Name: \_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

Organic Chemistry Practice Exam 1

Questions 1-10: Name the following organic compounds according to IUPAC nomenclature

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

Questions 11-20: Determine the stereochemistry and/or stereochemical relationship of each chiral compound(s) (if applicable)

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

Questions 21-30: Determine which direction the equilibrium would lie in these acid-base chemistry reactions and explain your reasoning.

1. $NH\_{2}^{-}+H\_{2}O \leftrightarrow NH\_{3}+OH^{-}$
2. $NH\_{3}+CH\_{3}COO^{-}\leftrightarrow NH\_{2}^{-}+CH\_{3}COOH$
3. $H\_{2}O+CH\_{3}COOH \leftrightarrow H\_{3}O^{+}+CH\_{3}COO^{-}$
4. $H\_{2}O+CH\_{3}OH \leftrightarrow H\_{3}O^{+}+CH\_{3}O^{-}$
5. $HCl+OH^{-}\leftrightarrow Cl^{-}+H\_{2}O$
6. $H\_{2}SO\_{4}+CO\_{3}^{-2}\leftrightarrow HCO\_{3}^{-}+HSO\_{4}^{-}$
7. $HCl+H\_{2}O \leftrightarrow H\_{3}O^{+}+Cl^{-}$
8. $HF+H\_{2}O \leftrightarrow H\_{3}O^{+}+F^{-}$
9. $F^{-}+CH\_{3}COOH \leftrightarrow HF+CH\_{3}COO^{-}$
10. $NH\_{2}^{-}+CH\_{3}OH\leftrightarrow NH\_{3}+CH\_{3}O^{-}$

Questions 31-40: Determine which molecule is more polar and explain your reasoning using dipole moment arrows

1. (CH3)3PO vs CCl4
2. SOCl2 vs CS2
3. NH3 vs NH4+
4. BF3 vs PF4Cl
5. SO2 vs NO
6. CH3COOH vs CH3CH3
7. CH3MgBr vs CH3OCH3
8. CH2F2 vs CH2Cl2
9. CH2O vs CO2
10. CH3MgBr vs CH3Li

Questions 41-45: Rank the bonds in each of the following molecules from shortest to longest. Explain your reasoning. How does the length of these bonds correlate to their bond strength in kJ/mol?

1. 
2. 
3. 
4. 
5. 

Questions 46-50: Determine of the sets of cyclohexane molecules are identical, diasteromers, enantiomers, or constitutional isomers. Here, conformational isomers falls under the “identical” category. Explain your reasoning by assigning R and S.

1. 
2. 
3. 
4. 
5. 

Questions 51-55: Determine if the given molecule is optically active and explain your reasoning.

1. 
2. 
3. 
4. 
5. 