

Name of the Student: _____

Max. Marks : 27 Marks

Time : 27 Minutes

Mark Schemes

Q1.

(a) $\Delta\theta = \frac{7.5}{30}$ 1

$\Delta\theta = 0.25 (^{\circ}\text{C})$ 1

(b) bar Y drawn to 16 **and** bar Z drawn to 12
allow \pm half a small square 1

y-axis labelled 'temperature in $^{\circ}\text{C}$ '
unit must be present 1

(c) Y 1
 because it showed the smallest change in temperature
reason only scores if Y is chosen 1

(d) less than 12.0°C 1

(e) $E = 0.0150 \times 334\,000$ 1
 $E = 5010 \text{ (J)}$ 1

(f) resolution 1

(g) density = $\frac{\text{mass}}{\text{volume}}$
 or
 $\rho = \frac{m}{V}$ 1

(h) $0.300 = \frac{m}{0.186}$ 1

$$m = 0.300 \times 0.186$$

1

$$m = 0.0558 \text{ (g)}$$

1

[14]

Q2.

- (a) the piece of limestone has an irregular shape

1

- (b) **Level 2:** The method would lead to the production of a valid outcome. The key steps are identified and logically sequenced.

3–4

Level 1: The method would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.

1–2

No relevant content

0

Indicative content

- add water to the displacement can until level with the spout
- place the limestone in the water
- avoid splashing water out of the displacement can
- collect the displaced water in the beaker or measuring cylinder
- measure the volume of the displaced water
- using a measuring cylinder

OR

- use the large measuring cylinder
- part fill the measuring cylinder water
- measure the initial volume on the measuring cylinder
- submerge the limestone in the water
- measure the final volume on the measuring cylinder
- volume of limestone = final volume – initial volume

To access level 2 the answer must refer to submerging the limestone in water and using the measuring cylinder.

(c) density = $\frac{155}{62}$

$$\text{density} = 2.5 \text{ (g/cm}^3\text{)}$$

2

(d) kg/m^3

1

(e) bar drawn to 2.4 g/cm^3

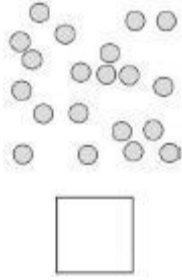
1

(f) obsidian

1

- (g) other types of rock may have the same density as obsidian
allow not all rock types are plotted on the bar chart

(h) 4th box ticked



1

(i) less than

1

[13]