
PHYSICS

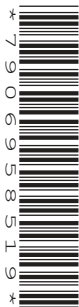
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Paper 5 Practical Test

October/November 2016

CONFIDENTIAL INSTRUCTIONS

Great care should be taken to ensure that any confidential information given does not reach the candidates either directly or indirectly.



If you have any problems or queries regarding these Instructions, please contact CIE
by e-mail: info@cie.org.uk,
by phone: +44 1223 553554,
by fax: +44 1223 553558,
stating the Centre number, the nature of the query and the syllabus number quoted above.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **7** printed pages and **1** blank page.

Instructions for preparing apparatus

The Supervisor is **not** allowed to consult the Question Paper before the examination. This teacher should, as part of the preparation of the examination requirements, test the apparatus in order to ensure that it is satisfactory.

The Supervisor is asked to give (and attach to the Report form printed on pages 7 and 8) a *brief* description of the apparatus supplied, mentioning any points that are likely to be of importance to the Examiner in marking the answers. The Supervisor should also report any assistance given to candidates. All reports should be signed by the Supervisor and by the person responsible for preparing the apparatus.

In addition to the usual equipment of a physics laboratory, each candidate will require the apparatus specified in these Instructions. If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Report.

Number of sets of apparatus

As a *minimum*, the number of sets of apparatus provided should be $N/3$, where N is the number of candidates (per session). A few spare sets should, preferably, be available to avoid any candidate being delayed when moving to another question.

The order in which a given candidate attempts the four questions is immaterial. It is suggested that candidates spend **about 20 minutes on each of questions 1 to 3, followed by 15 minutes on question 4.**

Assistance to Candidates

The purpose of the Practical Physics test is to find out whether the candidates can carry out simple practical work themselves. The Examiners are aware that candidates may sometimes be unable to show their practical ability through failure to understand some point in the theory of the experiment. If an Examiner were present in the laboratory, he/she would be willing to give a hint to enable such a candidate to get on with an experiment. In order to overcome this difficulty, the Supervisor is asked to co-operate with the Examiners to the extent of being ready to give (or allow the Physics teacher to give) a hint to a candidate who is unable to proceed.

The following regulations must be strictly adhered to.

- (i) No hint may be announced to the candidates as a whole.
- (ii) A candidate who is unable to proceed and requires assistance must come up to the Supervisor and state the difficulty. Candidates should be told that the Examiners will be informed of any assistance given in this way.
- (iii) A report must be made of any assistance given to the candidate, with the name and candidate number of the candidate.

It is suggested that the following announcement be made to the candidates.

'The Examiners do not want you to waste time through inability to get on with an experiment. Any candidate, therefore, who is unable to get on with the experiment after spending five minutes at it may come to me and ask for help. I shall report to the Examiners any help given in this way, and some marks may be lost for the help given. You may ask me for additional apparatus which you think would improve the accuracy of your experiments, and you should say, on your script, how you use any such apparatus supplied.'

Question 1**Items to be supplied by the Centre (per set of apparatus, unless otherwise specified)**

- (i) Metre rule with a mm scale. See note 1.
- (ii) Triangular block to act as a pivot for the metre rule. This block is to stand on the bench.
- (iii) A 100g mass, labelled **1.0N**. See note 2.
- (iv) A 200g mass labelled **Q**. See notes 2 and 3.

Notes

1. If the metre rule has two scales in opposite directions, one scale must be taped over.
2. Any suitable mass that can rest on the metre rule can be used.
3. The value of the mass of **Q** must not be visible to the candidates.

Action at changeover

Check that the apparatus is ready for the next candidate.

Question 2

Items to be supplied by the Centre (per set of apparatus, unless otherwise specified)

- (i) Power supply of approximately 1.5V–3V. Where candidates are provided with a power supply with a variable output voltage, the voltage should be set by the Supervisor and fixed (e.g. taped). See note 2.
- (ii) A resistor of nominal value $4.7\ \Omega$ with a power rating of at least 2W. See note 3.
- (iii) Switch. The switch may be an integral part of the power supply.
- (iv) Ammeter capable of reading up to 1.00 A with a resolution of at least 0.05 A. See note 4.
- (v) Voltmeter capable of measuring the supply p.d. with a resolution of at least 0.1 V. See note 4.
- (vi) Two lengths of approximately 50 cm of straight, bare constantan (Eureka) wire, diameter 0.46 mm (26 swg) or 0.38 mm (28 swg) or 0.32 mm (30 swg), taped to a board. The ends of the wires are to be labelled **A**, **B**, **C** and **D**, as shown in Fig. 2.1.
- (vii) Four suitable terminals (e.g. crocodile clips) attached to the constantan wire at the ends **A**, **B**, **C** and **D** so that connections can be made to the circuit shown in Fig. 2.1.
- (viii) Sufficient connecting leads to construct the circuit shown in Fig. 2.1, with two additional leads. See note 1.

Notes

1. The circuit is to be connected by the Supervisor as shown in Fig. 2.1. The lead used for the wandering lead must be of sufficient length to reach points **A**, **B**, **C** and **D**.

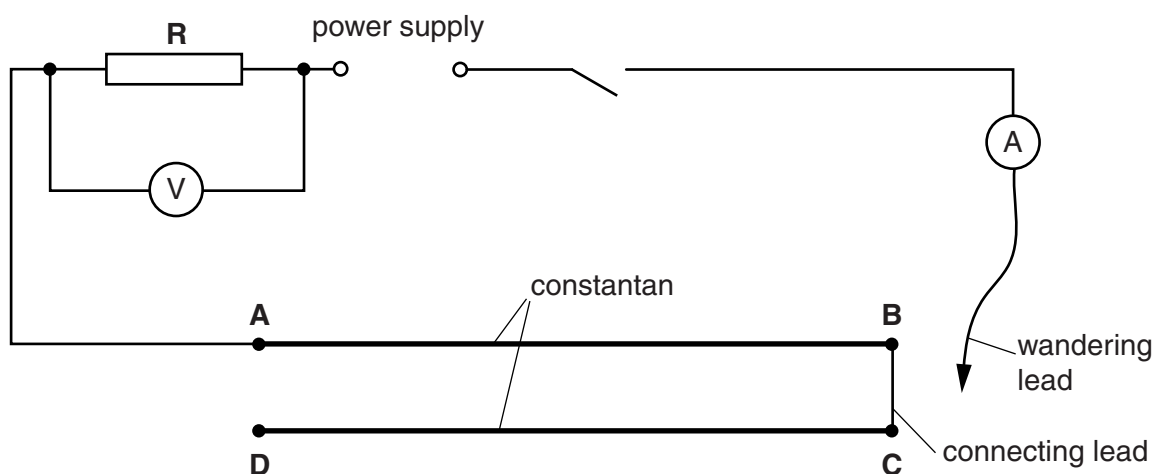


Fig. 2.1

2. If cells are to be used they must remain adequately charged throughout the examination. Spare cells must be available.
3. The resistor must be labelled **R**. The value of resistance must not be visible to the candidates.
4. Either analogue or digital meters are suitable. Any variable settings should be set by the Supervisor and fixed (e.g. taped). Spare meters should be available.

Action at changeover

Set up the circuit so that it is arranged as shown in Fig. 2.1. Check that the circuit works. Switch off.

Question 3**Items to be supplied by the Centre (per set of apparatus, unless otherwise specified)**

- (i) Sheet of plain A4 size paper with a hole in one corner, one per candidate.
- (ii) Plane mirror with a holder. See note 1.
- (iii) Four optics pins.
- (iv) Pin board (e.g. a cork mat), A4 size or larger.
- (v) Protractor. Candidates may use their own.
- (vi) 50 cm or 30 cm ruler, graduated in mm. Candidates may use their own.
- (vii) String or treasury tag (to tie the plain A4 sheet of paper into the Question Paper), one per candidate.

Notes

1. The mirror should be capable of standing vertically with one edge on the sheet of plain A4 paper.

Action at changeover

Supply a sheet of plain A4 paper (as in (i) above) and string or treasury tag (as in (vii) above).

Question 4

No apparatus is required for this question.

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This form must be completed and returned with the scripts.

REPORT ON PRACTICAL PHYSICS

(IGCSE OCTOBER/NOVEMBER 2016)

General

The Supervisor is required to give details of any difficulties experienced by particular candidates giving their names and candidate numbers. These should include reference to:

- (a) difficulties due to faulty apparatus;
- (b) accidents to apparatus or materials;
- (c) any other information that is likely to assist the Examiner, especially if this cannot be discovered in the scripts;
- (d) any help given to a candidate.

Information required

A plan of workbenches, giving details by candidate number of the places occupied by the candidates for each experiment for each session, must be enclosed with the scripts.



Information required (cont.)

A list by name and candidate number of candidates requiring help, with details of the help provided.

CENTRE NO.

NAME OF CENTRE

Declaration (to be signed by the Supervisor and the person responsible for preparing the apparatus)

The preparation of the practical examination has been carried out so as to maintain fully the security of the examination.

SIGNED
Supervisor

SIGNED
Person responsible for preparing the apparatus

