

### Question #57944, Chemistry / Organic Chemistry

a) reaction of a chlorobenzene with a strong base yields

dichlorobenzene / benzene / **benzyne** / chloroalkene

b) reaction between an alkyl nitrile with a Grignard reagent yields

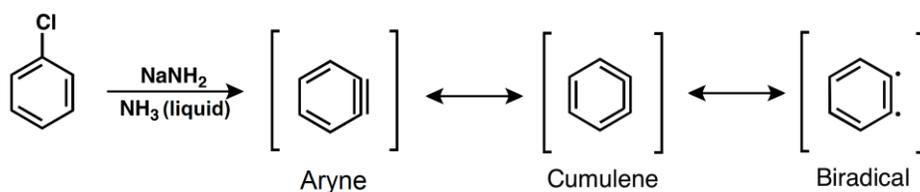
alkane / alcohol / alkanal / **alkanone**

c) in electrophilic addition to alkenes, the electrophilic attack is on

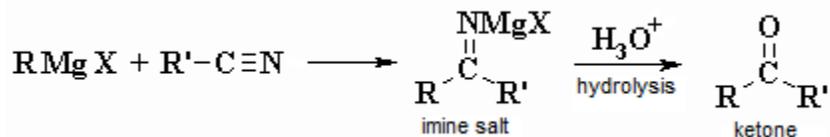
H-H bond / C-H bond / C-C bond / **none of the above**

#### Answer:

a) reaction of a chlorobenzene with a strong base leads to the formation of benzyne, which is a highly reactive species, derived from an aromatic ring by removal of two ortho substituents. Benzyne can be described as having a strained triple bond (aryne structure); however, it possesses some biradical character as well:



b) reaction between an alkyl nitrile with a Grignard reagent gives a ketone (alkanone):



c) during electrophilic addition  $A_E$  to alkenes, electrophile attacks the electron-rich C=C double bond, resulting in a carbocation which further adds the nucleophilic substituent:

