

Exam 3 Review Sheet

Key Concepts from Ch 23-26

1. Phase Diagrams and Phase Transitions
2. Chemical Potential
3. Gibbs Energy as a Function of T and P
4. Clapeyron and Clausius-Clapeyron Equations
5. Ideal Solutions
6. Raoult's Law and Deviations from the law
7. Henry's Law
8. Azeotropes and Immiscible Solutions
9. Activity
10. Colligative Properties
11. Electrolytes
12. Debye-Huckel and Extended Debye Huckel Equations
13. Concentration Units (and conversions)
14. Solving Equilibrium Problems (ICE tables)
15. Extent of Reaction and Equilibrium
16. Equilibrium Constants – K_p , K_c , and K_a
17. Reaction Quotient and Equilibrium
18. Le Chatelier's principle
19. Temperature dependence of equilibrium constants
20. Thermodynamics (ΔG , ΔH , ΔS etc) and relationship to equilibrium
21. Condensed Phases (including solutions) and equilibrium (i.e., Wed and Fri class)
22. Statistical Mechanics and Equilibrium – understand pieces (not plug 'n chug)

“Equations” to Know

Raoult's Law

Henry's Law

Finding K_p (and Q_p , K_c , K_a) from reactions

i.e. given: $\text{CO(g)} + 3\text{H}_2\text{(g)} \rightarrow \text{CH}_4\text{(g)} + \text{H}_2\text{O(g)}$ be able to tell be that

$$K_p = \frac{\left(\frac{P_{\text{H}_2\text{O}}}{P^\circ}\right)\left(\frac{P_{\text{CH}_4}}{P^\circ}\right)}{\left(\frac{P_{\text{CO}}}{P^\circ}\right)\left(\frac{P_{\text{H}_2}}{P^\circ}\right)^3}$$