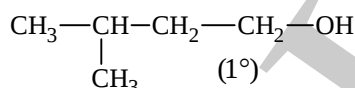
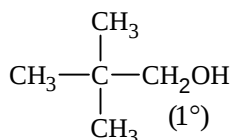
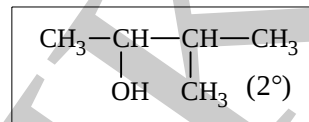
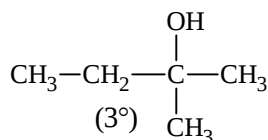
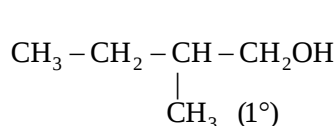
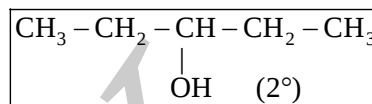
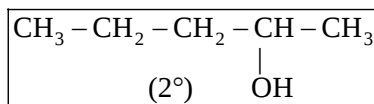
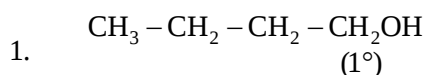
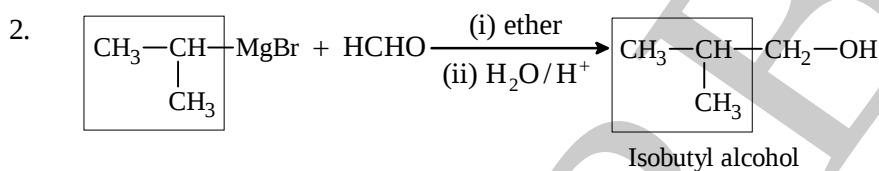


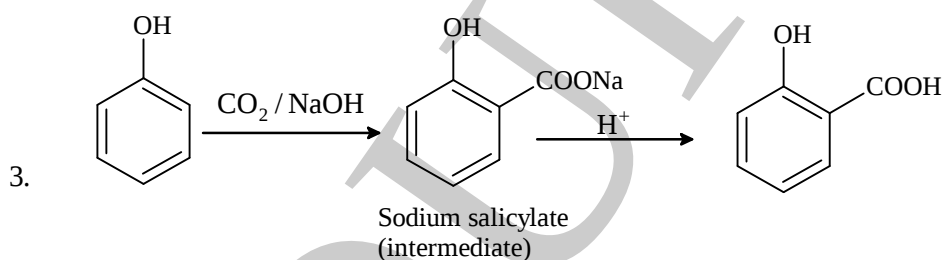
SOLUTION TEST-A



The correct answer is (iii)



The correct answer is (i)



The correct answer is (ii)

4. Phenol is highly activated due to +R effect of -OH group, hence, phenol does not require FeBr₃, a Lewis acid catalyst for bromination.

The correct answer is (iv)

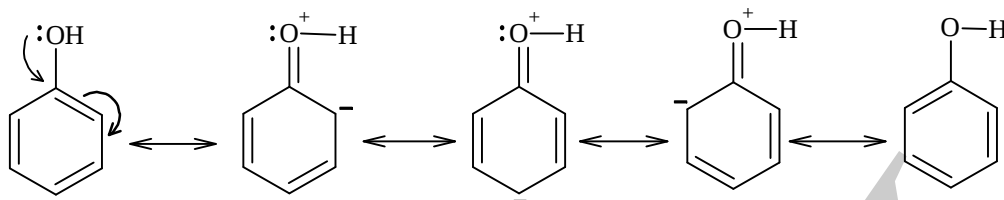
5. 2-methyl butan-2-ol has a highly compact alkyl group so, the OH group is more exposed to form hydrogen bond with water. Hence, soluble in water.

The correct answer is (iii)

6. (i) 2, 2, 4- trimethyl pentane-1, 3-diol
(ii) 2-Ethoxybutane

7. 16 σ bonds

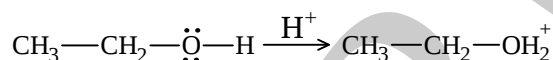
8. (i) In phenol, the lone pair of electrons present on oxygen participates into resonance with the benzene ring. As a result, the oxygen acquires a δ⁺ charge and electron density on oxygen decreases. Hence, difficult to add proton H⁺.



In ethanol, ethyl group exerts +I effect and increases the electron density on oxygen. Therefore, easier to add H^+ ion on oxygen in ethanol.

(ii) NO_2 group exerts -I and -R effect and helps in stabilizing the conjugate base of o-nitrophenol while CH_3O at ortho position has +R effect and destabilizes the conjugate base. Hence, ortho nitrophenol is more acidic than ortho-methoxy phenol.

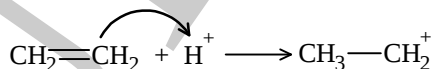
9. (i) $K_2Cr_2O_7/H_2SO_4$
 (ii) $Cu/573\text{ K}$
 (iii) Br_2/H_2O
 (iv) PCC (Pyridinium chloro chromate)
10. (i) Propanol has a higher boiling point than butane because propanol is highly associated via intermolecular hydrogen bonding.
 (ii) Alcohols are comparatively more soluble in water than the corresponding hydrocarbons due to their ability to form hydrogen bonds with water.
11. (i) Step-(i) is protonation of alcohol



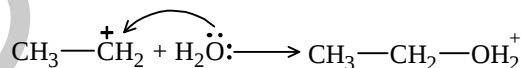
Step-(ii) is the attack by Br^- at α -carbon via S_N2 and results in the loss of H_2O .



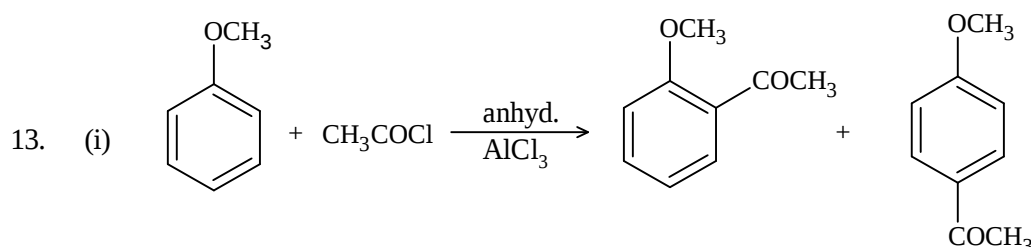
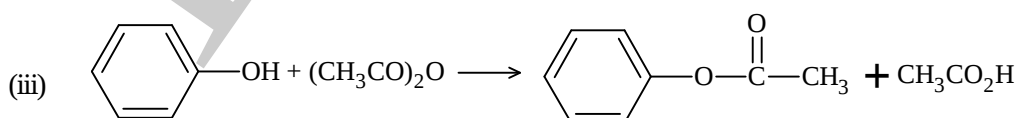
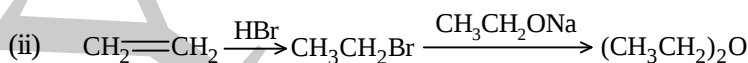
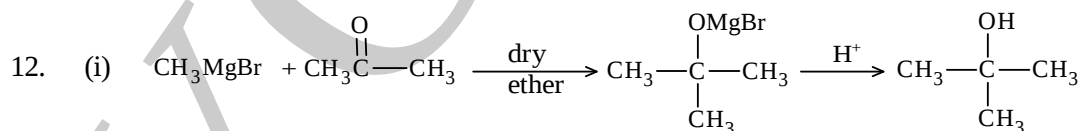
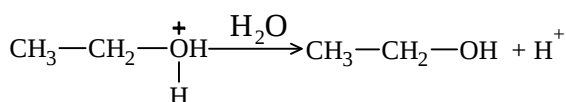
- (ii) Step-(i) is the protonation

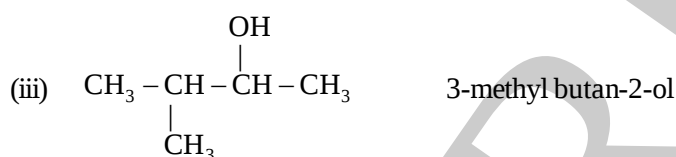
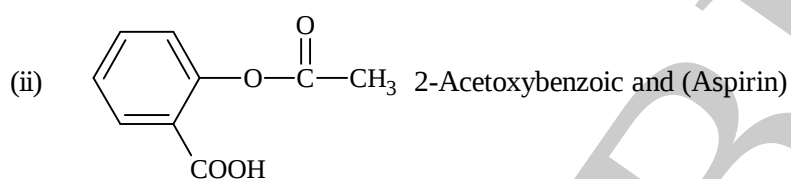
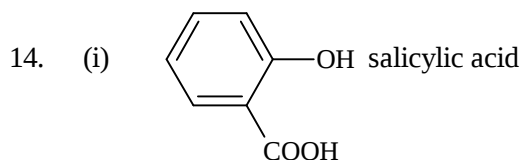
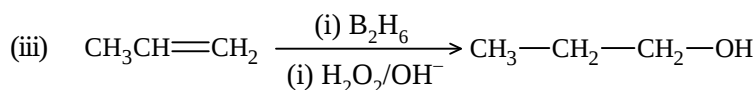
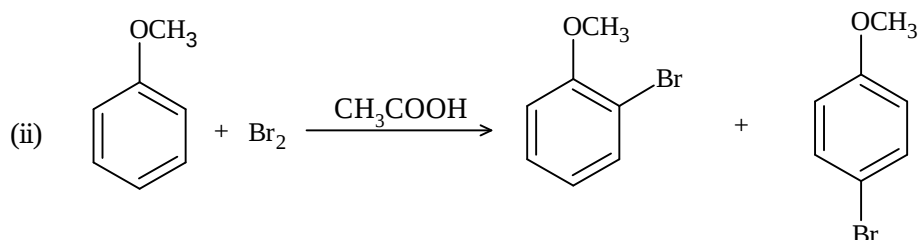


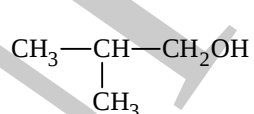
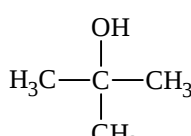
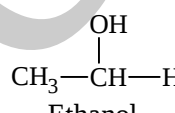
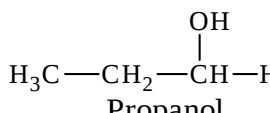
Step-(ii) is the addition of H_2O



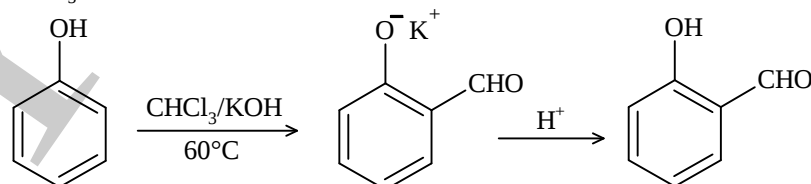
Step-(iii) is the loss of H^+ (deprotonations)





15. (a)	(i) Test		
	Lucas test HCl/ anhyd ZnCl ₂	It does not give cloudiness	It gives instant cloudiness
(ii)	Test	 Ethanol	 Propanol
	Iodoform test I ₂ /NaOH warm	It gives a yellow precipitate of CHI ₃	It does not give a yellow precipitate.

(b) (i) **Reimer-Tiemann reaction** is a method to prepare salicylaldehyde by reacting phenol with CHCl_3/KOH at 60°C followed by hydrolysis



(ii) **Williamson's synthesis** is a method to prepare ethers by reacting haloalkanes with sodium alkoxide. This reaction is an example of S_N2 mechanism

