
PHYSICS

5054/41

Paper 4 Alternative to Practical

May/June 2016

MARK SCHEME

Maximum Mark: 30

Published

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- 1 (a) Any 2: B2
 Insert another cell/decrease the resistance of the variable resistor/increase voltage of power supply
- (b) Table drawn with headings (Current and Number of paperclips) B1
 Unit for current (Amps) B1
 Correct data in table B1
- 2 (a) (i) 10.7366... C1
 10.7 s B1
- (ii) 1.07 s B1
- (iii) Time for one oscillation very small/difficult to measure/time for tens swings is more accurate gives an average B1
 Comparison of 0.2 s to T i.e. is a large proportion is significant B1
- (b) (i) Table completed B0
- (ii) axes labelled quantity and unit B1
 scales linear B1
 points plotted accurately B1
 best fit curve drawn B1
- (iii) As N increases, T increases B1
- (iv) (0.65 ± 0.01) s B1
 Unit needed
- (c) Different lengths would not give a reliable (allow accurate) result/graph not smooth/introduces another variable/result for (b)(iv) not valid. B1

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- 3 (a) 22.8 C1
23 g (2 significant figures only) B1
- (b) (i) Measuring cylinder/burette/graduated cylinder B1
(ii) 1 Liquid P B1
Only liquid P is denser than water B1
(ii) 2 B because liquid P is denser than oil. B1
- (c) Wood is less dense than water but more dense than oil/density of wood between 0.9 and 1.0 B1
- 4 (a) Thermometer/pyrometer B1
- (b) Water in test tubes and thermometer/pyrometer B1
Left for a period of time/pyrometer connected to galvanometer B1
Readings of initial and final temperatures/temperature fall/readings taken from the galvanometer B1
- (c) Any 2: B2
Same volume of water
Same initial starting temperature
Same length of time / pyrometer must be an equal distance from the test tubes.