Met 320: Beyond Chapter 8 Guide (in the order presented in lecture)

Chapter 11 and 12: Reactions involving gases (11) and any phase (12):

§ All

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

$$\Delta G^o = -RT \ln K_{EQ}$$

Reaction Extent Problems (11)
Ellingham Diagrams (12)

Problems: 11.2, 11.6, 11.10, 12.1, 12.3, 12.4, 12.7,
12.11 (assume a basis of calc, say 1 minute),
See old exams

Chapter 9: Solutions

§9.2 Raoult's and Henry's Laws – I am not impressed by these 'Laws', but many people speak of them as though they are universally true so you might want to familiarize yourself with the ideas presented. These laws are sometimes strictly true but are often useful approximations.

§9.3 Note the author's incorrect definition of activity, but his so-called defining equation is nevertheless true.

§9.4 Gibbs-Duhem Equation

§9.5 Note Eqs. [9.27a and 9.27b] are the Tangent-Intercept Equations.

§9.6 Basically what you already know about Ideal Solutions:

- Heats and Volumes of Mixing ($\Delta H_i^{M,ID}$, $\Delta V_i^{M,ID}$) = 0,
- Gibbs energy of Mixing ($\Delta G_i^{M,ID}$) = RT ln(x_i),
- Entropy of Mixing ($\Delta S_i^{M,ID}$) = - R ln(x_i).

§9.7 Real solutions and Activity plots,
Temperature dependence of activity - see Eq. [9.47].

§9.8 Gibbs-Duhem Integration: poor functions and the Alpha Function.
Note the sign of the second term in Eq. [9.61]'s would be positive if dX_B were used rather than dX_A in the integral. This was the form we derived in class.
Stop before the section titled *The Relationship between Henry's and Raoult's Laws.*

Problems: 9.3 b, c, d
See old exams

Chapter 15: Reactions Electrochemistry

§9.1-3 Nerst Equation and relation to Q

Problems: 15.8, See old exams

Chapter 13: (Phase Rule Only)

§13.4 (through example 2)

Problems: See old exams