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## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE A Level

## MARK SCHEME for the November 2005 question paper

## 9702 PHYSICS

9702/03

Paper 3 (Practical Paper)

maximum raw mark 25

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*.

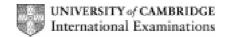
All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

 CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2005 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



Part (b) (ii)	Absolute uncertainty = 1 mm (1 mark). Percentage uncertainty in first value of $d$ (i.e. ratio correct) (1 mark).	[2]
(iii	i)Measure each end of rule to see if distance above bench is the same (1 mark) Use of set square to ensure that half-metre rule is 90° to bench (1 mark)	[2]
Part (c)	Readings 6 sets of readings scores 1 mark. Repeated readings scores 1 mark. Reasonable interval between values of $d$ (> 5 cm) scores 1 mark. Help given by Supervisor, then -1. Excessive help then -2.	[3]
	Quality of results Judge by scatter of points about the line of best fit. 6 trend points with little scatter scores 2 marks. 6 trend points with 'a fair amount of scatter' scores 1 mark. 5 trend points with little scatter scores 1 mark. 4 trend points (or less) scores zero. Considerable scatter scores zero.	[2]
	Column headings Apply to <i>F</i> and <i>d</i> . One mark each. The headings must contain a quantity and a unit.	[2]
	Consistency Apply to $F$ and $d$ only. One mark each. Values of $d$ must be given to the nearest millimetre.	[2]
Part (d)	Axes Scales must be such that the plotted points occupy at least half the graph grid in both the <i>x</i> and <i>y</i> directions. Scales must be labelled. Do not allow awkward scales.	[1]
	Plotting of points Check a suspect plot. Circle and tick if correct. If incorrect, show correct position with arrow, and -1. Work to half a small square.	[1]
	Line of best fit There must be a reasonable balance of points about the line of best fit.	[1]

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Paper 3

Syllabus 9702

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Part (e)	$\Delta$ used read-of	ination of gradient must be greater than half the length of the drawn line; fs correct; ratio correct (one mark). nt given as negative (one mark).		[2]
		The septing $y = mx + c$ is the line.	and a	[1]
Part (f)	Gradie	nt equated with $-W/L$		[1]
	Value o	of $W$		[1]
	_	cant figures in <i>W</i> 2 or 3 sf only.		[1]
	Interce	pt equated with $\frac{mg}{2} + W$		[1]
	Value o	of m		[1]
	Units o	f m and W both correct		[1]

Mark Scheme

Paper

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25 marks in total.

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