Things to Know for Quiz 3

Chem 30B, Spring 2020

Chapter 13

1. List the properties of alkenes and alkynes. Given some alkenes and alkynes, predict which would have the higher boiling point.
2. Given an organic reaction, classify it as either an addition, an elimination, substitution, or a rearrangement reaction. Be able to explain how you can tell. [Ch. 13 #52-57]
3. Addition reactions of alkenes: hydrogenation, halogenation (chlorination or bromination), hydrohalogenation (hydrochlorination or hydrobromination or hydroiodination), hydration. For each of these types of reactions, given the reactants and reaction conditions, be able to predict the structure(s) of the products. Also, given the name of the reactant and the name of the reaction, be able to write the equation for the reaction, draw the structures of the reactants and products, and include reaction conditions, if any. Be able to name the products. In some cases, there is only one product. In other cases, there are two products. Be able to tell whether there will be one or two products. [Ch. 13 #58-59, 62, 77-79]
4. What is Markovnikov's rule, and when does it apply?
5. Given the formula of a product, be able to show the reaction for how it could have been formed from an alkene. [Ch. 13 #60, 61, 80]
6. Structure of benzene
7. Benzene is especially stable - why?
8. Name compounds containing benzene rings. Use ortho-, meta-, or para- if there are only two substituents. [Ch. 13 #37]
9. Draw the structure of any benzene compound given the name. [Ch. 13 #39]
10. Some benzene-containing compounds have their own names - know these.

Chapter 14

1. Name alcohols according to IUPAC rules. (Diols and triols, too.)
2. Given the name of any alcohol, draw the structure. [Ch. 14 #34, 35]
3. Classify any alcohol as either primary (1°), secondary (2°), or tertiary (3°). [Ch. 14 # 27, 36a]
4. Explain the properties of alcohols (boiling points and solubility).
5. Given the names or structures of some organic compounds, predict which would have the higher boiling point and explain the reasons. See the "Intermolecular Forces" handout for examples. [Ch. 14 #38]
6. Given the names or structures of some organic compounds, decide which would be the most soluble in water or the most soluble in a nonpolar solvent, and explain the reasons. [Ch. 14 # 36b, 39, 62]

Chapter 12 - Review this:

1. Write the equation for the halogenation (chlorination or bromination) of an alkane, including reaction conditions. Because many different products are possible, be able to draw the structures of all of the monosubstituted products and all of the disubstituted products (and possibly trisubstituted products). Don't show any duplicate structures. Why is this type of reaction not very useful in general?