GCE

# Physics B (Advancing Physics)

OCR Advanced Subsidiary GCE H159 Unit G493 (a) Quality of Measurement

Coursework Assessment Form

| Examination session | June | Year | |
|---|---|---|---|

| Centre name | |
|---|---|

| Centre number | |
|---|---|

| Candidate name | | Candidate number | |
|---|---|---|---|

**A copy of this sheet must be attached to each candidate's work as a record of the assessment. The full criteria on which the assessment should be based can be found in the Teacher Support: Coursework Guidance.**

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**Total** **0**

## INSTRUCTIONS FOR COMPLETION

1 Each of these forms should be completed for each candidate for each of parts (a) and (b) of this unit.

2 Please ensure that the appropriate boxes at the top of the forms are completed.

3 Enter the mark awarded for each coursework task in the appropriate box.

4 Add the marks for all the coursework tasks together to give a total out of 20.

5 Sign and date the forms.

| | 5 | 3 | 1 |
|---|---|---|---|
| **A** Quality of Practical Work in the Laboratory | **(i) Observations & measurements** Sufficient observations and measurements are made to deal with the problem, with a good range of data of appropriate precision. | Observations and measurements are relevant to the problem. The range of data collected is barely adequate to the problem, and of limited precision. | Observations and measurements have some serious shortcomings. Data may be incomplete. |
| | **(ii) Careful methodical work** Methods and approach are well chosen. The work is done systematically and safely. Data are carefully recorded as they are taken, in well-designed tables of appropriate format. | Methods and approach are adequate for the task. Safety may be adequately addressed. Data are generally correctly recorded, but with only limited care and attention. | There are shortcomings or limitations in the approach chosen. Data may be recorded scrappily without concern for care and correctness. Safety may not be considered. |
| | **(iii) Practical competence and skill** Considerable skill and care is used to obtain results that are as good as possible, avoiding unnecessary uncertainty and systematic error. | Competent practical work with attention to practical detail is demonstrated. Some attempts were made to work carefully and skilfully so as to avoid uncertainty and systematic error. | There is limited attention to practical detail, demonstrating only modest skill. There is little attempt to work carefully so that substantial unnecessary uncertainty or systematic error is present |
| | | | **/5** |
| **B** Quality of thought about uncertainty and systematic error, and attempts to improve the measurements | **(i) Assessment of uncertainty and systematic error** The relevant properties of measuring instruments and, where appropriate, sensors were assessed systematically and carefully. Calibration of instruments was attempted where appropriate. | The properties of the measuring instruments are considered and some attempts made to use them to their best advantage. Calibration, where appropriate, may have significant errors. | Measuring instruments are used directly without consideration of their properties. Calibration, where appropriate, will have been neglected or tackled poorly. |
| | **(ii) Reducing uncertainty and error** The largest sources of uncertainty are identified. Possible sources of systematic error are considered. Careful thought is given to ways of reducing uncertainty and systematic error. | Uncertainty and systematic error are considered, but there are significant flaws in the way in which the student attempts to tackle them. | The student demonstrates little understanding of the systematic errors or uncertainties associated with the experiment. |
| | **(iii) Improvements** Improvements to the experiment, which might reduce uncertainty or systematic error, are suggested and are tried out. Evidence is sought as to whether they work or not. | Improvement to the experimental method is considered, but not put properly into effect, e.g. there is no appropriate evaluation of suggested improvements. | Experimental work is limited to a simple set of measurements with no attempt to refine the procedure. |
| | | | **/5** |

| | 5 | 3 | 1 |
|---|---|---|---|
| **C**<br>Quality of communication of physics in the report | **(i) Recording & presentation of data**<br>Data are presented clearly and effectively, with correct headings, units, tolerances and significant figures. Thought is given to design and presentation of tables. Available ICT was well used. | Data are displayed clearly. There may be inconsistencies in the use of headings, units or significant figures. Appropriate ICT was used in places. | There may be serious shortcomings in the recording and clarity of presentation of data. Use of available ICT was inadequate. |
| | **(ii) Graphical plots and other representations of data**<br>Graphical plots are well chosen to display the data to best effect, based on sound physical reasoning. Labelling, uncertainty bars and best fit lines are used appropriately. The message to be drawn from plots is stated clearly (perhaps in a caption) | Graphical plots are clear and without distracting elements. The physical reasoning has no major flaws. Some possibly incomplete attempt is made to represent uncertainties. It is not always clear what message should be drawn from a plot. | Graphical plots may be inappropriate, unclear or incorrect. Uncertainties are not represented, or are represented implausibly. There may be serious flaws in the physical reasoning behind the plots. |
| | **(iii) Quality of the report**<br>The report is clear and concise, well structured and presented. It gives sufficient detail to allow someone else to repeat the experiment. The physics of the experiment is well explained | The report covers most details need to repeat the experiment, but may have shortcomings in detail, structure or quality of English. The physics of the experiment may have features not explained. | The physics of the experiment is explained poorly or incorrectly. It would not be possible to repeat the experiment from the report alone. |
| | | | **/5** |
| **D**<br>Quality of handling and analysis of data | **(i) Analysis of data**<br>The data are analysed carefully, extracting as much information as possible. Where possible, results of analysis are cross-checked against other analysis or data. | Some correct calculations of relevant quantities are made. Possible checks may be mentioned, but not carried through. | The analysis is limited to direct calculations or plots of measured data. |
| | **(ii) Interpretation of Data**<br>There is a clear claim about the outcome of the experiment, well-founded in the data and analysis. The interpretation is qualified with statements of uncertainty and possible systematic error. | There is an attempt to discuss the outcome in terms of physical explanations with few major errors. There is some discussion of systematic error and uncertainties, but this may contain mistakes. | There is little attempt to explain the outcomes in terms of physical ideas, or there may be flaws in use of physics. Statements of uncertainties and systematic errors are unfounded. |
| | **(iii) Evaluation of outcome**<br>The analysis of data demonstrates understanding of the physics involved. Uncertainties in conclusions are discussed in terms of limitations of the procedures used. Anomalies are noted and discussed or dealt with. | The analysis may have minor errors of physics. The main limitations of the procedures used are discussed. Any obvious limitations are noted. | The analysis may have significant errors of physics. Discussions of the limitations of the procedures or of the results obtained is missing or incorrect. |
| | | | **/5** |
| | | **RATING TOTAL** | **0 /20** |
| Assessor's signature: | | Date: | |

## Additional Comments