

**Marks**  
**4**

- A 150.0 g block of iron metal is cooled by placing it in an insulated container with a 50.0 g block of ice at 0.0 °C. The ice melts, and when the system comes to equilibrium the temperature of the water is 78.0 °C. What was the original temperature (in °C) of the iron?

Data: The specific heat capacity of liquid water is  $4.184 \text{ J K}^{-1} \text{ g}^{-1}$ .

The specific heat capacity of solid iron is  $0.450 \text{ J K}^{-1} \text{ g}^{-1}$ .

The molar enthalpy of fusion of ice (water) is  $6.007 \text{ kJ mol}^{-1}$ .

Answer: