

You should be successful on Exam II, if you can do the following in addition to the skills from CHEM 101 and Exam I:

KINETICS - Unit 15, Sections 1-6

1. Give the rate of reaction in terms of reactant and product concentration variations
2. Calculate aver. rate, given $[]_i$, $[]_f$, t_f , and t_i
3. Calculate instantaneous rate from a graph of $[]$ vs. time
4. Explain the factors that affect rxn rates.
5. Explain the meaning of "rate constant" & state the units
6. Determine the rate law and overall order from experimental results (vv)
7. Calculate rate, rate constant, or reactant conc. given rate law + 2 of these
8. Calculate $[A]$, $[A]_0$, k , or t given 3 of 4
9. Explain & calculate relationship between $t_{1/2}$ & k for zero, 1st, and 2nd order rxn
10. Use graphing to determine zero, 1st, or 2nd order
11. Find E_a , ΔE from energy profile & define each
12. Use collision theory to explain temperature & concentration dependence
13. Describe the effects of a catalyst on energy requirements
14. Use the Arrhenius equation to relate activation energy to changing temp. & rate constants
15. ID elementary step, overall rxn, and rate determining step
16. Derive Rate law given elementary steps & their speeds or overall rxn
17. ID a catalyst and an intermediate in a mechanism

EQUILIBRIUM -Unit 16, Sections 1-4

1. Describe chemical equilibrium
2. Describe & Write the equilibrium constant expression for a balanced equation.
3. Calculate K using equilibrium concentrations or pressures (vv)
4. Convert between K_p and K_c
5. Find the equilibrium constant for 1 equation by comparing it to another equation
6. Calculate K given initial concentration and 1 equilibrium concentration
7. Determine if an equilibrium has been reached, conditions at equilibrium, or the direction of the equation.
8. Calculate Q and compare it to a given K to determine the direction of the equil.
9. Use K and initial concentrations to find the equilibrium concentrations
10. Explain and Calculate how changes in conc, temp, & pressure effect equilibrium
11. Calculate K from ΔG

Unit 20.3c and 20.3d