

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2014 series

5054 PHYSICS

5054/42

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, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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- 1 (a) dot/mark/cross at one end of compass needle B1
 move compass to point to (previous) dot, new dot B1
 repeat along one line and join the dots B1
 repeat with different start points / more lines B1 [4]
- (b) any **one** from:
 more dots/dots closer together
 smoother lines
 field due to compass small B1 [1]
- (c) any **one** from:
 direction/strength of field
 which end is N/S/the poles of the magnet
 where field is stronger B1 [1]
- [Total: 6]
- 2 (a) (i) any **one** from:
 to measure a constant force
 no accelerating (force)
 to give a steady reading
 a variation in speed gives a variation in F B1 [1]
- (ii) any **one** from:
 have time to read meter
 easier to read the meter
 easier to keep speed constant B1 [1]
- (b) (i) 0.45 N c.a.o. unit required B1
- (ii) eye position avoiding parallax marked
 e.g. above/below meter looking towards meter
 accept on top of meter B1 [2]
- (c)(i),(ii) axes labelled quantity and unit B1
 scales linear B1
 points plotted accurately B1
 best fit straight line drawn B1
 0.32 to 0.36 B1 [5]
 allow ecf from graph
- (iii) weight of lower pulley
 friction of string over pulleys
 because F is not (directly) proportional to W B1 [1]

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- (d) large triangle used on graph ($\geq \frac{1}{2}$ drawn line) and attempt at correct calculation C1
 0.58 to 0.64 penalise if not 2 significant figures A1 [2]
 allow ecf from graph

[Total: 12]

- 3 (a) both first bands red **and** both second bands yellow B1
 black, orange in third band spaces in correct order B1 [2]

- (b) (i) parallel B1 [1]

- (ii),(iii) any two correct combinations B1
 three correct combinations B1
 E marked correctly B1 [3]

[Total: 6]

- 4 (a) maximum 3 marks for drawing round bottom of beaker
 equipment used stated B1
 how equipment used explained B1
 readings taken stated B1
 how diameter is obtained explained B1
 one accuracy detail B1 [5]

- (b) any **one** from:
 cannot fit ruler inside beaker
 cannot use string inside beaker
 cannot draw (internal) circle inside beaker B1 [1]

[Total: 6]