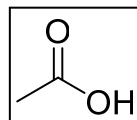


Name: \_\_\_\_\_

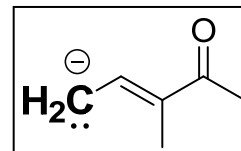
1. Identify the functional group in the molecule below. (1 point)

- a. ketone                                      c. carboxylic acid  
 d. alcohol                                    d. ester

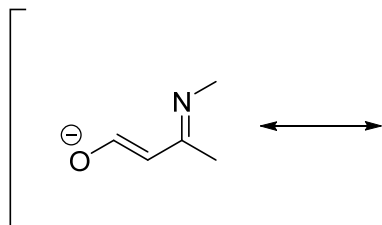


2. What is the hybridization and molecular geometry for
- bolded carbon**
- ? (1 point)

- a.  $sp$ , linear                                      c.  $sp^3$ , tetrahedral  
 d.  $sp^2$ , trigonal planar                                      d.  $sp^3$ , trigonal pyramidal



3. a. Draw as many reasonable resonance structures as you can for the following molecules using correct curved arrows to show electron movement.  
 b. Label the major resonance contributor and provide a **one phrase** explanation. (4 points)



4. a. Provide products **and** curved arrows for the following acid base reaction.  
 b. Provide the  $pK_a$  of the acid **and** conjugate acid and use this to predict the direction and magnitude of the equilibrium (4 points)

