Marking scheme for practice exam-style paper

Paper 6 Alternative to Practical

The number of marks is given in brackets [ ] at the end of each question or part question.

1 a i 58 cm^3

ii eye level with meniscus of water [2]

b i 92; 92 – 58 = 34 cm^3

ii *2 from:* air may be trapped on wood or stone; water may have been removed when stone was taken out; measuring cylinder may be inaccurately graduated *or other sensible suggestion* [3]

c i 95 cm^3; 95 – 92 = 3 cm^3

ii measure volume of stone + string before adding wood [2]

[Total: 7]

(*Assuming printed copy is to correct scale*)

2 a i 8.2 cm

ii 41.0 cm

iii difficult to judge the midpoint/centre of mass of the bob *or* difficult to judge top end of string [3]

b i 25.71/20 = 12.9 s

ii difficult to judge when bob is at end of swing

iii reaction time problem with starting and stopping timer [3]

c in table: *L*/cm, *T*/s

graph axes sensibly chosen, points clearly plotted

curve drawn

length of 'one-second pendulum' = 24.8 cm ± 0.4 cm

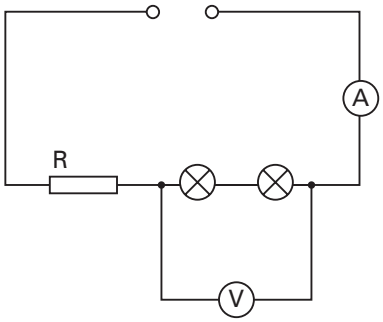
region between points at *L* = 22 and 35.7 [4]

[Total: 10]

3 a $R = V/I = 4.8/0.25$

$= 19\ \Omega$ (2s.f.) [2]

b



extra lamp in series

voltmeter across both

$2 \times 19 = 38\ \Omega$ [3]

c include a variable resistor in the circuit *or* use a variable power supply [1]

d straight line through points

large triangle for gradient

gradient = change in p.d./change in current

= 3.4/0.65 (or similar) = 5.2 Ω [3]

[Total: 9]

4 a 54 °C [1]

b

Time / minutes	Temperature / °C
0	54
5	40
10	33
15	30
20	30

time 13 ± 2 minutes

temperature stops decreasing when it reaches 30 °C

it was dropping fast after 10 minutes, so probably reached 30 before 15 minutes [4]

c stirring before reading temperature

add a lid

to prevent convection currents rising above water [3]

[Total: 8]

5 a greater than 200 g

difficult to measure to centre of objects

mark a line down the side of each at midpoint [3]

b graph is straight line and passes through the origin

mass = 42.0/23.3 × 200 = 361 g

calculate the gradient of the graph; mass of **L** = 200/gradient [3]

[Total: 6]