

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2008 question paper

5054 PHYSICS

5054/04

Paper 4 (Alternative to Practical), maximum raw mark 30

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

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.

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Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2008	5054	04

- 1 (a) 21 cao B1 [1]
- (b) any one of following:
- allow answer correctly drawn on Fig 1.1
- scale/ruler placed close to tube
- eye (level)/sight perpendicular to ruler/scale/reading **NOT** meniscus
- eye level with reading/meniscus B1 [1]
- (c) axes: correct way round, labelled quantity and unit B1
- scales: more than $\frac{1}{2}$ grid, sensible, at least three values B1
- points: plotted accurately, to $\frac{1}{2}$ smallest square, maximum size 1 mm dots B1
- line: best fit, straight neatly drawn with ruler; allow joints first to last points B1 [4]
- (d) pressure not zero when not in liquid/when $d = 0$ /
- $p = 3$ to 6 cm water when $d = 0$ /
- zero error in reading/measuring pressure /
- pressure changed when apparatus assembled B1 [1]
- (e) d increases (equal amounts) as p increases (by equal amounts) /
- linear relationship / straight line not through 0,0/positive gradient B1 [1]
- NOT** directly proportional / doubling d doubles p / linearly proportional / p proportional to d
- (f) 18.5 to 19.5 ecf graph B1 [1]
- NOT** if no line through points drawn on graph

[Total: 9]

Page 3	Mark Scheme	Syllabus	Paper
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- 2 (a) line through OP_1P_2 with ruler, neat, touching each dot B1
- line through P_3P_4 with ruler, neat, touching each dot B1
- lines produced to meet B1 [3]
- (b) repeat for Q B1 [1]
- (c) mirror line accurately drawn through intersections B1 [1]
- (d) P_3P_4 and Q_3Q_4 produced back to meet B1 [1]
- (e) 12.5 to 14.0 cm to nearest mm unit required B1 [1]
- (f) pins may not be vertical / pins not straight / where pins enter paper
- allow more accurate / pins placed correctly or properly B1 [1]
- [Total: 8]**
- 3 (a) reading on scale not zero when closed / no object B1 [1]
- (b) 28 seen or implied C1
- 1.28 seen / 8 seen C1
- 0.16 cao unit not required (0.427 scores 2) A1 [3]
- (c) easier to use (e.g. no vernier to read/automatic reading) / reduces operator error / quicker to use / more sf or dp or precise B1 [1]
- uses a battery / cell / battery / cell may run out / expensive / too sensitive / readings fluctuate / (circuit) malfunction B1 [1]
- [Total: 6]**

Page 4	Mark Scheme	Syllabus	Paper
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- 4 (a) (i) dim(mer than normal) / not lit B1 [1]
- normal brightness / brighter (than A) / bright B1 [1]
- (ii) (glows brightly then) blows / filament fuses / melts M1
- voltage / current (too) high / more than working value/6V A1 [2]
- (b) variable resistor / variable power supply /
changing number / voltage of cells drawn or described B1
- voltmeter across lamp / power supply drawn or described B1
- start with low V/high R then measure V just before lamp blows B1 [3]
- max 2** if no circuit drawn showing lamp and power supply /
incorrectly drawn symbols / additional incorrectly connected components

[Total: 7]