

Revised August 2012



## HONORS WORKSHEET 1e: Cooling Curve



### Question:

- (a) How much heat (energy) is released, when 2.00 moles (36.0 g) of water at 25.0 °C is frozen, and then cooled to a temperature of -12.0 °C? (4)

### Data:

- Specific heat capacity of ice =  $2.05 \text{ Jg}^{-1}\text{K}^{-1}$
- Specific heat capacity of water =  $4.18 \text{ Jg}^{-1}\text{K}^{-1}$
- Specific heat capacity of steam =  $2.08 \text{ Jg}^{-1}\text{K}^{-1}$
- Molar heat of fusion for  $\text{H}_2\text{O}$  =  $6.02 \text{ kJ mol}^{-1}$
- Molar heat of vaporization of  $\text{H}_2\text{O}$  =  $40.7 \text{ kJ mol}^{-1}$
- Melting point of ice =  $0.00^\circ\text{C}$
- Boiling point of water =  $373 \text{ K}$

- (b) Sketch (and label) the cooling curve that you would expect to observe in the expt. described in (a). (6)