

Commentary on candidate evidence

Candidate 5 – RLC circuits

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

Section	Mark available		Mark awarded	Comments
1 Abstract	1		1	<p>Some of the candidate's findings are statements involving proportionality. The experimental data supports the findings of direct and inverse proportionality however as 'current increases as frequency increases', this is not a justification for proportionality.</p> <p>There is also a slip in the candidate's description of the parallel RLC circuit (line 5).</p> <p>Overall however the candidate has stated an aim and given findings.</p>
2 Underlying physics	4		4	<p>The candidate has given a good account of the physics behind the procedures.</p> <p>Symbols are identified and defined and both the relationships used and the effects observed, are justified.</p>
3 Procedures	a	2	1	<p>The candidate has included basic circuit diagrams, with values stated for the individual components.</p> <p>The nature of the supplies and of the meters however is unclear and not adequate for straightforward replication.</p> <p>The addition of clear, uncluttered labelled photographs may have allowed the second mark to be awarded.</p>
	b	2	2	<p>The candidate has clearly described the procedures, using the past</p>

Section	Mark available		Mark awarded	Comments
				tense impersonal voice. Values for supply voltage and frequency range are stated for each procedure. The range and interval of the independent variable for each procedure are included.
	c	3	2	<p>The candidate's procedures are at an appropriate level, but limited in range, using similar equipment throughout.</p> <p>The candidate has however made a significant number of measurements in a number of the procedures, which may have taken up to 10 hours to complete.</p>
5 Discussion (conclusion(s) and evaluation)	a	1	1	The candidate has included conclusions for individual procedures, which are supported by experimental data and link to the aim.
6 Presentation	b	1	0	<p>The candidate has cited the source using the Vancouver system, and has listed references at the end of the report in an acceptable format.</p> <p>However, as only one source is referenced, the mark cannot be awarded.</p>
Total		14	11	

Candidate 6 – Moment of Inertia: Disc, Hoop, Cylinder

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

Section	Mark available	Mark awarded	Comments
1 Abstract	1	0	The candidate has clearly stated the aim of the project, and given the findings for only two of the three procedures. The experimental value for the moment of inertia of the cylinder however has not been stated.
2 Underlying physics	4	1	<p>Although the candidate's account of the underlying physics is of an appropriate level, it lacks labelled diagrams identifying the symbols used.</p> <p>The force required to accelerate the falling mass is not taken into account.</p> <p>The description also depends on the reader being familiar with the experimental procedures and requires too much input from the reader for the account to be informative.</p> <p>The last relationship quoted has no justification or derivation, and is incorrect for the moment of inertia of a cylinder rotating about an axis through its centre, parallel to its length.</p>
3 Procedures	a	2	<p>1</p> <p>The candidate has included basic computer-drawn diagrams.</p> <p>The diagrams are only partially labelled, are incomplete and lack the operational/logistical details, which would be necessary for straightforward replication.</p>

Section	Mark available		Mark awarded	Comments
	b	2	0	<p>The candidate has given brief descriptions on how the apparatus was used.</p> <p>The descriptions on pages 19 and 21 use the imperative voice, rather than past tense impersonal voice, on more than one occasion.</p> <p>The descriptions lack basic details necessary for replication, such as the measuring instruments used, the range of the independent variable and (page 22) the number of repeats.</p>
	c	3	2	<p>The candidate has completed three procedures, which are at an appropriate level of demand for Advanced Higher Physics.</p> <p>The range and intervals of independent variables is satisfactory, as is the number of repeats.</p> <p>The procedures however are fairly basic and lack some sophistication of design/equipment.</p> <p>Two of the three procedures are similar and basic in nature.</p>
5 Discussion (conclusion(s) and evaluation)	a	1	1	<p>The candidate has stated conclusions for individual procedures, rather than an overall conclusion. The individual conclusions relate to the aim and are assumed to be valid.</p>
6 Presentation	b	1	0	<p>The candidate has cited sources on page 19 but the citing uses neither the Harvard nor Vancouver system.</p> <p>In addition, a list of references to the relevant sources near the end of the report has not been included.</p>

Section	Mark available	Mark awarded	Comments
Total	14	5	

Candidate 7 – Geometric Optics

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

Section	Mark available	Mark awarded	Comments	
1 Abstract	1	1	The candidate has stated the aims of the project and given the findings for each experiment.	
2 Underlying physics	4	2	The candidate has given a reasonable basic description of geometrical optics. The information given however does not show a significant depth of understanding, with relationships stated but not justified, although symbols are defined.	
3 Procedures	a	2	2	The candidate has included clear, uncluttered labelled photographs of the apparatus used for each procedure. The standard of the photographs would support replication of the experiments.
	b	2	2	The descriptions of procedures were written in the appropriate tense and voice, with the exception of a single use of the active voice (experiment 2). Where appropriate, the candidate has specified the range and interval of the independent variable and the number of repeats. There are a small number of slips in the descriptions of experiments 3 and 5, but overall the descriptions support replication.
	c	3	2	The candidate has completed six procedures, with four of the six at the level of complexity appropriate for Advanced Higher. The procedures each used the same basic equipment with some variations.

Section	Mark available		Mark awarded	Comments
				<p>Although some procedures had a limited number of measurements, only the second procedure involved an appropriate number.</p> <p>Overall, this phase of the candidate's research may not have taken 10 hours experimental work.</p>
5 Discussion (conclusion(s) and evaluation)	a	1	1	The candidate has made valid conclusions, which relate to the aims of the project.
6 Presentation	b	1	0	The candidate has cited five sources (reference 2 and reference 4 are from the same source). The listings however contains the full URL and date accessed only, and so are not in Vancouver or Harvard system.
Total	14		10	