Question	Answer	Marks
3(a)	(thermal) energy per unit mass	B1
	energy to change state between liquid and gas at constant temperature	B1
3(b)(i)	$q = mL = 0.37 \times 2.3 \times 10^6$ $= 8.5 \times 10^5$ J	A1
3(b)(ii)	$pV = nRT$ **and** $T = 373$ K	C1
	$n = 370 / 18$	C1
	$V = [(370 / 18) \times 8.31 \times 373] / (1.0 \times 10^5) = 0.64$ m^3	A1
3(b)(iii)	$w = p\Delta V$	C1
	$= 1.0 \times 10^5 \times 0.64$ $= 6.4 \times 10^4$ J	A1
3(b)(iv)	(water does work against atmosphere so) work done on water is negative	B1
	increase in internal energy = $(8.5 - 0.64) \times 10^5 = 7.9 \times 10^5$ J	A1
3(c)	valid reasoning of how work done by water is affected	M1
	correct use of first law to draw conclusion about effect on specific latent heat that is consistent with work done	A1

Question	Answer	Marks
2(a)	0	B1
2(b)	$pV = nRT$ (n =) $1.5 \times 10^5 \times 4.2 \times 10^{-3} / 8.31 \times 540$	C1
	= **0.14** mol	A1
2(c)	missing pressure **1.5** ($\times 10^5$)	B1
	both missing volumes **1.8** ($\times 10^{-3}$)	B1
2(d)(i)	(ΔU:) increase in internal energy (of the system)	B1
	(q:) thermal energy supplied to the system	B1
	(W:) work done on system	B1

Question	Answer	Marks
2(d)(ii)	volume increases and work is done by the gas	B1
	temperature decreases and internal energy decreases	B1