P #B

Ch. 11

$m = 300\,g = .300\,kg$

$T_i = -5^\circ C$ (ice)

$T_f = 10^\circ C$ (water)

$C_{ice} = 2090\ J/kg\cdot C$

$C_{H_2O} = 4186\ J/kg\cdot C$

$L_f = 3.33 \times 10^5\ J/kg$

$$Q = Q_{ice(-5\text{ to }0)} + Q_{melt} + Q_{water(0\text{ to }10^\circ C)}$$

$$= m \cdot C_{ice} \cdot \Delta T_{-5\text{ to }0} + m \cdot L_f + m \cdot C_{H_2O} \cdot \Delta T_{0\text{ to }10}$$

$$= (.3\,kg)(2090\,J/kg\cdot C)(0 - -5^\circ C) + (.3\,kg)(3.33 \times 10^5\,J/kg) + (.3\,kg)(4186\,J/kg\cdot C)(10^\circ C - 0)$$

$$\boxed{Q_{total} = 116{,}000\ J}$$