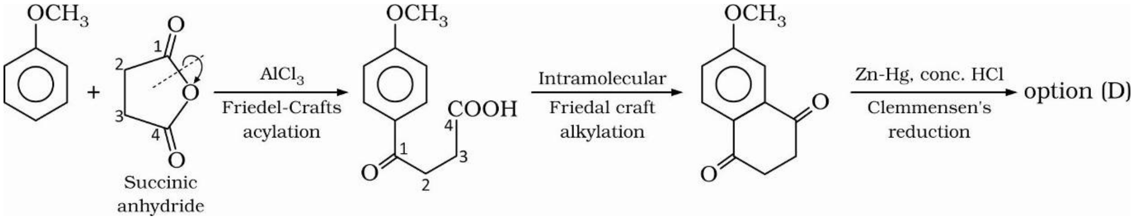
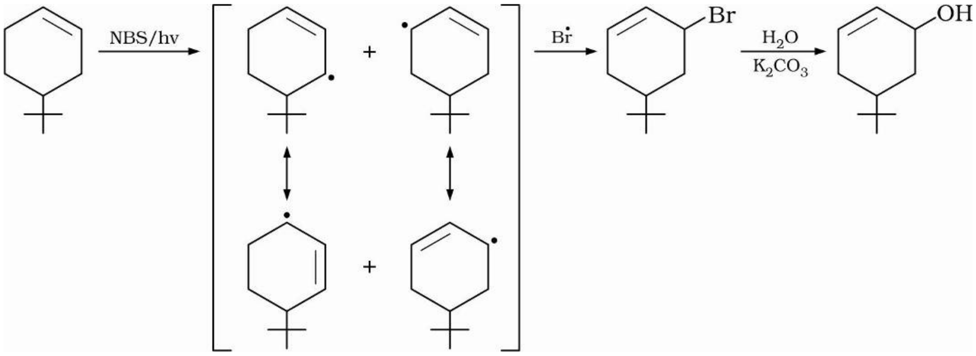
Daily Tutorial Sheet 2	JEE Main [Archive]

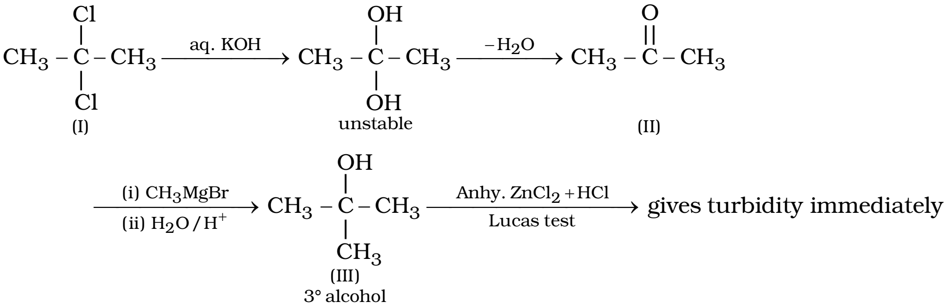
21.(D)



22.(B)



23.(B)

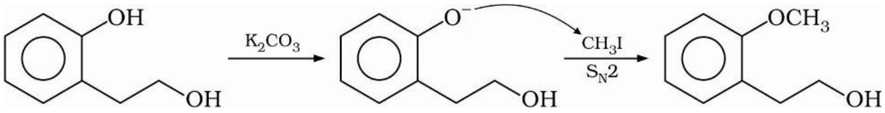


$$\underset{(I)}{CH_3-\overset{Cl}{\underset{Cl}{C}}-CH_3} \xrightarrow{\text{aq. KOH}} \underset{\text{unstable}}{CH_3-\overset{OH}{\underset{OH}{C}}-CH_3} \xrightarrow{-H_2O} \underset{(II)}{CH_3-\overset{O}{\overset{\|}{C}}-CH_3}$$

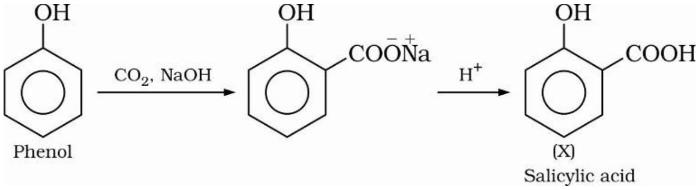
$$\xrightarrow[\text{(ii) } H_2O/H^+]{\text{(i) } CH_3MgBr} \underset{\substack{(III)\\ 3^\circ \text{ alcohol}}}{CH_3-\overset{OH}{\underset{CH_3}{C}}-CH_3} \xrightarrow[\text{Lucas test}]{\text{Anhy. } ZnCl_2 + HCl} \text{gives turbidity immediately}$$

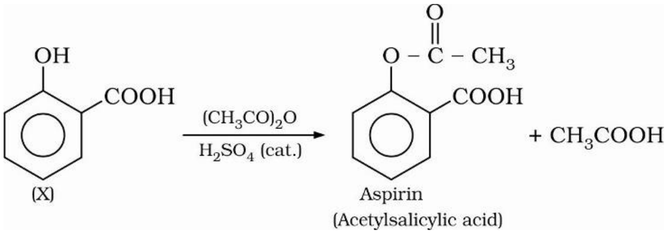
24.(A) Visualise K_2CO_3 (aq) = $KOH_{(aq)}$

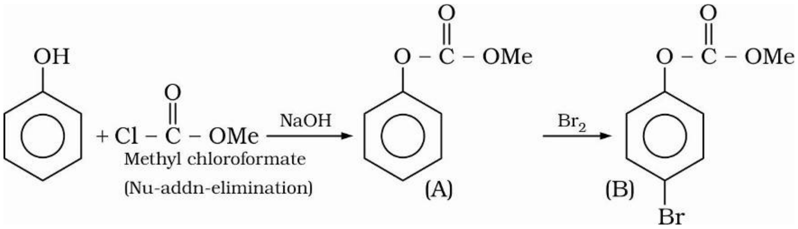
Alcohol do not react with aq. KOH



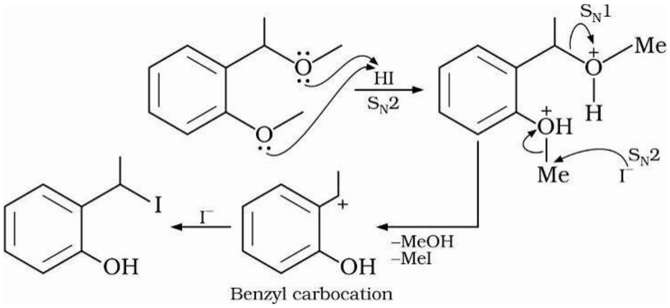
25.(A)



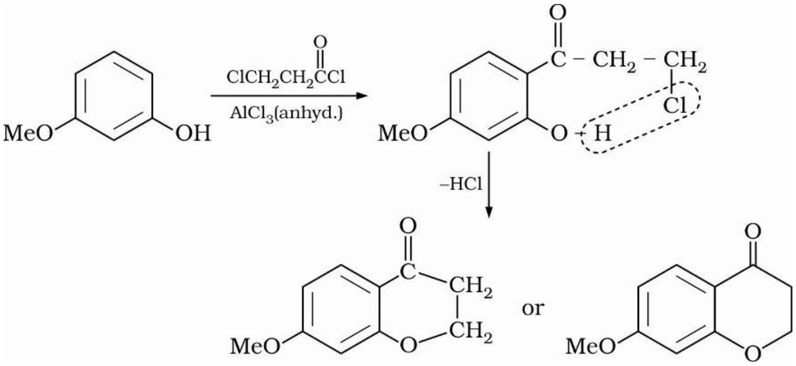


26.(C) 

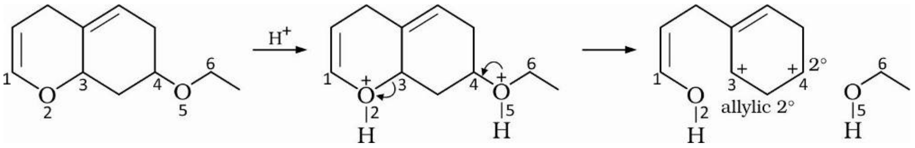
- Note that Cl^- is better leaving group than OMe. $-O-CO-OMe$ is an o/p directing group due to +M effect.

27.(D) 

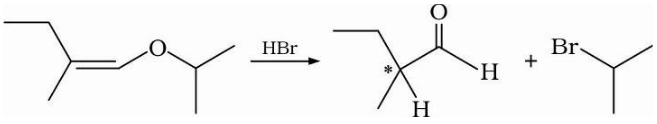
28.(C) Acylation is electrophilic aromatic substitution reaction, thus it occurs at para position to $-OCH_3$ group.



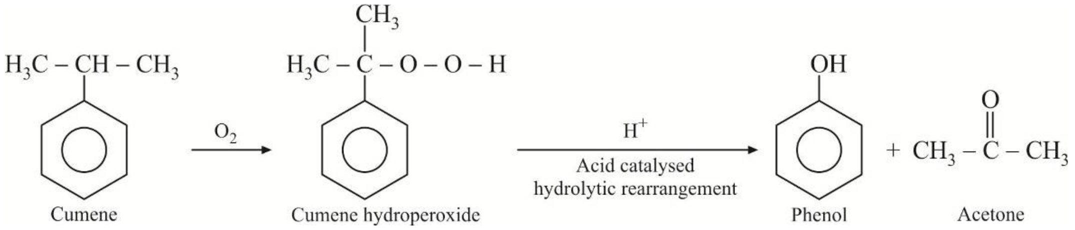
29.(B) The cleavage will occur between O2 – C3 bond because a 2° allylic carbocation will be formed as compared to a 2° carbocation formed by cleavage of C4 – O5 bond (as shown below).



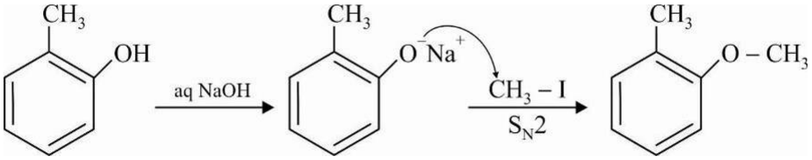
30.(B) Refer to the solution of Q.8



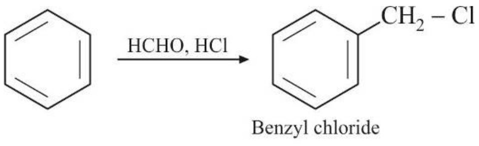
31.(C) Refer to module for the mechanism of the process involved in the following reaction :



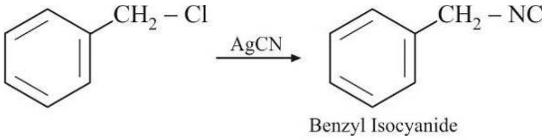
32.(C)



33.(A)

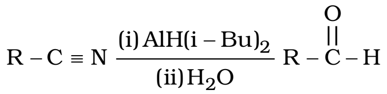


(A)



(B)

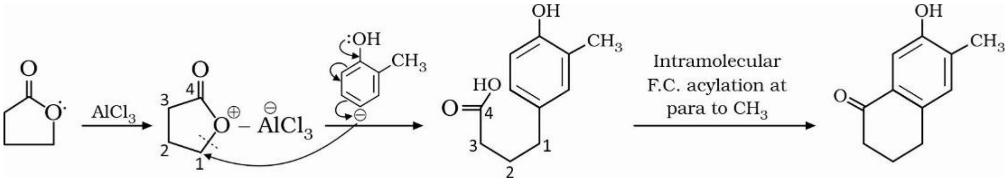
34.(C)



$$R-C\equiv N\xrightarrow[\text{(ii)}H_2O]{\text{(i)}AlH(i-Bu)_2}R-\overset{O}{\overset{||}{C}}-H$$

DIBAL partially reduces nitriles to imines which are then converted into aldehydes on addition of water.

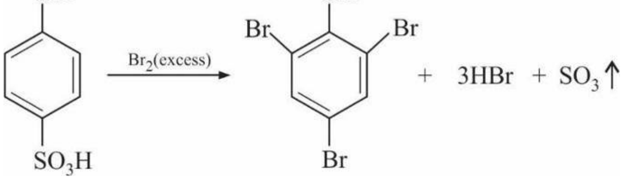
35.(D)



36.(C) Observe that in the product there is a decrease in number of carbon atom, so the obvious reagent for the given transformation is $NaOH/I_2$. The steps leading to the transformation are : Oxidation, Iodination followed by attack of OH^- (as nucleophile) at carbonyl group (Nu-addition-elimination) to give iodoform and $CH_3-CH=CH-CH_2CO_2H$.

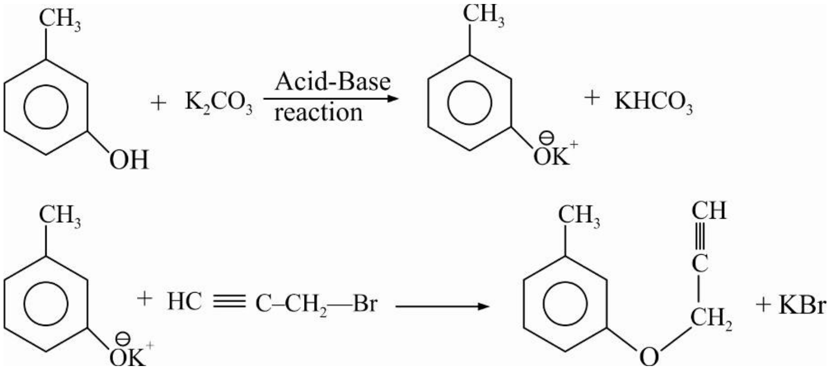
37.(A) Grignard reagent gives primary alcohol with HCHO. Hence option (A) is incorrect

38.(B)

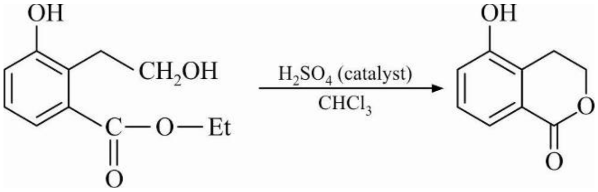


Refer to the solution of Q.87. Visualise *ipso* substitution.

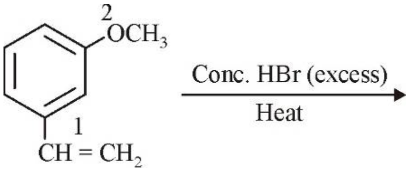
39.(B)



40.(A) It is an acid catalyzed intramolecular esterification reaction to give lactone.



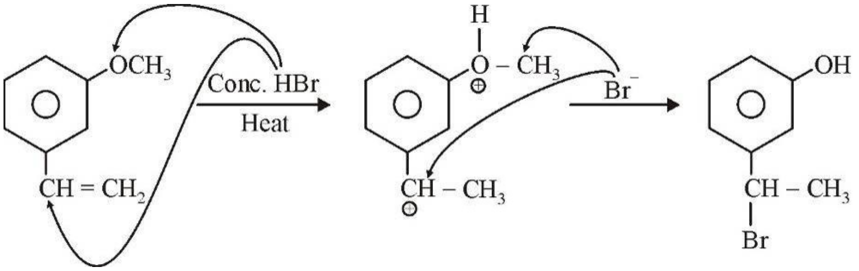
41.(B)



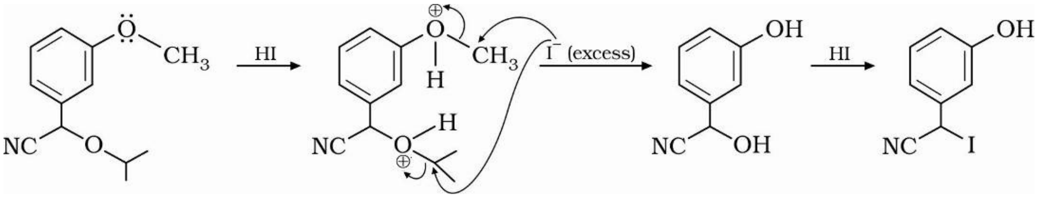
Here 1 and 2 are conc. HBr sensitive regions

1 ≡ Alkene, will undergo electrophilic addition reaction [Markonikov's addtion]

2 ≡ Ether, will undergo forced [Acid catalysed] nucleophilic substitution reaction [S_N2 mechanism]

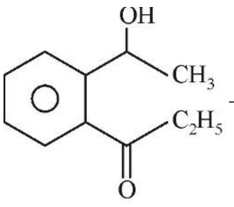


42.(C)

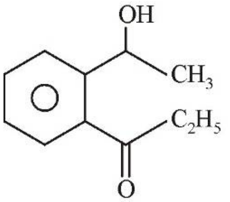


Note : Phenol does not react with HI, whereas secondary alcohols react with HI to form iodides.

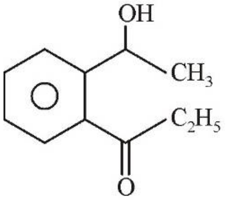
43.(A)



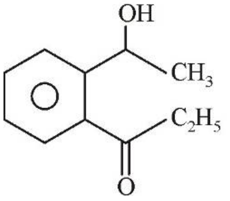
$\xrightarrow[\text{[GR]}]{\text{RMgX}}$ True [Has active hydrogen as well as keto group]



$\xrightarrow{\text{OH}^-}$ True [Has 2° methyl alcoholic group]



$\xrightarrow{\text{FeCl}_3}$ False [Test is not given by alkyl alcohol given by phenolic compounds]



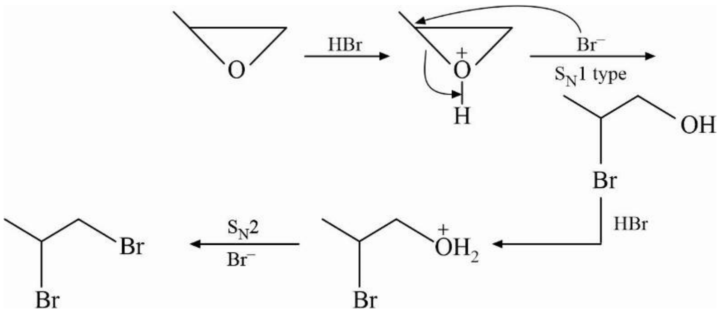
$\xrightarrow[\text{Solution}]{\text{Fehling}}$ False [Not shown by keto groups this test is given by aldehydes only]

44.(B) $CH_3OH \rightarrow$ No resonance

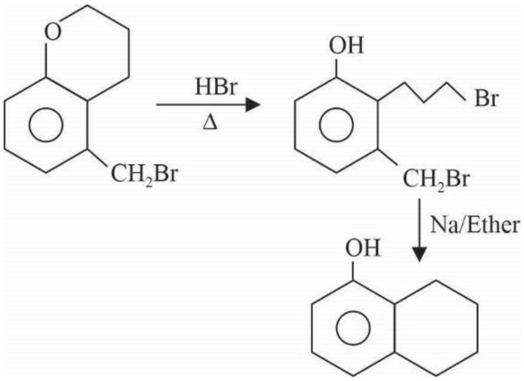
In p-ethoxyphenol, due to +R effect of $—OC_2H_5$ group, resonance of OH group will be less as compared to phenol.

So order of, C — OH bond length will be phenol < p-ethoxyphenol < methanol

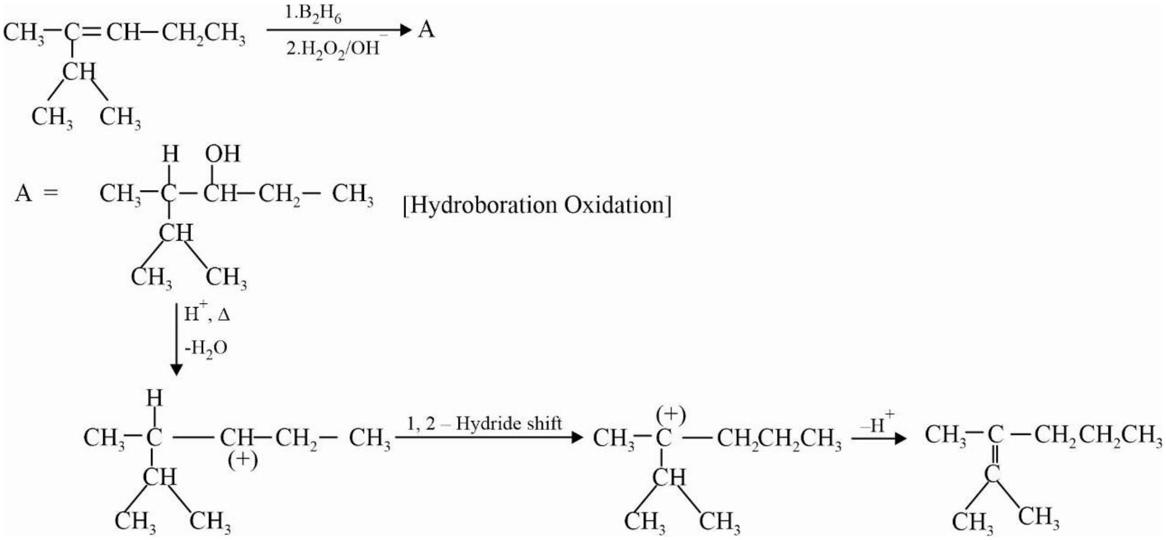
45.(B)

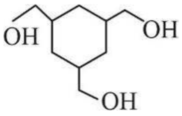
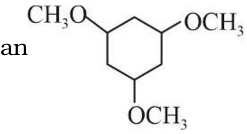


46.(D)

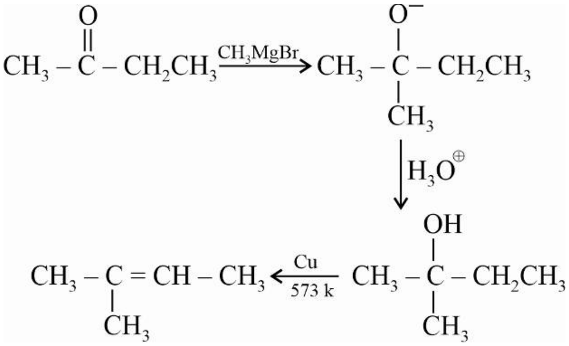


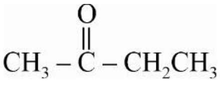
47.(D)



48.(A)  has greater boiling point than  because of extensive –H bonding.

49.(66.66 to 66.67)

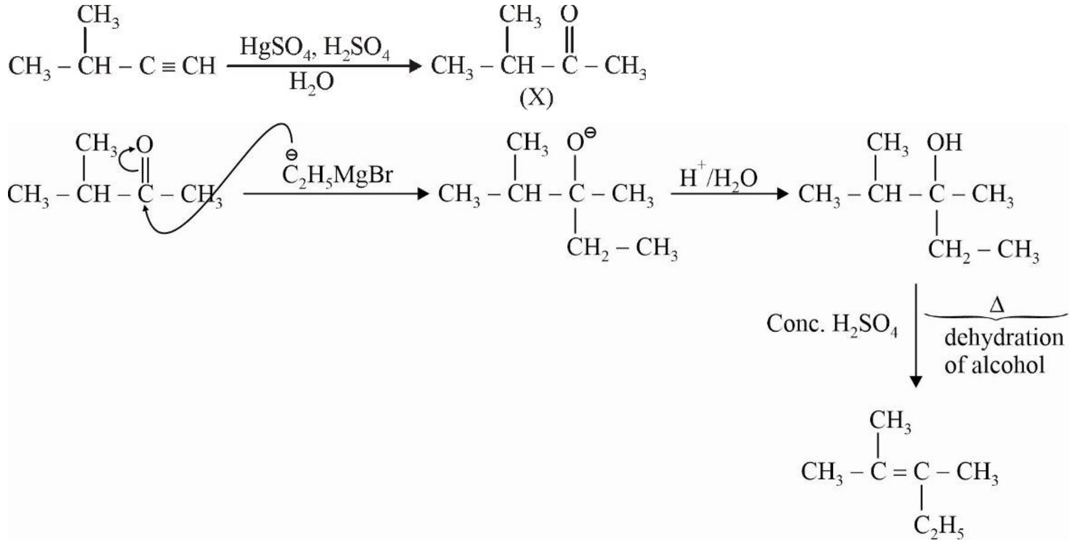


A ⇒ 

$CH_3-\overset{O}{\overset{\|}{C}}-CH_2CH_3$

$$\% \text{ carbon} = \left(\frac{12\times4}{12\times4+8+16}\right)\times100 = 66.67$$

50.(C)


$CH_3-CH(CH_3)-C\equiv CH \xrightarrow[H_2O]{HgSO_4,\ H_2SO_4} CH_3-CH(CH_3)-CO-CH_3$
(X)
$\overset{\ominus}{C}_2H_5MgBr$
H^+/H_2O
Conc. H_2SO_4
Δ
dehydration
of alcohol
$CH_3-C(CH_3)=C(C_2H_5)-CH_3$