CHM 2211 – Ch 20 Homework

1. Provide structures and systematic names for pyruvic acid, fumaric acid, benzonitrile, and acetonitrile. Refer to Table 20.1 and Section 20.1. Show correct geometry on sp^2 and sp C's. (1 pt)

2. Provide structures, with correct geometry on sp^2 and sp C's, for 3-oxobutanoic acid, 1,4-benzenedicarboxylic acid, 1-cyclohexenecarbonitrile, and 2-oxobutanenitrile. (1 pt)

3. Show a reaction mechanism that will create propanoic acid from an alkyl chloride using Mg, then CO_2. (1 pt)

4. Show how to start with butanoic acid to sequentially synthesize 1-butanol, 1-bromobutane, pentanenitrile, then pentanoic acid. (butanoic acid → a → b → c → pentanoic acid). State the general class of reaction or mechanism for each step. (2 pts)

5. Show the complete mechanism for the basic hydrolysis of propanenitrile into propanamide, then into propanoic acid. (2 pts)

6. Show the complete dehydration mechanism that converts propanamide into propanenitrile. (2 pts)

7. Show a complete reaction mechanism that will create propylamine from an alkyl chloride using KCN, then a reducing agent. (1 pt)