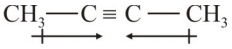
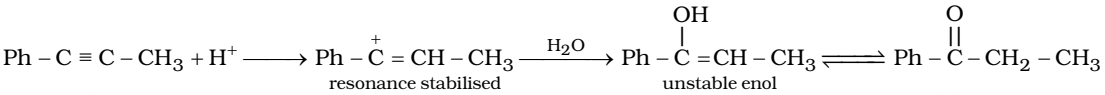
61.(B) X can be concentrated alcoholic NaOH giving propene. Propene on reaction with Y would have given 2-bromopropane product via addition.

62.(C) Methyl group activates the benzene ring towards electrophilic aromatic substitution reaction due to +I and hyperconjugation effect whereas Cl deactivates the benzene ring due to –I effect of Cl being greater than +M effect of Cl and nitro group deactivates due to –M and –I effects.

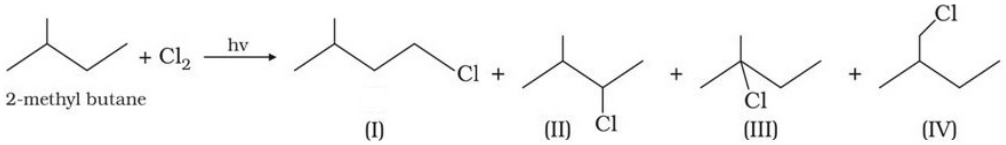
63.(B) $CH_3 - C \equiv C - CH_3$ is a symmetrical and linear molecule; so its dipole moment is zero :



64.(A) Reaction proceeds through carbocation intermediate :

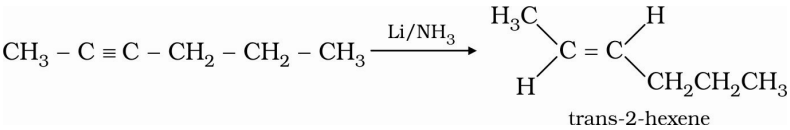


65.(B)

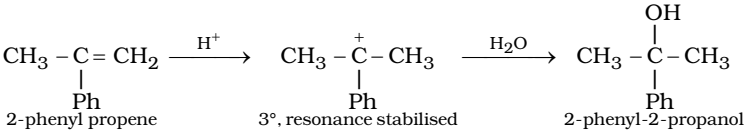


out of the four products formed above, II and IV are chiral, produced in pairs, giving total of six mono-chlorination.

66.(A) Alkynes on treatment with alkali metals in liquid ammonia gives trans hydrogenation product.



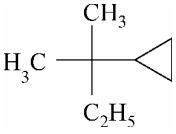
67.(A) Reaction proceeds through carbocation intermediate :



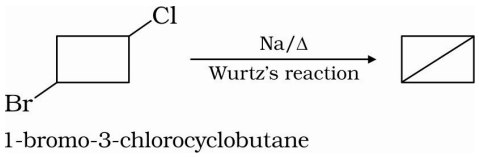
68.(B) Isobutene

Boiling point order : Alkyne > Alkene and Alkane
(for same number of C)

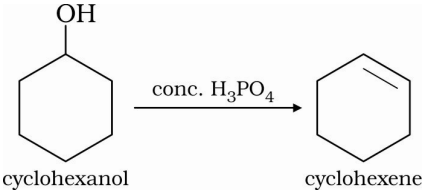
69.(C)



70.(D)

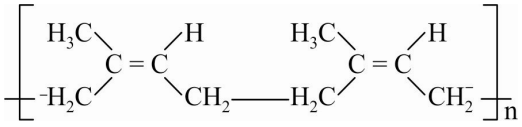


71.(A) Cyclohexanol on treatment with concentrated H_3PO_4 undergoes acid catalysed dehydration giving cyclohexene.



72. **(a)** $CH_2 = \underset{(A)}{\overset{CH_3}{\overset{|}{C}} - CH = CH_2} \xrightarrow[Zn-H_2O]{O_3} 2HCHO + CH_3 - \overset{O}{\overset{\|}{C}} - CHO$

2-methyl-1, 3-butadiene (Isoprene)

(b) 

73.(B) $H_3C - \underset{CH_3}{\underset{|}{CH}} - CH_2 - CH_3 + Br_2 \xrightarrow{h\nu} H_3C - \underset{CH_3}{\overset{Br}{\overset{|}{\underset{|}{C}}}} - CH_2 - CH_3$ (Bromination is more selective)

Major

74.(B) $H_2C = CH - CH = CH_2 \xrightarrow[40°C]{HBr} CH_3 - CH = CH - CH_2Br$ (Thermodynamically controlled product)

75.(B) $H_3C - \underset{H}{\overset{H_3C}{\overset{|}{C}}} - \underset{H}{\overset{CH_3}{\overset{|}{C}}} - CH_3 \xrightarrow[h\nu]{Cl_2} H_3C - \underset{H}{\overset{ClH_2C}{\overset{|}{C}}} - \underset{H}{\overset{CH_3}{\overset{|}{C}}} - CH_3 + H_3C - \underset{Cl}{\overset{H_3C}{\overset{|}{C}}} - \underset{H}{\overset{CH_3}{\overset{|}{C}}} - CH_3$