

FORMULAE AND POSSIBLY HELPFUL INFORMATION

$$P_A = X_A P_A^0$$

$$P_A = k_A X_A$$

$$\bar{\Pi} = MRT$$

$$\Delta T_b = K_b m$$

$$\Delta T_f = K_f m$$

$$PV = nRT$$

$$\Delta S_{\text{sys}} = q_{\text{rev}}/T = \Delta H/T$$

$$\Delta S_{\text{surr}} = -\Delta H/T$$

$$w = -P_{\text{ext}} V$$

$$q_p = nC_p \Delta T$$

$$\Delta E = q + w$$

$$\Delta H = \Delta E + P\Delta V$$

$$\Delta H = \Delta E + RT\Delta n$$

$$\Delta S_{\text{univ}} = \Delta S_{\text{sys}} + \Delta S_{\text{surr}}$$

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta G = \Delta G^0 + RT\ln Q$$

$$\Delta G^0 = -RT\ln K$$

$$\ln(K_2/K_1) = -(\Delta H^0/R)[(1/T_2) - (1/T_1)]$$

$$R = 8.3145 \text{ J/mol-K} = 0.08206 \text{ L-atm/mol-K}$$

$$1 \text{ atm} = 760 \text{ torr} = 101325 \text{ Pa}$$

$$1 \text{ cal} = 4.184 \text{ J}$$

$$0^\circ\text{C} = 273.15 \text{ K}$$

$$N_o = 6.02 \times 10^{23}$$

Benzene (g)

Benzene (l)

$$\Delta H_f^0 \quad 82.93 \text{ KJ/mol}$$

$$49.03 \text{ KJ/mol}$$

$$\Delta G_f^0 \quad 129.66 \text{ KJ/mol}$$

$$124.50 \text{ KJ/mol}$$

$$P^0 (\text{Benzene}) = 95.1 \text{ torr (at } 25.0^\circ\text{C)}$$

$$K_f (\text{Benzene}) = 4.9 \text{ K-kg/mol}$$

