**Mark schemes**

Q1.

(a) Student A’s measurements had a higher resolution

1

Student B was more likely to misread the temperature

1

(b) a random error

1

(c) 8.4 °C

1

(d) 740 (seconds)

allow answers in the range 730 – 780

1

(e) 0.40 × 199 000

1

79 600 (J)

1

accept 79 600 (J) with no working shown for 2 marks

(f) stearic acid has a higher temperature than the surroundings

accept stearic acid is hotter than the surroundings

1

temperature will decrease until stearic acid is the same as the room temperature / surroundings

1

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Q2.

(a) solid

particles vibrate about fixed positions

1

closely packed

accept regular

1

gas

particles move randomly

accept particles move faster

accept freely for randomly

1

far apart

1

(b) amount of energy required to change the state of a substance from liquid to gas (vapour)

1

unit mass / 1 kg

dependent on first marking point

1

(c) 41000 or 4.1 × 104 (J)

accept

41400 or 4.14 × 104

correct substitution of

0.018 × 2.3 × 106 gains 1 mark

2

(d) AB

changing state from solid to liquid / melting

1

at steady temperature

dependent on first AB mark

1

BC

temperature of liquid rises

1

until it reaches boiling point

dependent on first BC mark

1

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