Name of the Student:_____
Max. Marks : 18 Marks **Time :18 Minutes**

Mark Schemes

Q1.

(a) Initial temperature was a control variable

1

(b) copper

1

greater change in mass (than the other metals)

this mark is dependent on scoring the first mark
allow more ice melted (than the other metals)
allow the ice melted faster (than the other metals)

1

(c) variation in initial mass of ice cube

allow variation in initial volume of ice cube

or

surface area of the ice cube touching the metal

allow melting of ice while handling
allow variation in room temperature
allow initial temperature of metal block

1

(d)

*an answer of 0.016 (kg) scores **5** marks*

$E = m \times 2100 \times 15$

1

$E = m \times 334\,000$

1

$5848 = 31\,500\ m + 334\,000\ m$

or

$5848 = 365\,500\ m$

1

$$m = \frac{5848}{(31\,500 + 334\,000)}$$

or

$$m = \frac{5848}{(365\,500)}$$

Downloaded from www.merit-minds.com

1

m = 0.016 (kg)

*allow **2** marks for an answer that rounds to 0.186 or 0.0175*

*if no other mark scored allow **1** mark for either*
5848 = m × 2100 × 15
or
5848 = m × 334 000

1

[9]

Q2.

(a) metre rule has a lower resolution

allow metre rule has a resolution of 1 mm / 1 cm

fewer decimal places is insufficient

1

so is less accurate (than the micrometer screw gauge)

1

(b) record the value of the zero error when there is no object on the balance

subtract / add the value of the zero error

1

subtract / add the value of the zero error

1

(c)

*an answer of 0.0502 (kg) scores **5** marks*

$V = (18.45 \times 10^{-3})^3$
or
$V = 0.01845^3$

this mark may be awarded if width is incorrectly / not converted

1

$V = 6.28 \times 10^{-6}$ (m^3)

this answer only

1

$$8.0 \times 10^3 = \frac{m}{6.28 \times 10^{-6}}$$

allow

$$8.0 \times 10^3 = \frac{m}{\text{their calculated V}}$$

1

$m = 8.0 \times 10^3 \times 6.28 \times 10^{-6}$

allow m = 8.0 × 10^3 × their calculated V

1

m = 0.0502 (kg)

allow an answer consistent with their calculated V

1

[9]

Downloaded from www.merit-minds.com