MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0625 PHYSICS

0625/62   Paper 6 (Alternative to Practical), maximum raw mark 40

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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1 (a) Table:
correct *d* values
70.0, 60.0, 50.0, 40.0, 30.0, 20.0, 10.0 [1]
cm, N ALLOW m, mm if consistent with figures [1]

(b) (i) *d* against *F* (or vice versa) OR distance against force/forcemeter reading
NOT 'extension', 'forcemeter', quantity expressed just as units [1]

(ii) Straight line [1]
Through origin or wtte [1]

(c) Would change forcemeter reading/change mass on rule/wtte [1]

(d) Check distance from bench is the same at two points or wtte/
Line up by eye with windowsill (or suitable horizontal reference) [1]

[Total: 7]

2 (a) 23 °C need unit for the mark [1]

(b) Axes correctly labelled with quantity and unit [1]
Suitable scales [1]
All plots correct to ½ small square [1]
Good line judgement [1]
Thin, continuous line [1]

(c) Two from:
Room temperature/humidity/sun through window/air conditioning
Draughts
Initial water temperature [2]

[Total: 8]

3 (a) (i) V_1 = 1.9 [1]
I_1 = 0.3 [1]
Units V and A both correct [1]

(ii)/(iii) R_P = 6.33 and $4R_P$ = 25.3/25.2 to 2 or 3 sig. figs. [1]
Ω [1]

(b) R_S = 23.8 (Ω) or 24 (Ω) [1]

(c) Correct statement (from candidate's work)
with matching justification (idea of within or beyond experimental accuracy) [1]

(d) Circuit: correct symbols for ammeter, voltmeter and lamp in correct series circuit [1]

(e) (i) Change/control current/voltage [1]

    (ii) To obtain range of readings (or wtte) [1]

[Total: 10]

4 (a) Blocks parallel with ONE sphere completely between [1]
    Rule correctly placed [1]

(b) (i) Line of sight perpendicular to scale [1]
      Line of sight along bottom of meniscus [1]

    (ii) 70 (cm^3) [1]

    (iii) 0.53 cm^3, 2 or 3 significant figures, with unit [1]

[Total: 6]

5 (a) Trace:
Normal at 90° in correct position [1]
N at 4 cm above AB and angle of incidence 20° [1]
a value 4.3 cm ± 1 mm correct answer only [1]

(b) <u>All</u> correct lines drawn, thin and continuous [1]
a and *b* both with consistent, correct unit which matches figures [1]
b value 6.2 cm ± 3 mm correct answer only [1]
n value range 1.4 – 1.5 after rounding [1]
to 2 or 3 significant figures and no unit [1]

(c) One from:
Pins well spaced
Pins at least 5 cm apart
View bases of pins
Ensure pins vertical
Use thin lines
Sharp pencil
Use thin pins [1]

[Total: 9]