

Bonding and hybridisation in organic compounds

21. Which of the following statements is false for isopentane
 (a) It has three CH_3 groups
 (b) It has one CH_2 group
 (c) It has one CH group
 (d) It has a carbon which is not bonded to hydrogen
22. The number of σ bonds in o-xylene is
 (a) 6 (b) 9
 (c) 12 (d) 18
23. In benzene the total number of σ bonds is
 (a) 3 (b) 6
 (c) 9 (d) 12
24. The number of sp^3 hybridized carbon atoms in cyclohexene are
 (a) 2 (b) 3
 (c) 4 (d) 6
25. The number of π bonds in 3-hexyne-1-ene is
 (a) 1 (b) 2
 (c) 3 (d) 4
26. Example of sp^2 hybridization is
 (a) CH_3^+ (b) CH_3
 (c) $C_2H_5^+$ (d) C_2H_5
27. Select the molecule which has only one π bond
 (a) $CH \equiv CH$
 (b) $CH_2 = CHCHO$
 (c) $CH_3CH = CH_2$
 (d) $CH_3CH = CHCOOH$
28. Carbon atoms in the compound $(CN)_4C_2$ are
 (a) sp hybridized
 (b) sp^2 hybridized
 (c) sp and sp^2 hybridized
 (d) sp , sp^2 and sp^3 hybridized
29. Acetylene molecules contain
 (a) 5 σ bond
 (b) 4 σ bond and 1 π bond
 (c) 3 σ and 2 π
 (d) 3 σ and 3 π
30. Number of unhybridised orbitals in vinyl acetylene are
 (a) 2 (b) 3
 (c) 4 (d) 6



31. Maximum bond energy of $C-H$ bonds is found in the compound
- Ethane
 - Ethene
 - Ethyne
 - Equal in all the three
32. Ethylene possess
- Two sigma and two pi bonds
 - Two pi bonds
 - Five sigma and one pi bond
 - Four sigma and one pi bond
33. The hybridization involved in the six carbon atoms of benzene is
- $3sp^3, 3sp^2$
 - $3sp^3, 3sp$
 - All $6sp$
 - All $6sp^2$
34. 1, 3-butadiene has
- sp and sp^2 hybridised C-atoms
 - sp , sp^2 and sp^3 hybridized C-atoms
 - Only sp^2 hybridised C-atoms
 - Only sp hybridised C-atoms
35. Which of the following $C-H$ bond has the lowest bond dissociation energy
- Primary (1°) $C-H$ bond
 - Secondary (2°) $C-H$ bond
 - Tertiary (3°) $C-H$ bond
 - All of these
36. Number of σ and π bonds present in 1-butene-3-yne respectively are
- $7\sigma, 3\pi$
 - $5\sigma, 2\pi$
 - $8\sigma, 3\pi$
 - $6\sigma, 2\pi$
37. Which is an acidic hydrocarbon
- $CH_3CH_2CH_2CH_3$
 - $CH_3C \equiv CCH_3$
 - $CH_3C \equiv CH$
 - $CH_2 = CH - CH = CH_2$
38. A carbon-carbon triple bond in ethyne ($-C \equiv C-$) consists of
- All σ bonds
 - Two σ bonds and one π -bond
 - One σ bond and two π bonds
 - All π bonds
39. Toluene has
- 6 σ and 3 π bond
 - 9 σ and 3 π bond
 - 9 σ and 6 π bond
 - 15 σ and 3 π bond
40. In compound X, all the bond angles are exactly $109^\circ 28'$, X is
- Chloroform
 - Carbon tetrachloride



- (c) Chloromethane
- (d) Iodoform

