HW09 - VB

1 — 1 point

Which of the following combinations of hybridization and molecular geometry is possible?

- sp^2, tetrahedral
- sp^3d, octahedral
- sp^2, linear
- sp^3, trigonal pyramidal

2 — 1 point

The sp^3 hybridization has what percent s character and what percent p character respectively?

- 25%, 75%
- 75%, 25%
- 33%, 67%
- 50%, 50%

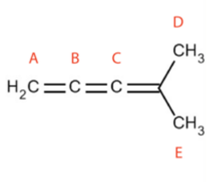
3 — 1 point

What hybridization would you expect for Se when it is found in SeO_4^{2-} ?

- sp^3d^2
- sp^3
- sp^2
- sp^3d

4 — 1 point

Give the hybridization of each central atom in order from A to E:



- sp^2, sp, sp, sp^2, sp^2
- sp^3, sp, sp, sp^3, sp^3
- sp^2, sp, sp, sp^3, sp^3
- sp^3, sp^2, sp^2, sp^3, sp^3

5 — 1 point

What hybridization would you expect for C in ethyne (C_2H_2)?

- sp
- sp^3
- sp^2
- sp^3d

6 — 1 point

sp^2 hybrid orbitals have...

- trigonal pyramidal symmetry.
- trigonal planar symmetry.
- linear symmetry.
- tetrahedral symmetry.

7 — 1 point

A sigma bond...

- always exists in conjunction with a pi bond.
- is always polar.
- stems from sp hybridization of orbitals.
- is composed of non-bonding orbitals.
- may exist alone or in conjunction with a pi bond.

8 — 1 point

In a new compound, it is found that the central carbon atom is sp^2 hybridized. This implies that...

- carbon has four lone pairs of electrons.
- carbon has four sigma bonds.
- carbon is also involved in a pi bond.
- carbon has four regions of high electron density.
- carbon has a tetrahedral electronic geometry.

9 — 1 point

In the molecule, C_2H_4, what are the atomic orbitals that participate in forming the sigma bond between the C and H atoms?

- H: 1s, C: 2p
- H: 1s, C: sp^2
- H: 2p, C: sp^3
- H: sp^2, C: sp^2
- H: 1s, C: sp