Question Number	Answer		Mark
12(a)	Use of $P = \frac{\Delta E}{\Delta t}$ Use of $\Delta E = mc\Delta\theta$ $t = 216$ (s) Example of calculation $P\,\Delta t = mc\Delta\theta$ $\therefore t = \frac{0.165\text{ kg} \times 4190\text{ J kg}^{-1}\text{ K}^{-1} \times (100 - 12.5)\text{ K}}{280\text{ W}} = 216\text{ s}$	(1) (1) (1)	**(3)**
12(b)	Use of ΔE from (a) **Or** use of $P = \frac{\Delta E}{\Delta t}$ using value for Δt from (a) **Or** use of $\Delta E = mc\Delta\theta$ with $\Delta\theta = (100 - 87.7)$ Use of $\Delta E = mc\Delta\theta$ **and** $\Delta E = mL$ $m = 3.7 \times 10^{-3}$ kg (allow ecf from (a) Example of calculation $P\,\Delta t = mc\Delta\theta + mL$ $280\text{ W} \times 216\ s = 0.165\text{ kg} \times 4190\text{ J kg}^{-1}\text{ K}^{-1} \times (87.7 - 12.5)\text{ K} + m \times 2.29 \times 10^{6}\text{ J kg}^{-1}$ $\therefore 6.05 \times 10^{4}\text{ J} = 5.20 \times 10^{4}\text{ J} + m \times 2.29 \times 10^{6}\text{ J kg}^{-1}$ $\therefore m = \frac{6.05 \times 10^{4}\text{ J} - 5.20 \times 10^{4}\text{ J}}{2.29 \times 10^{6}\text{ J kg}^{-1}} = 3.71 \times 10^{-3}\text{ kg}$	(1) (1) (1)	**(3)**
	Total for Question 12		**6**