

Chemistry 2541, Fall 2015

Quiz 2

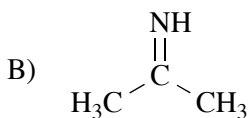
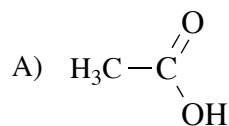
(30 points)

Important notes:

- Please use the provided Scantron form for your answers; you can keep the sheet with the questions and can use it as scratch paper
- Do not forget to write your name on the Scantron form
- You will not receive credit for unmarked answers or for more than one mark on answer line
- Your scores will be posted on eGradebook; graded Scantron forms will not be returned to students.

Questions 1-10: Please mark the appropriate box on the front of the Scantron form (3 pts each).

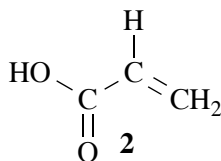
1. Which of the following compounds has *sp*-hybridized atoms in the structure?



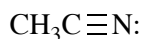
2. Which of the following compounds (molecules 1-5) have two π bonds in their structures?



1



2



3



4



5

A) **1 and 2**

B) **2 and 3**

C) **3 and 4**

D) **4 and 5**

3. Which orbitals overlap to form the carbon-carbon σ bond of acetaldehyde, CH_3CHO ?

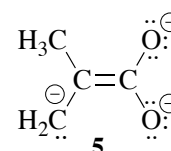
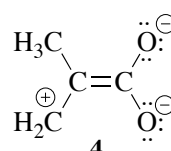
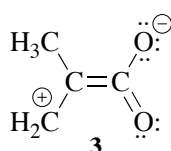
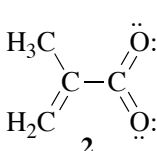
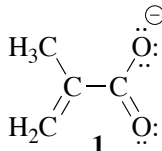
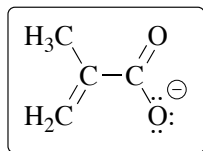
A) $\text{sp}^3 + \text{sp}^3$

B) $\text{sp}^3 + \text{sp}^2$

C) $\text{sp}^2 + \text{sp}^2$

D) $\text{sp} + \text{sp}^3$

4. Which of the following structures (1-5) represent resonance contributors of molecule in the box?



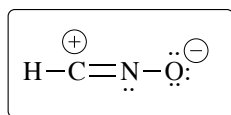
A) **1 and 2**

B) **1 and 4**

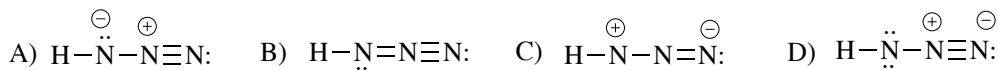
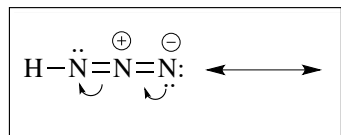
C) **2 and 4**

D) **3 and 5**

5. Which of the following structures represent **major** resonance contributors of molecule in the box?



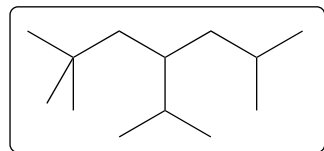
6. Which of the following structures represent resonance contributor of molecule in the box in agreement with the shown curved **arrows**?



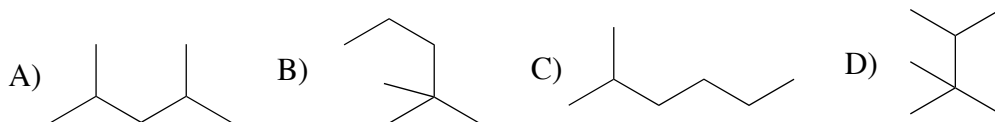
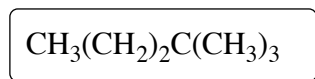
7. Which carbon-carbon bond is the **longest**?

- A) carbon-carbon single bond B) carbon-carbon double bond
C) carbon-carbon triple bond D) all carbon-carbon bonds have the same length

8. Which is the correct **molecular formula** for the line-angle structure shown in the box?



9. Which of the **line-angle formulas** corresponds to the condensed structural formula shown in the box?



10. Which of the statements in the box are true about **constitutional isomers**?

- I. They have the same connectivity of atoms
II. They have the same molecular weight
III. They have the same physical properties
IV. They have the same molecular formula

- A) I and II are true B) I and III are true
C) III and IV are true D) II and IV are true