001 version _____ last name _____ first name _____ signature

McCord CHf301

Final Exam

Summer 2016

$h = 6.626 \times 10^{-34}$ J·s

$c = 3.00 \times 10^{8}$ m/s

$N_A = 6.022 \times 10^{23}$ mol^{-1}

$\mathcal{R} = 2.18 \times 10^{-18}$ J

$R = 0.08206$ L atm/mol K

$R = 8.314$ J/mol K

$k = 1.38 \times 10^{-23}$ J/K

$PV = nRT \qquad x_A = P_A/P_{total}$

$P(V - nb) = nRT$

$\left(P + a\frac{n^2}{V^2}\right)(V - nb) = nRT$

$P_{total} = P_A + P_B + P_C + \cdots$

$v_{rms} = \sqrt{\frac{3RT}{M}} \qquad E_k = U = \frac{3}{2}RT$

$E = h\nu \qquad c = \lambda \cdot \nu$

$\frac{1}{2}mv^2 = h\nu - \Phi$

Rydberg : $\nu = \mathcal{R}\left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$

$\Delta U = q + w \qquad H = U + PV$

$w = -P\Delta V \qquad w = -\Delta nRT$

$\Delta U = \Delta H - P\Delta V$

$\Delta U = \Delta H - \Delta nRT$

$\Delta U = q_v = n\,C_v\,\Delta T$

$\Delta H = q_p = n\,C_p\,\Delta T$

$q = n \cdot \Delta H_{trans}$

$q_{sys} = -q_{cal}$

$q_{cal} = q_{water} + q_{hardware}$

$\Delta S = q_{rev}/T \qquad S = k \ln W$

$\Delta S = n\,C_m \ln\left(\frac{T_2}{T_1}\right)$

$\Delta H_{rxn} = \Delta H_1 + \Delta H_2 + \Delta H_3 + \cdots$

$\Delta H^\circ_{rxn} = \sum n\Delta H^\circ_f(\text{prod}) - \sum n\Delta H^\circ_f(\text{react})$

$\Delta H_{rxn} = \sum BE_{reactants} - \sum BE_{products}$

$\Delta G^\circ_{rxn} = \sum n\Delta G^\circ_f(\text{prod}) - \sum n\Delta G^\circ_f(\text{react})$

$\Delta S^\circ_{rxn} = \sum nS^\circ(\text{prod}) - \sum nS^\circ(\text{react})$

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

$\Delta S_{trans} = \Delta H_{trans}/T_{trans}$

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