Question	Answer	Marks	AO Element	Notes	Guidance
1(a)	(E =) $mc\Delta T$ **OR** 0.30 × 4200 × (100 – 95) (1) 6300 J (1)	**2**			
1(b)	(C =) $E \div \Delta T$ **OR** 6300 ÷ 84 (1) 75 J / °C (1)	**2**			
2	molecules do work against attractive force as they evaporate (1) more energetic molecules more likely to escape (1) average energy of remaining molecules decreases (1)	**3**			
3	cold junction labelled or shown in ice or something similar **OR** diagram with two junctions with voltmeter labelled (1) two different metals labelled (1) galvanometer or voltmeter joining ends of wires (1)	**3**			

Question	Answer	Marks	AO Element	Notes	Guidance
4	pV = constant **OR** $p_1V_1 = p_2V_2$ in any form (1) $p_1 \times 820 = 20\,000 \times 330$ **OR** $(p_1 =) 20\,000 \times 330 / 820$ (1) $(p_1 =)$ 8000 Pa (1)	**3**			
5	molecules touching **OR** no space between molecules (1) large (repulsive / intermolecular) forces (when moved closer) (1)	**2**			
6	1st box **gas** (1) 2nd box **solid** (1)	**2**			
7	any **one** from: A has a capillary / tube of greater cross-section / diameter / radius / width A contains a liquid with less expansion per degree / unit temperature rise A is longer than B A has a smaller bulb	**1**			
8	C - 1000 J / °C	**1**			

Question	Answer	Marks	AO Element	Notes	Guidance
9(a)	(E =) mc∆θ **OR** 65 × 720 × 7 (1) 3.3×10^5 (J) (1) P = E / t in any form **OR** (t=) E / P **OR** $3.3 \times 10^6 / 1.5 \times 10^3$ (1) 220 s (1)	**4**			
9(b)	any **two** from: the heater warms walls / floor / ceiling / windows / furniture / objects thermal energy conducted through walls / floor / ceiling / windows (to exterior) thermal energy used to raise temperature of air entering room via draughts / openings	**2**			
					[Total: 25]