Question number	Answer	Notes	Marks
8 (a)	288 (K);	allow 288.15 (K) allow 288.16 (K)	1
(b) (i)	(energy of molecules) increases; **kinetic** energy increases;	 scores both marks allow KE for kinetic energy	2
(ii)	substitution into E = V × I × t; conversion of minutes to seconds; evaluation; e.g. time = 45 × 60 = 2700 (s) energy = 230 × 1.5 × 2700 energy = 9.3×10^5 (J)	independent mark i.e. allow ×60 seen anywhere allow in either order allow 931 500 (J) however rounded 15 525 (J) scores 2 marks however rounded 258.75 (J) scores 2 however rounded	3
(iii)	substitution into Q = m × c × ΔT; rearrangement; evaluation; e.g. 9.3×10^5 = mass × 4200 × (60-15) mass = 9.3×10^5 / 4200 × 45 (mass =) 4.9 (kg)	allow ecf from (ii) allow in either order answer that rounds to 0.082 (kg) scores 3 ecf from 15 525 divided by (4200 x 45) answer that rounds to 0.0014 (kg) scores 3 ecf from 258.75 divided by (4200 x 45)	3

(c)	(i)	particles are arranged randomly;	condone moving randomly condone irregular for random	2
		idea that particles are spread out or are widely spaced;	idea of 'large gaps'	
	(ii)	boiling happens at a specific or fixed temperature or 100 °C but evaporation happens at any temperature;	needs comparison condone idea of a lower temperature (compared to boiling point)	2
		boiling happens throughout a liquid but evaporation only happens at the surface /eq ;	ignore reference to bubbles	

Total for Question 8 = 13 marks