

Name: _____ Date: _____ Pd: _____

Distance Learning Acid-Base Organic Chemistry TEST – 3



Directions: Complete only what is asked for each question. Complete sentences are NOT necessary, but complete responses are! **Make sure your explanations/justifications are specific! Make sure that all answers are your own!**

1. What is the difference between an acid and a base? (specifically, what is their function according to the Bronsted-Lowry definition?)

2. Explain how the strengths of acids can be determined from analyzing their conjugate bases.



3. Draw the mechanism and label the parts of the following reaction. (use: A, CA, B, CB on the line below the molecule)



4. List what the “4 factors” are in order of significance, then describe how they “work”:

a. _____

b. _____

c. _____

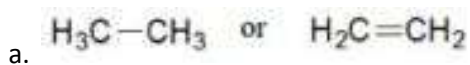
d. _____

5. Which is a stronger acid, HF or HBr? Draw the conjugate bases of each and justify/explain your reasoning.

6. Show and explain an example of each “good” and “bad” inductive effects using alkyl groups and electronegative atoms.

7. What is the alpha effect? Explain and draw an example of what it would look like.

8. For each of the two acids, CIRCLE the stronger acid and justify/explain your reasoning . You may draw the resulting conjugate bases, if needed, but it is not necessary.



9. **True** or **False:** (circle one) Resonance with many carbon atoms is better than resonance with one oxygen atom.

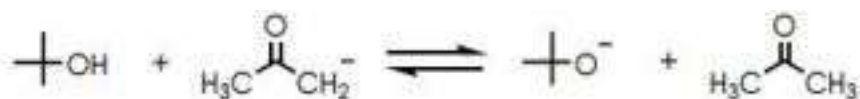
10. What is a pKa value? How can it be used to determine information about an acid-base reaction?

11. Which pKa value is more acidic? (circle one) 2.3 or 6.45

12. Draw the shape/size of orbitals in order of triple, double, and single bonds from left to right. Label the hybridization for each type of orbital.

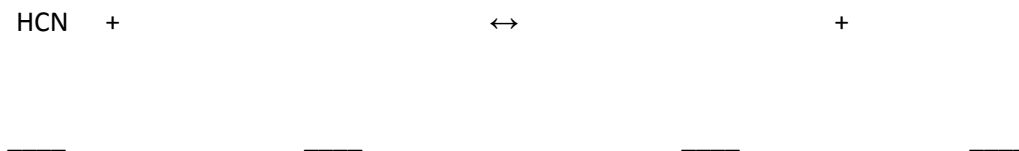
13. Explain how you predict the shift of equilibrium in an acid-base reaction.

14. Show the mechanism for the following reaction and predict the direction of equilibrium by drawing a large arrow or circling the side the equilibrium will shift towards. Then justify/explain your answer!



Justification:

15. Decide which hydrogen is the most acidic, then **draw the mechanism, predict the products, label the acid-bases and conjugate pairs, predict the direction of equilibrium, and justify your reasoning** for the following molecule reacting with hydroxide:



Justification:

16. Decide which hydrogen is the most acidic, then **draw the mechanism, predict the products, label the acid-bases and conjugate pairs, predict the direction of equilibrium, and justify your reasoning** for the following molecule reacting with the amide ion:



Justification: