Chemistry 2541

Fall Semester 2010

Quiz 2

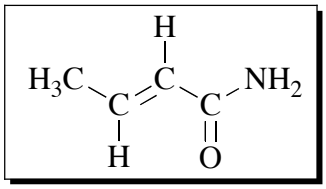
(25 points)

September 22, 2010

Printed Name (***Last***, First) _____

Good Luck!

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

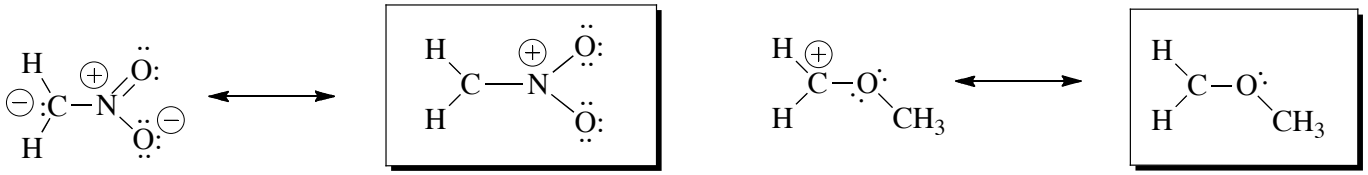


- **Number of *non-bonding* electrons present in this molecule:** _____
- **Number of sp^2-*hybridized* atoms in this molecule:** _____
- **Number of π bonds in this molecule:** _____
- **Number of σ bonds in this molecule:** _____

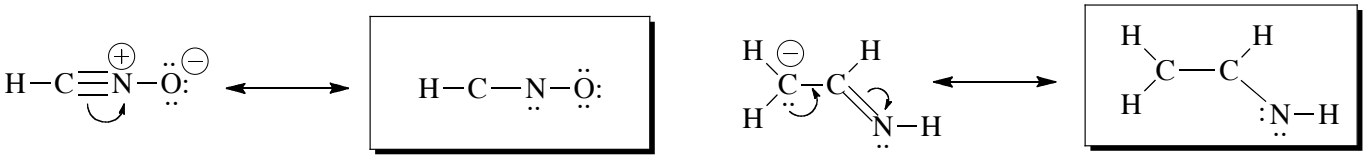
2. (3) Which **orbitals** overlap to form the **carbon-oxygen σ bond** of acetaldehyde, **CH_3CHO** ?

(circle correct answer): **$sp^3 + sp^3$** **$sp^2 + sp^2$** **$sp^3 + sp^2$** **$sp + sp^2$** **$sp + sp^3$**

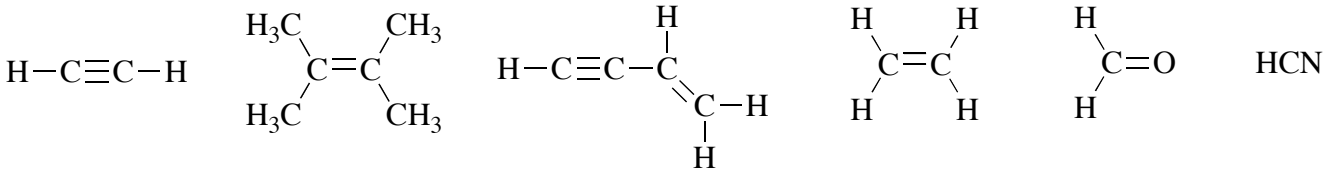
3. (6) In the provided boxes, finish drawing of the **most important resonance contributing structures** for each of the following species by placing missing bonds or formal charges at appropriate position. (3 pts each structure; no partial credit)



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)

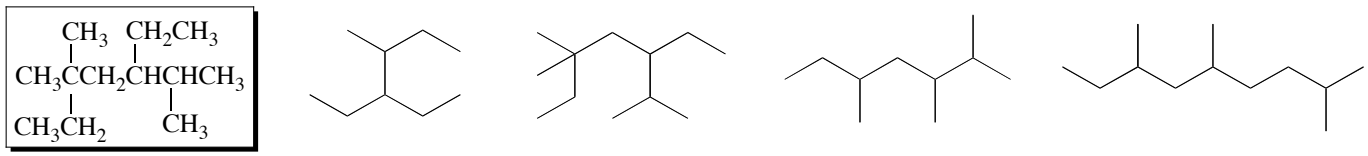


5. (3) Which one of the following molecules has the **longest C–H bond**?



HCN

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



Overall Score: _____