not provide feedback to candidates on their results' to 'A teacher or lecturer must not provide feedback to candidates on their data.' ♦ 'Internet/literature research' sub-section: — this must be the work of the individual candidate — provision of a wide list of URLs or a wide list of journals and/or books should be the exception	September 2019

	— provision of the full content of a wide list of sources should be the exception ♦ 'Report stage' sub-section: — teachers/lecturers must check the materials of each and every candidate — information added to the bullet points about raw experimental data, internet/literature data and extracts — information added on extracts — list of items that candidates cannot have access to in the report stage replaced with 'Candidates **must not** have access to a previously prepared draft of a report or any part of a report.' 'Instructions for candidates' section updated as follows: ♦ amended throughout to reflect the changes in the course specification and the 'Instructions for teachers and lecturers' ♦ candidates must repeat measurements ♦ when using graphing software, candidates must include both major and minor gridlines	
4.0	'Instructions for teachers and lecturers' section updated as follows: ♦ 'Internet/literature research' sub-section: — teachers and lecturers are no longer permitted to provide a list of potential sources, direct candidates to particular sources, or provide candidates with articles or extracts form sources ♦ 'Report stage' sub-section: — clarification added that where reports are being produced over successive lessons, candidates must not add additional materials between reporting sessions. Teachers and lecturers must not provide additional teaching or coaching in relation to assignments between sessions. — a record for the source of data from the internet/literature has been added to the list of materials that can be used in the report stage 'Instructions for candidates' section updated as follows: ♦ 'Underlying Physics' sub-section: — clarification added about quoting and copying from sources ♦ 'Evaluation' sub-section: — advice added about using the words reliability, accuracy or precision in explanation	June 2020

Security and confidentiality

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