Key, Quiz2, F2010

 $sp + sp^3$

1. (4) Answer the following four questions about the molecule shown in the box below (write numbers after each question; 1 pt each answer):



• Number of *non-bonding* electrons present in this molecule: • Number of sp^2 -hybridized atoms in this molecule: • Number of π bonds in this molecule: • Number of σ bonds in this molecule: • Number of σ bonds in this molecule: • Number of σ bonds in this molecule:

2. (3) Which orbitals overlap to form the carbon-oxygen σ bond of acetaldehyde, CH₃CHO?

(circle correct answer): $sp^3 + sp^3$

 (sp^2+sp^2) sp^3+sp^2 $sp+sp^2$

3. (6) In the provided boxes, finish drawing of the **most important resonance contributing structures** for each of the following species by placing missing bonds or formal charges at appropriate position. (3 pts each structure; no partial credit)



4. (6) Similarly to the previous problem, finish drawings of the **resonance contributing structures** which are in agreement with the shown curved **arrows**. (3 pts each structure; no partial credit)



5. (3) Which one of the following molecules has the longest C-H bond?



6. (3) Circle the correct line-angle structure for the molecule shown in the box:



Overall Score: 25