Mark schemes

Q1.

(a) displacement

1

(b) $\text{(percentage =)} \frac{63.5}{159.5} \times 100$

1

= 39.81191 (%)

1

= 39.8 %

allow an answer correctly rounded to 3 significant figures from an incorrect calculation which uses both the values in the question

1

(c) volume of copper sulfate solution

1

(d) 0.8(0) g

1

(e) (maximum temperature change) = 47 – 22 (ºC)

1

= 25 (ºC)

allow correct use of incorrectly determined value(s) from the graph

1

(f) (conversion 25 cm^3 =) 0.025 dm^3

1

(concentration =) $\frac{6.75}{0.025}$ (g/dm^3)

allow correct use of an incorrectly determined or unconverted volume

1

= 270 (g/dm^3)

1

(g) line of best fit using the first five points

*max **1** mark if the lines do not intersect*

1

line of best fit using the last four points

1

(h) energy is **taken in from** the surroundings so the reaction is **endothermic**

1

[14]

Q2.

(a) water (vapour) is colourless

allow water vapour cannot be seen

1

(calcium hydroxide and calcium oxide are) both white (powders / solids)
or
there is no change in the appearance of the powder / solids

1

(b) the stopper would be pushed out

allow test tube may break

1

(c) the mass of the empty test tube

1

(d) 5 minutes

1

(e) (mass =) 2.00 - 1.51

1

= 0.49 (g)

1

(f) 5.90 kJ

1

(g) endothermic

1

[9]

Q3.

(a) 24.5 (g)

1

(b) water vapour was produced

allow water was produced as a gas

1

(so) water (vapour) escaped (from the tube)

allow (so) the mass of the water (vapour) was not measured

1

allow steam for water vapour

(c) (so that) the reaction was complete

allow (so that) no more water (vapour) was produced

1

(d) (energy =) $\frac{2.00}{238} \times 88.1$

1

= 0.740336134 (kJ)

1

= 0.740 (kJ)

allow an answer correctly calculated to 3 significant figures from an incorrect calculation which uses all the values in the question

1

(e) endothermic (reaction)

allow reversible (reaction)

allow (thermal) decomposition (reaction)

1

[8]