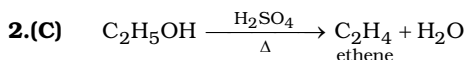
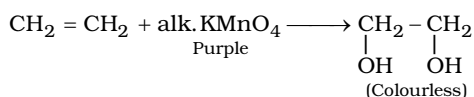
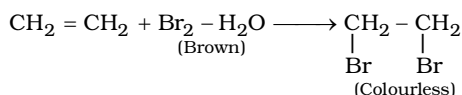


**Daily Tutorial Sheet 1**

**JEE Advanced [Archive]**

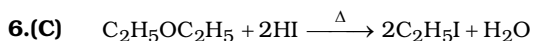
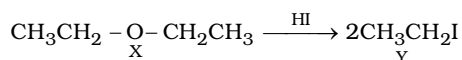
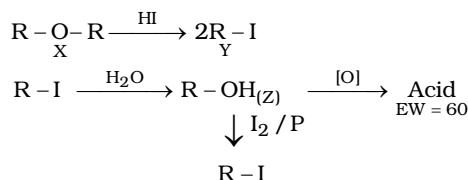
1. A is ethanol because B is an alkene (ethene).



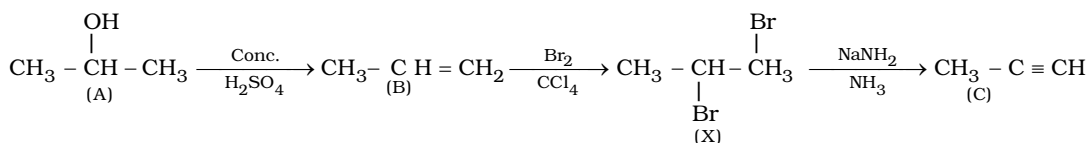
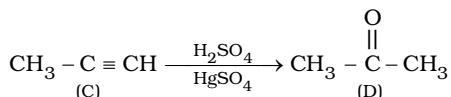
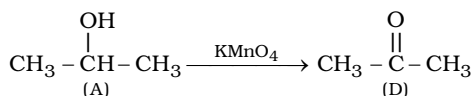
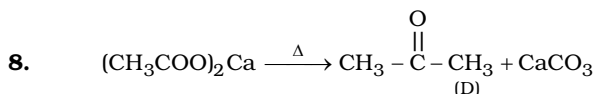
- 3.(B) On the basis of 'like dissolves like' principle ethanol being most polar among the given compounds, it will dissolve in water readily.

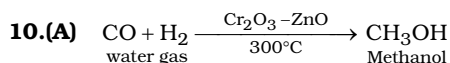
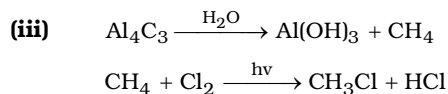
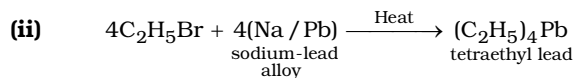
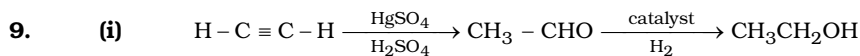
- 4.(D) The order of reactivity of alcohol with Lucas reagent (Zn + conc. HCl) is tertiary > secondary > primary. 3° alcohols produce turbidity immediately, 2° alcohol gives turbidity within 5-10 minutes. But 1° alcohol do not give turbidity at all at room temperature.

5. Compound X must be a symmetrical ether because it is unreactive towards sodium

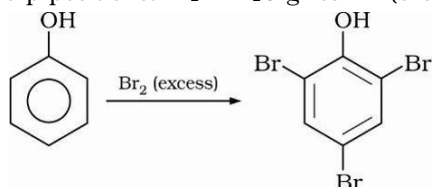


- 7.(T) Aldehydes (from 1° alcohols) may further be oxidised to acids but ketones donot (from 2° alcohols) get oxidised.



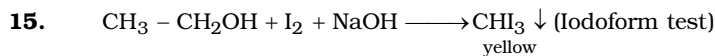
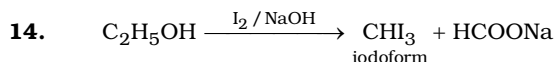


- 11.(D) The  $-\text{OH}$  group activates the benzene ring to a large extent towards EAS ( $\text{S}_\text{E}$ ) and facilitates substitution in o- and p-positions.  $\text{Br}_2$  in  $\text{H}_2\text{O}$  gives  $\text{Br}^+$  (bromonium) ion in surplus due to polarity of  $\text{H}_2\text{O}$ .



12. Extra stability via resonance.

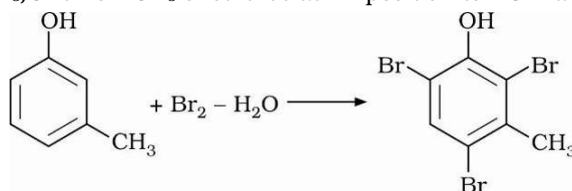
13. A *vicinal diol* has two hydroxyl group on adjacent carbon atom.  $\text{R}-\underset{\text{OH}}{\text{CH}}-\underset{\text{OH}}{\text{CH}}-\text{R}'$



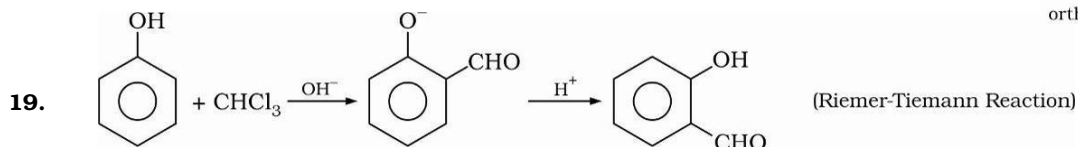
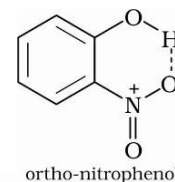
Iodoform test is not given by methanol.

16. Butanol forms intermolecular H-bonds, has higher boiling point than butanal.

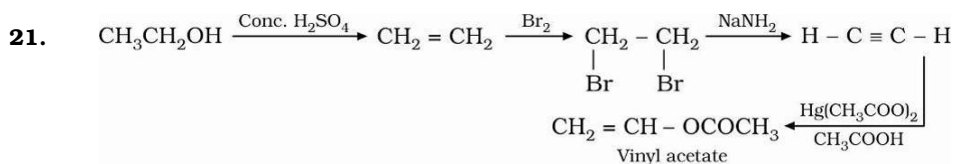
17. The compound must contain a hydroxy group on the ring (Phenolic). So compound should be of form  $\text{C}_6\text{H}_4(\text{CH}_3)\text{OH}$ . Now  $\text{CH}_3$  should be at 'm' position to  $-\text{OH}$  as it forms a tri-bromo derivative.



18. Intramolecular H-bonding in ortho-nitrophenol lowers its boiling point. No such intramolecular H-bonding is possible with p-nitrophenol and rather it is associated together by intermolecular H-bonding which increases the boiling point.

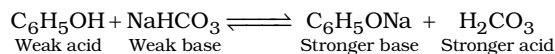


- 20.(F) Ethanol is not acidic enough to react with aq.  $\text{NaOH}$ . Thus sodium ethoxide is prepared by reaction of ethyl alcohol with  $\text{Na}$  metal, liberating  $\text{H}_2$  gas.



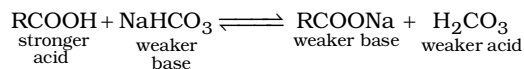
22.(A) Among the given compound ethanol shows maximum hydrogen bonding.

23. Phenol (a weaker acid) reacts with  $\text{NaHCO}_3$  (a weaker base) to form phenoxide ion (a stronger base) and carbonic acid (a stronger acid).



Since acid-base equilibria lies towards the weaker acid and weaker base, phenol does not decompose  $\text{NaHCO}_3$ .

Whereas carboxylic acids decompose  $\text{NaHCO}_3$ .



24.(D) The most polar bond in  $\text{CH}_3\text{CH}_2\text{OH}$  is O – H due to high electronegativity difference between O and H.

25. Isobutane < n-butane < n-butylchloride < n-butanol

Alcohols have highest boiling point due to H-bonding followed by alkyl halides.

With more branching in alkanes, the boiling point will be lower as a result of decreased surface area.