Question number	Answer	Notes	Marks
5 (a) (i)	C (nuclear); A is incorrect because chemical reactions do not happen in the Sun B is incorrect because the kinetic store of particles increases during nuclear fusion D is incorrect because the thermal store of the Sun remains constant whilst fusion is taking place		1
(ii)	B (by radiation); A is incorrect because transfers by heating cannot happen in a vacuum C is incorrect because there is no electrical circuit or flow of ions D is incorrect because the transfer does not happen due to forces		1
(b) (i)	evaluation of total power / conversion of hours to seconds; evaluation of energy in J; evaluation of energy in MJ; e.g. power = (1000 × 15 =) 15 000 (m^2) OR time = (2 × 60 × 60 =) 7200 (s) energy = (15 000 × 7200 =) 108 000 000 (J) energy = (108 000 000 ÷ 1 000 000 =) 108 (MJ)	allow ×3600 seen anywhere in working	3
(ii)	substitution into $\Delta Q = m \times c \times \Delta T$; rearrangement; evaluation of ΔT; evaluation of final temperature; e.g. 100 000 000 = 1100 × 4200 × ΔT ΔT = 100 000 000 / (1100 × 4200) (ΔT =) 22 (°C) T = (20 + 22 =) 42 (°C)	-1 for POT error allow ECF from incorrect ΔT allow 23.3…, 21.6… allow 41.6-43.8 (°C)	4
(iii)	any sensible suggestion; e.g. • heating process is not 100% efficient • energy also heats up pipes / not all energy is transferred to water • some energy is transferred to the surroundings • power of Sun may change	allow energy transferred to (solar) panel ignore 'heat is lost'	1

Total for Question 5 = 10 marks