Bonding and hybridisation in organic compounds

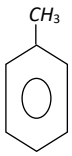
61. (a) $\overset{\downarrow 2\sigma}{CH_2}\overset{\sigma}{=}\underset{\pi}{\overset{\downarrow\sigma}{CH}}-\underset{\sigma}{\overset{\downarrow 2\sigma}{CH_2}}-\underset{\sigma}{C}\equiv\underset{\pi}{\overset{\pi}{\underset{\sigma}{N}}}$

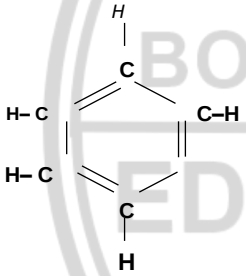
Allylcyanide

Total 9σ bond and 3π bond.

62. (d) Because hydrogen is attached with high electronegative element.

63. (c) $\underset{\text{Ethyne}}{CH\equiv CH}$

64. (b)  has 15σ bonds.

65. (b) 

12π and 3π bonds

66. (b) The s-character of $C-H$ bond of acetylene is higher in comparison to $C-H$ bond of ethene and ethane. The electrons of the $C-H$ bond in acetylene are strongly held by carbon nuclei. This facilitates the removal of hydrogen as proton.

67. (b) $\underset{9\sigma 1\pi \& 2L.p}{CH_3-\overset{\overset{\cdot\cdot}{:OH}}{\overset{|}{C}}=CH_2}$