

Name of the Student: _____

Max. Marks : 26 Marks

Time : 26 Minutes

Mark Schemes

Q1.

(a) 80 °C 1

$$\Delta E = 0.5 \times 3400 \times 80$$
1

$$\Delta E = 136\,000 \text{ (J)}$$
an answer of 136 000 (J) scores 3 marks
1

 (b) energy is dissipated into the surroundings
allow any correct description of wasted energy
1

 (c) put a lid on the pan
allow any sensible practical suggestion
eg add salt to the water
1

(d) efficiency = 300/500
 1

$$\text{efficiency} = 0.6$$
an answer of 0.6 or 60% scores 2 marks
allow efficiency = 60%
an answer of 0.6 with a unit scores 1 mark
an answer of 60 without a unit scores 1 mark
1

(e) lower rate of energy transfer
 1

(so) potato soup will remain at a higher temperature
 1

[9]**Q2.**
 (a) 78 (°C)
allow 2 marks for correct temperature change ie 22 °C
allow 1 mark for correct substitution
ie $46\,200 = 0.5 \times 4200 \times \theta$
or

$$\frac{46200}{0.5 \times 4200} = \theta$$

3

(b) 6.4 (W)

allow 2 marks for an answer that rounds to 6.4

allow 1 mark for correct substitution

ie $46\,200 = P \times 7200$

an answer of 23 000 or 23 100 or 385 gains 1 mark

2

[5]

Q3.

(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** 4.1×10^4 (J)

accept

41400 or 4.14×10^4

correct substitution of

$0.018 \times 2.3 \times 10^6$ 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

