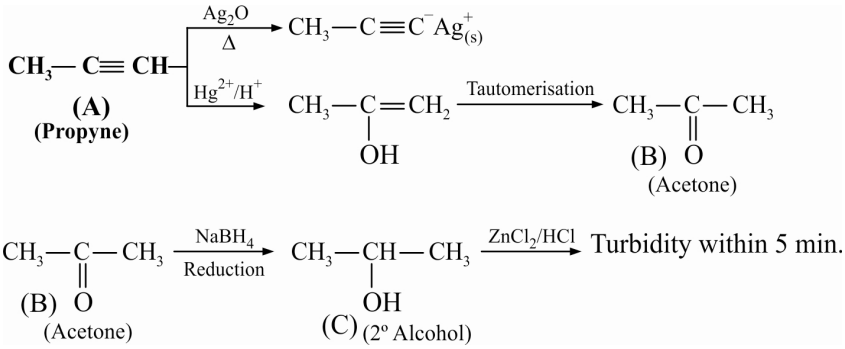
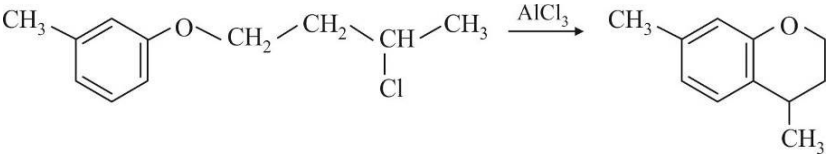
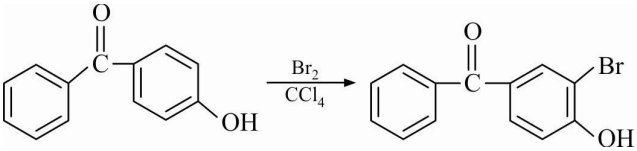
31.(B)



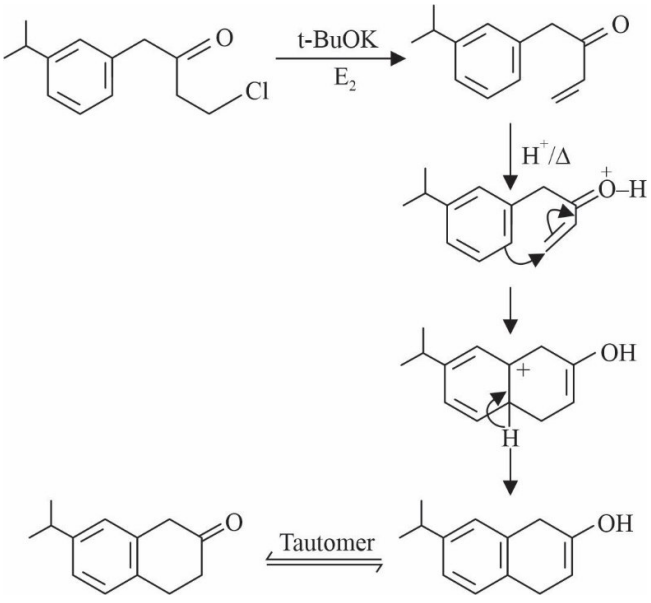
32.(C) It is intermolecular friedel craft reaction and will go via formation of carbocation



33.(B) Electrophilic substitution is more in phenol ring.



34.(D)



35.(B) In Friedel craft alkylation, the alkylated product obtained is more activated than reactant, hence undergoes poly substitution.

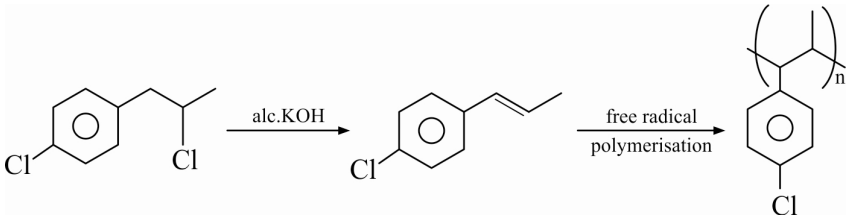
36.(A) CF_3 is very strong-I group hence it will favour anti-Markownikaff's product.

$CF_3 - CH = CH_2 \xrightarrow{HX} CF_3 - CH_2 - CH_2^+ \longrightarrow CF_3 - CH_2 - CH_2X$ (anti-Markownikoff's product)

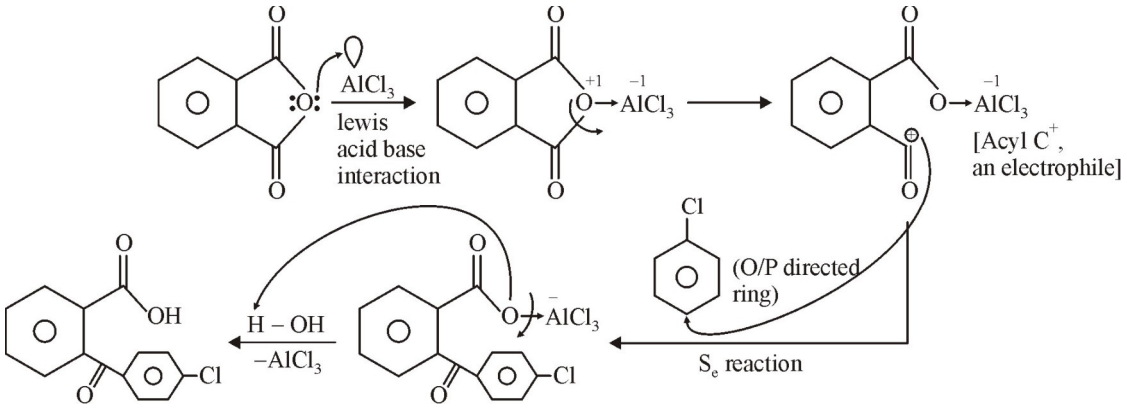
37.(C) $\xrightarrow[\text{Activating nature}]{-CN\ -Cl\ -Me\ -OMe}$ i.e. D < A < C < B

38.(B) $CH_3 - C \equiv CH \xrightarrow{DCl} CH_3 - \underset{Cl}{\overset{|}{C}} = CHD \xrightarrow{DI} CH_3 - \underset{I}{\overset{Cl}{\overset{|}{\underset{|}{C}}}} - CHD_2$

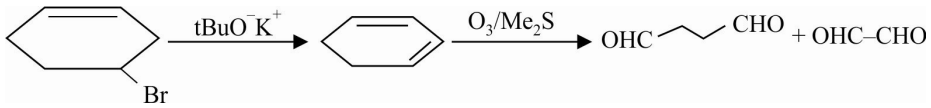
39.(B)



40.(A)



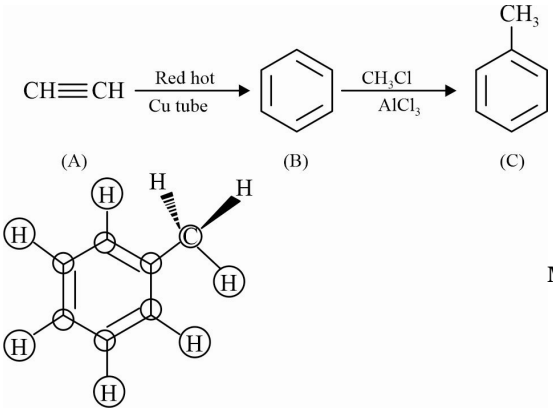
41.(C)



42.(D) $H_3C - CH = CH - CH_3 \xrightarrow[\text{High temp}]{\text{alkaline.}KMnO_4} 2CH_3COOH$

43.(D) $H_3C - CH = CH_2 \xrightarrow{Cl_2/H_2O} H_3C - \underset{OH}{\overset{|}{CH}} - \underset{Cl}{\overset{|}{CH_2}}$

44.(13) A is $CH \equiv CH$

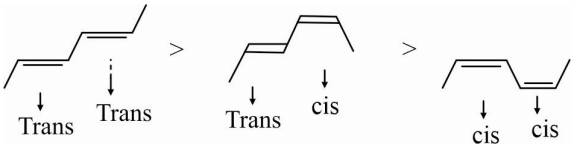


Max no of atoms in one plane = 13

45.(D) In Benzene, total six sp^2 hybrid carbon atoms are present. Each carbon atom has $3sp^2$ hybrid orbitals. Therefore, total sp^2 hybrid orbital are 18 in Benzene.

46.(B) $\text{Heat of combustion (HOC)} \propto \frac{1}{\text{stability of an alkene}}$

i.e., As the stability increases, heat of combustion decreases and order of stability of an alkene is Trans > cis (due to less steric hindrance in trans alkenes). Hence, Stability order :



Stability order a > b > c