

Organic Chemistry

Multiple Choice Questions: Hybridization, Sigma Bonds, and Pi Bonds

1. What is the hybridization of the carbon atoms in methane (CH_4)?
 - a) sp
 - b) sp^2
 - c) sp^3
 - d) sp^3d
2. How many sigma bonds are present in ethane (C_2H_6)?
 - a) 4
 - b) 5
 - c) 6
 - d) 7
3. What is the hybridization of the carbon atoms in ethene (C_2H_4)?
 - a) sp
 - b) sp^2
 - c) sp^3
 - d) sp^3d
4. How many pi bonds are present in ethyne (C_2H_2)?
 - a) 1
 - b) 2
 - c) 3
 - d) 4
5. What is the hybridization of the carbon atoms in ethyne (C_2H_2)?
 - a) sp
 - b) sp^2
 - c) sp^3
 - d) sp^3d
6. How many sigma bonds are present in propene (C_3H_6)?
 - a) 6
 - b) 7
 - c) 8
 - d) 9
7. What is the hybridization of the carbon atoms in benzene (C_6H_6)?
 - a) sp
 - b) sp^2
 - c) sp^3
 - d) sp^3d
8. How many pi bonds are present in benzene (C_6H_6)?
 - a) 1
 - b) 3

- c) 6
d) 12
9. **What is the hybridization of the carbon atoms in butane (C_4H_{10})?**
a) sp
b) sp^2
c) sp^3
d) sp^3d
10. **How many sigma bonds are present in acetylene (C_2H_2)?**
a) 1
b) 2
c) 3
d) 5
11. **What is the hybridization of the central carbon atom in propane (C_3H_8)?**
a) sp
b) sp^2
c) sp^3
d) sp^3d
12. **How many pi bonds are present in 1-butene (C_4H_8)?**
a) 1
b) 2
c) 3
d) 4
13. **What is the hybridization of the carbon atoms in formaldehyde (CH_2O)?**
a) sp
b) sp^2
c) sp^3
d) sp^3d
14. **How many sigma bonds are present in 1,3-butadiene (C_4H_6)?**
a) 5
b) 6
c) 7
d) 8
15. **What is the hybridization of the carbon atoms involved in the triple bond in propyne (C_3H_4)?**
a) sp
b) sp^2
c) sp^3
d) sp^3d

- 9. c) sp^3
- 10. b) 2
- 11. c) sp^3
- 12. a) 1
- 13. b) sp^2
- 14. c) 7
- 15. a) sp

Answer Key

- 1. c) sp^3
- 2. c) 6
- 3. b) sp^2
- 4. b) 2
- 5. a) sp
- 6. c) 8
- 7. b) sp^2
- 8. b) 3

Correction

- 2 - d
- 10 - c
- 14 - 9 - to correct