

Exam 2 Review Sheet for Friday, March 2 Exam Chem 1120, Spring 01, Robertson

Our exam will include material from parts of **chapters 13, 15 and 16**. **Only material that I have covered in class, have assigned homework problems for or is mentioned on this review sheet will be tested.** The answers to all problems in the chapters are on reserve in the library. Material from previous tests is also fair game, but will be given limited coverage. On Friday, you should be able to:

Chapter 13 - Solutions

- Define and work problems with molarity, molality, mole fraction, and weight and volume fractions.
- Define colligative properties. Explain why VP decreases and FP goes down and BP goes up when a nonvolatile solute is dissolved in a volatile solvent. Work problems with Raoult's Law as well as FP depression and BP elevation.
- Explain osmotic pressure and work problems. Define osmolarity. Give practical applications of osmotic pressure with reference to hypotonic, hypertonic, and isotonic solutions.
- Explain colloids and their relationship to solutions and suspensions. Give examples of names of types of colloids. Explain the light scattering of colloids and answers to such questions as "Why is cigarette smoke blue?"

Chapter 15 - Organic

- Define and use the following terms: catenation, hybridization, homologous, saturated, unsaturated, condensed structural formula, general structural formula, radicals, isomers.
- Explain why there are so many carbon compounds.
- List and explain the different types of hybridization that carbon undergoes and what geometries and bond angles result.
- Name and draw structural formulas for alkanes, cycloalkanes, alkenes, cycloalkenes, alkynes, aromatics, halides, alcohols, ethers, aldehydes, ketones, acids, esters, amines, and amides. Be sure and know common names for structures covered in class. Describe the general properties of each type of compound with regard to stable phase under normal room conditions, water solubility, and chemical reactivity.

Chapter 16 - Kinetics

- Define kinetics and reaction rate. Determine the reaction rate in terms of the change in concentration of any reactant or product. Be able to determine graphically the instantaneous rate of a reaction.
- Explain the basic idea of collision theory for chemical reactions and the factors that affect reaction rate. This will include knowing terms such as reaction mechanism, elementary step, rate determining step, activation energy, catalyst (Homo and heterogeneous).
- Know the difference between the differential rate law and the integrated rate law. Be able to determine the order of a reaction from a rate law and vice versa.
- Determine the reaction order by the method of initial rates.