MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

0625 PHYSICS

0625/52   Paper 5 (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)**, **(b)**, **(c)**
   Correct masses 100, 200, 300, 400, 500   [1]
   F column complete, all values < 10N and to at least 1d.p.   [1]
   F values increasing   [1]

   (d) Graph:
   Axes labelled   [1]
   Scales suitable   [1]
   All plots correct to nearest ½ small square   [1]
   Well-judged best fit, thin line   [1]

   (e) Correct *F* to ½ small square with unit N   [1]
   Clear how obtained   [1]

   (f) Weight/mass/force of rule owtte   [1]

                                                                      [Total: 10]

2. **(a)** θ_R sensible value   [1]

   (c) – (e)
   t in s, both θ in ºC   [1]
   Correct *t* values 30, 60, 90, 120, 150, 180   [1]
   Uninsulated tube temperatures decreasing   [1]
   Insulated tube temperatures decreasing   [1]
   Slower rate of fall in insulated tube   [1]

   (f) Statement matches readings   [1]
   Justified by reference to temperature <u>differences</u> and <u>time</u> [1]

   (g) Any two from:
   <u>initial</u> temperature/<u>starting</u> temperature/temperature of <u>hot</u> water (constant) room
   temperature/ correct <u>named</u> reference to environmental condition
   tube size/same test-tube
   thickness of glass
   volume/amount/level of water
   thickness of cotton wool
   depth (of immersion) of thermometer
   (rate of) stirring   [2]

                                                                      [Total: 10]

3. **(a)** mm or cm or m, A, V, Ω [1]
Correct lengths 50cm, 75cm, 100cm [1]
I values all to at least 2 d.p. (<1A) [1]
V values all to at least 1 d.p. (<3V) [1]
R values correct [1]
R consistently to 1 or 2 d.p. [1]
$R_{AD} = 2R_{AB}$ to within 10% [1]

(b) Statement matches results [1]
Justification refers to results and matches statement, including idea of 'within limits of experimental accuracy' [1]

(c) One of:
Switch off between readings
Use of low current (owtte) [1]

[Total: 10]

4. Trace:
Normal correct [1]
All lines present and neat [1]
P_3P_4 distance $\geq$ 5.0cm [1]
EFN = 30º ± 2º [1]

(h) *a* correct to 2mm [1]

(j) *b* correct to 2mm [1]

(k) *n* correct value, 2 or 3 significant figures, no unit [1]
n 1.4 – 1.6 [1]

Pin: pins not vertical/not straight/pins too close/thickness of lines/size of holes [1]

Ray Box: thickness of ray [1]

[Total: 10]