**Assignment #8 (Due May 1, 2023)**

**Chem 436 – Spring 2023**

1. When you subject vinyl bromide or bromobenzene with Sodium Ethoxide, why do you not expect to see an SN2 reaction? [Feel free to show appropriate diagrams of the transition state, hybridization, and/or geometry/steric arguments if necessary]

2. Rank the following with respect to their order of reactivities with a nucleophile in a nucleophilic acyl substitution. Justify your order of arrangement. [1=Most Reactive, 4=Least Reactive]



3. Arrange the following in the decreasing order of pKaH [For compounds having more than two Nitrogen, consider the most basic site for this answer]:



4. In the reaction of an α,β-unsaturated carbonyl compound, why do you think Gilman reagent and Grignard reagents behave differently? [Hint: Think along the lines of kinetic and thermodynamic controlled product]

5. Explain why acid-catalyzed ester hydrolysis is reversible but base-catalyzed ester hydrolysis is not.

6. You’re performing an experiment and you have got a mixture of benzylamine, benzoic acid, and biphenyl in your final step. How would you separate them using liquid extraction?

7. Which of the following two amides is more stable and why?



8. Which of the following statements are false? Why?

1. Carboxylic acids are weaker acids than HCl
2. The C-O bonds in a formate anion are different
3. Amides are relatively more reactive than esters
4. Typically, thiols are more acidic than carboxylic acids
5. Acid hydrolysis of nitriles can yield carboxylic acids