MiniQuiz 4

Chem 111, Section 2 (Martin, 10:10am) Fall 1998

Fill out the name and student ID section of the OpScan sheet completely. Also enter your exam number, as indicated below. **Failure to correctly do so will result in the loss of 2 points on this quiz.**

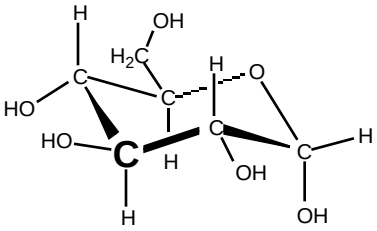
1. If carbon is sp hybridized, how many pure p orbitals remain on the atom?
   a) 0 b) 1 c•) 2 d) 3 e) 4

2. For the same pair of atoms, bond length increases with increasing bond order. (Q10.12)
   a) true b•) false

3. Which hybrid orbital set is used for carbon in CH_2F_2 (≈ Q10.16)?
   a) none b) sp c) sp^2 d•) sp^3 e) sp^3d

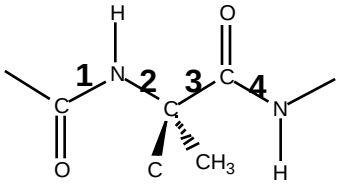
4. Which hybrid orbital set is used for oxygen in water, H_2O? (Q10.16)
   a) none b) sp c) sp^2 d•) sp^3 e) sp^3d

5. Which hybrid orbital set is used for sulfur in SO_3^{2-} (Q10.36)?
   a) none b) sp c) sp^2 d•) sp^3 e) sp^3d



6. Which hybrid orbital set is used for the carbon shown in **bold** in the sugar glucose, shown at left?
   a) none b) sp c) sp^2
   d•) sp^3 e) sp^3d

7. For the short polypeptide shown at right, which statement below is most true?
   a) Bonds 1 and 4 allow free rotation; bonds 2 and 3 do not.
   b) Bonds 1 and 2 allow free rotation; bonds 3 and 4 do not.
   c•) Bonds 2 and 3 allow free rotation; bonds 1 and 4 do not.
   d) Bonds 1, 2, and 4 allow free rotation; bond 3 does not.
   e) All bonds allow free rotation.



8. What is the bond order in He_2 (Q10.30)?
   a•) 0 b) 1/3 c) 1/2 d) 1 e) 2

9. What is the bond order in H_2^- (Q10.30)?
   a) 0 b) 1/3 c•) 1/2 d) 1 e) 2

10. For the molecule N_2, consider the electron(s) with the highest energy. In which molecular orbital does it(they) reside (Q10.47)?
    a) σ_{2s} b) σ_{2s} c•) π_{2p} d) π_{2p}^* e) σ_{2p}^*

IMPORTANT: Place the number **1** in column **K** of your OpScan sheet.