

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

General Certificate of Education Ordinary Level

MARK SCHEME for the November 2005 question paper

5054 PHYSICS

5054/04 Paper 4, maximum mark 30

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which Examiners were initially instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

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Page 1	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – NOVEMBER 2005	5054	4

- 1 (a) current increases/pointer moves to right
resistance decreases [2]
- (b) scale/units marked on the meter [1]
- [Total 3]
- 2 (a) (i) to enable a range of current/distance/light intensity to be measured [1]
- (ii) 4 mA/5 mA/10 mA [1]
- (b) table with headings: quantities distance, current (allow d, I)
units cm, mA
pairs of measurements entered in table [3]
- (c) axes: correct way round, labelled quantity and unit
scales: more than $\frac{1}{2}$ page, sensible (origin not needed)
6 points plotted accurately and neatly $\pm \frac{1}{2}$ square e.c.f. (b)
best fit line drawn, smooth curve, neatly [4]
- (d) increasing distance decreases current/inverse relationship [1]
- (e) shade around bulb/bulb is hot/filament is inside bulb/
uncertainty in position of LDR or ruler/ruler or circuit unsupported [1]
- (f) lamp not over base/far from stand/could topple/is unstable [1]
- [Total 12]
- 3 (a) (i) diagram of convex lens + Sun/distant object/parallel rays to lens
+ screen or rays to focus + f marked or ruler shown [1]
- (ii) value for f too large or larger/image is further from lens [1]
- (b) (i) rays hit mirror at 90° /reflected by mirror/
rays go back along the same path (can be shown on diagram) [1]
- (ii) 1 no change/image in focus/image is dimmer [1]
2 image becomes blurred/out of focus/disappears [1]
- [Total 5]
- 4 (a) cross-sectional area of the tube is constant/ $V = Axl$ [1]
- (b) gas may have heated up/to allow the gas to cool down/
liquid or apparatus settles/so temperature remains constant [1]
- (c) $P \times l$ calculated for both values/P doubles and l halves [1]
- (d) to avoid/reduce (parallax) error/more accurate [1]
- [Total 4]

Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – NOVEMBER 2005	5054	4

- 5 (a) brass/metal is a good conductor/heats up quickly/has high melting point/
does not melt/does not rust [1]
- (b) temperature of water
initial and final temperatures/temperature rise of the water [2]
- (c) any two from: cube may not all be at the same temperature/in the flame
time taken/heat lost by cube during transfer
some water may boil/spit out of beaker
beaker is also heated
human error in specified measurement
other sensible suggestion [2]
- (d) valid comment linked to response in (d) [1]

[Total 6]
[Paper total 30]