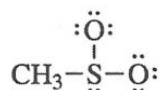


Final Test Prep, Part 1

- 1) What is the electronegativity trend of the periodic table?
- 2) When bonds are formed, what determines if it will be a covalent bond or an ionic bond?
- 3) Draw the ClO_4^- ion, and assign formal charges to all of the elements.
- 4) What is the formal charge on the S and O atoms in the following structure?

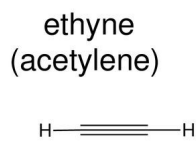
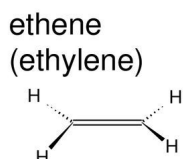
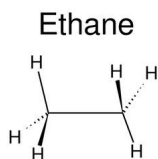


- 5) What are constitutional isomers?

6) Cyclohexane has the molecular formula of C_6H_{12} . Draw it and four more constitutional isomers of C_6H_{12} . Then, name the isomers.

7) What type of bonds are the shortest bonds? Which are the longest bonds?

8) What is the s and p hybridization of the C atoms in the following compounds?



9) What is the difference between saying something is sp^3 hybridized and that it has a tetrahedral structure?

10) What constitutes a polar bond?

11) What is a zero dipole moment?

12) What are the three rules of electron configuration?

13) What is resonance?

14) What is a conjugate acid-base pair?

15) Define Bronsted-Lowry and Lewis acids and bases.

16) Explain how you might identify the above acids and bases.

- 17) There is an acid and conjugate base pair and a base and conjugate acid pair in the following reaction. What are they?



- 18) What is the difference between a nucleophile and an electrophile?

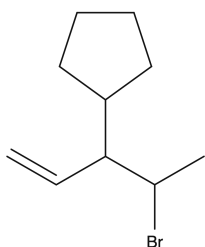
- 19) Will a strong acid have a high or low pK_a ?

- 20) What is the relationship between the strength of an acid and the strength of its base?

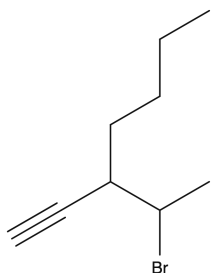
- 21) What is the Gibbs Free Energy equation?

- 22) Name the following compounds.

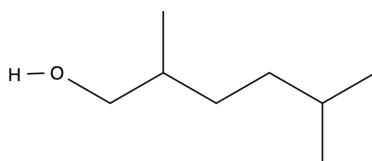
a)



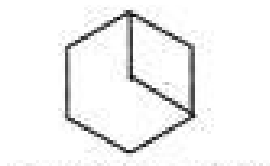
b)



c)



d)



23) Draw the most stable conformation of 2-bromo-3-methylpentane, viewed through the C2-C3 bond (C-2 in the front, C-3 in the back).

24) Draw the most stable form of trans-1,3-diethylcyclohexane.

- 25) Calculate the index of hydrogen deficiency of
4-bromo-7-chloro-6-cyclohexyl-3-cyclopropyl-2,5-octa-diene.