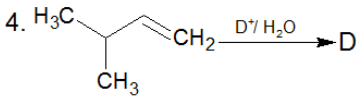
# Alcohol (Q and A)

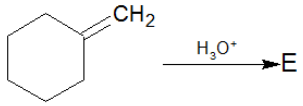
**A. Try out – 1:**

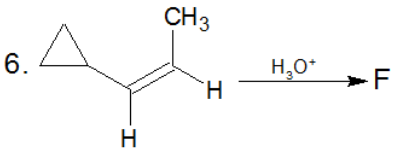
1. $CH_3CH = CH_2 \xrightarrow{D^+/\ H_2O} A$

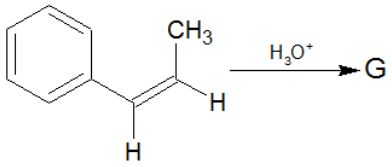
2. $CH_3CH = CH_2 \xrightarrow{H^+/\ D_2O} B$

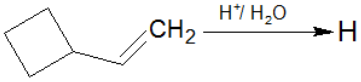
3. $CH_3CH = CH_2 \xrightarrow{D^+/\ D_2O} C$

4. 

5. 

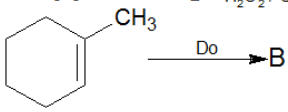
6. 

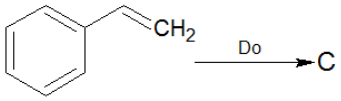
7. 

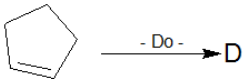
8. 

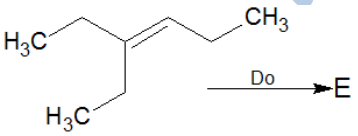
**B. Tryout – 2:**

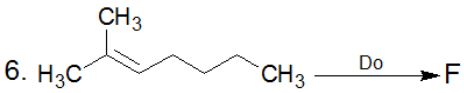
1. $(CH_3)_3CH = CH_2 \xrightarrow[H_2O_2\ /\ OH^-]{BH_3\ ,\ THF} A$

2. 

3. 

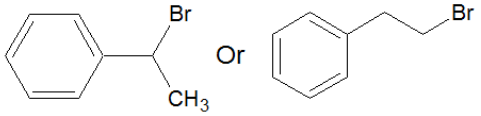
4. 

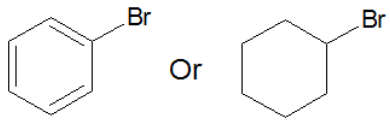
5. 

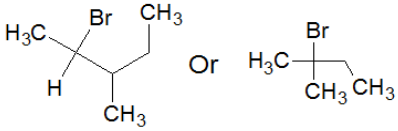
6. 

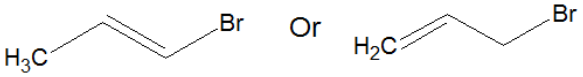
**C. Try out – 3:**

Which member hydrolysis faster:-

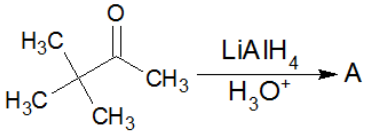
i) 

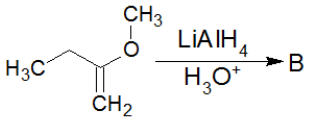
ii) 

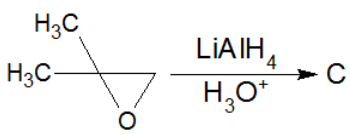
iii) 

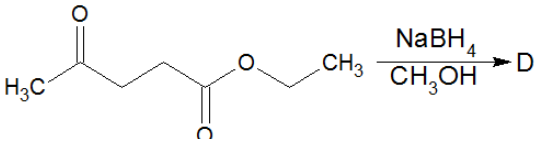
iv) 

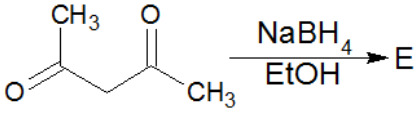
**D. Try Out 4:**

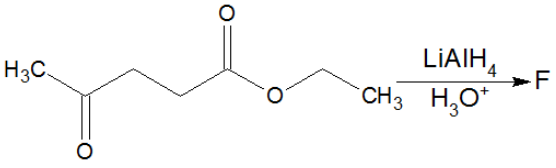
i). 

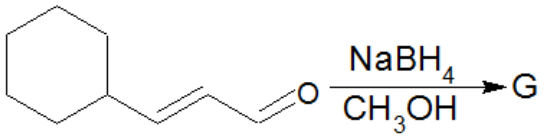
ii) 

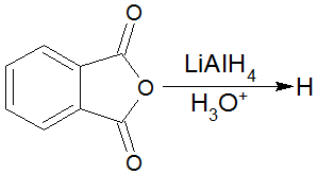
iii) 

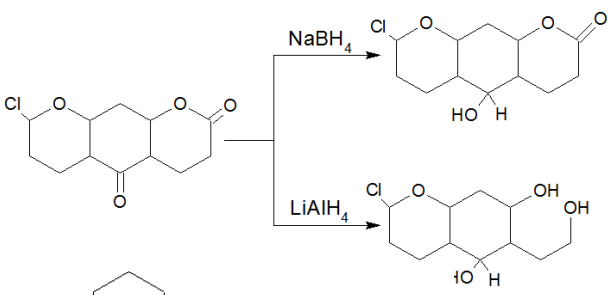
iv) 

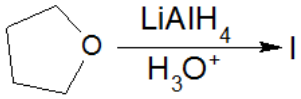
v) 

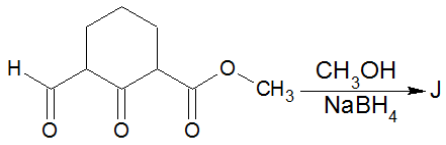
vi) 

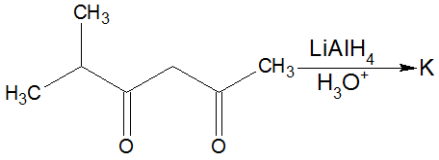
vii) 


viii) 

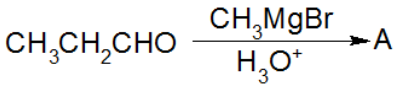

ix) 

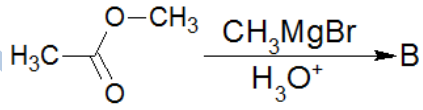

x) 

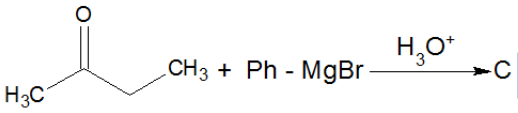

xi) 

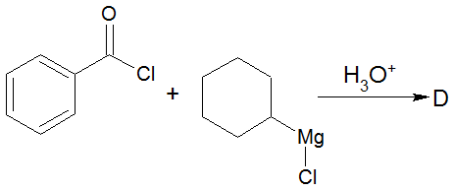

xii) 

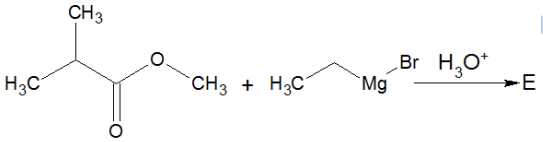

**E. Try Out 5:**

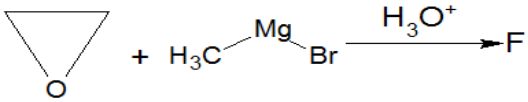
i) 

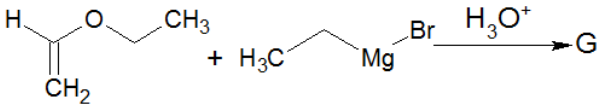

ii) 

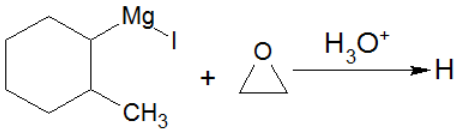

iii) 


iv) 

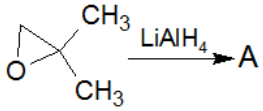

v) 

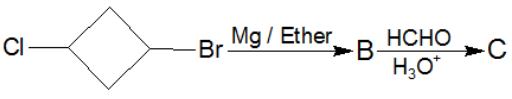

vi) 

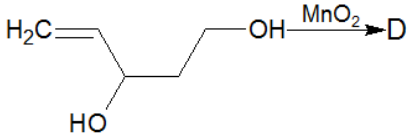

vii) 

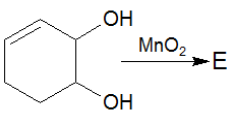

viii) 


**F. Try Out 6:**

1. 


2. 


3. 

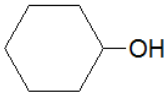
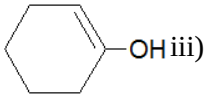
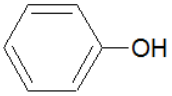
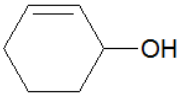

4. 


5. Which of the following compounds give most stable carbocation on dehydration?

a) $(CH_3)_3C$ –OH  b) $(CH_3)_3$ CH – $CH_2CH_2OH$

c) $CH_3$ - CH - $CH_2CH_3$ (OH)  d) $CH_3CH_2CH_2CH_2OH$

6. Dehydration of alcohols

i)  ii)  iii)  iv) 

will be in order

a) i< ii < iii < iv b) i > ii > iii > iv

c) iii< ii < i < iv d) ii < iii < iv < i

7. Ethyl alcohol cannot be dried by Na or $CaCl_2$ – why

8. Glycerols are highly viscous. – why

9. Dehydration of alcohols to form alkenes is always carried out with conc.$H_2SO_4$ and not with conc HCl or $HNO_3$ – why

10. Alcohols are soluble in water – why

11. B,P of alcohols are much higher than those of corresponding alkanes or ethers – why

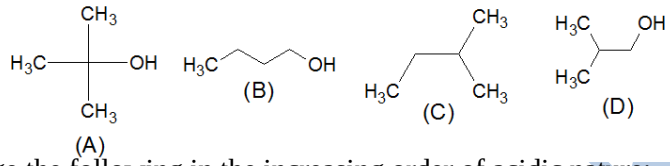
12. What is absolute alcohol?

13. Glycerol contains 3 OH groups – prove it.

**G. Try Out 7:**

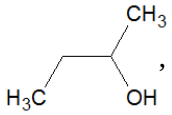
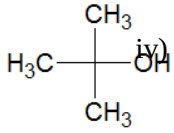
1. In between R – CO – Cl and R – CO – OH whoch one is better concentred to ester by alcohols?

2. Arrange the following in the increasing tendency of ester formation

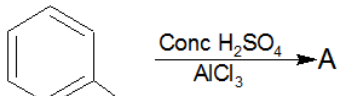


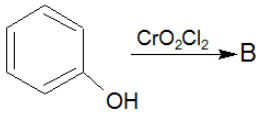

**3.** Arrange the following in the increasing order of acidic nature:-

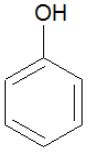
i) $CH_3OH$, $CF_3OH$, $CCl_3OH$ ii) $CH_2ClOH$, $CHCl_2OH$, $CCl_3OH$

iii) $CH_3CH_2CH_2CH_2OH$,  ,  iv) $CH_3CH_2OH$, $CH_3OH$, $CH_3CH_2CH_2OH$

**H. Try Out 8:**

1. 


2. 


3. Why freshly prepared  turns reddish when kept exposed to air and light?

4. Give some chemical test for Phenol.

5. Why o-nitrophenol has lower boiling point and is less soluble in water than p-nitrophenol?

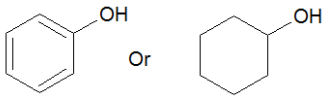
**I. Try Out 9:**

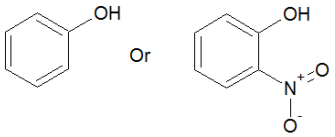
Distinction between –

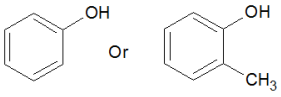
i. phenol and ethanol
ii. phenol and benzoic acid
iii. phenol and cyclohexanol
iv. phenol and chloroform
v. methanol and ethanol
vi. propan -1-ol and propan -2-ol
vii. butan -1-ol and butan-2-ol
viii. alcohol and phenol

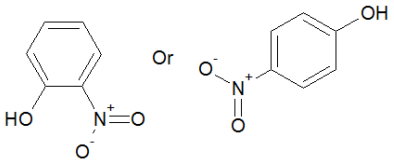
**J. Try Out 10:**

1. Which one is more acidic?

i) 

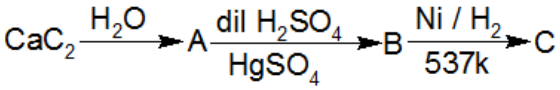
ii) 

iii) 

iv) 

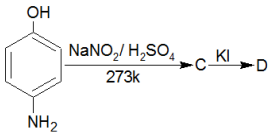
2. When glycerol is heated at 533 k with oxalic acid we get.

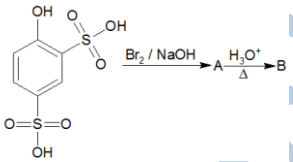
3. The end product is

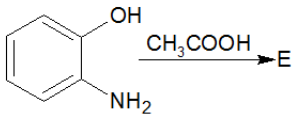


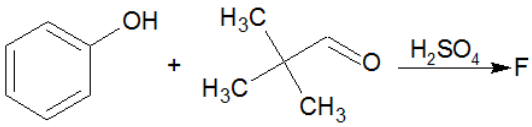
4. When wine is put in air it brought about by –

5. When Oxalic acid is heated with glycerol we get –

6. 

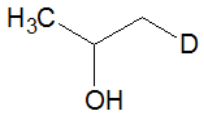
7. 

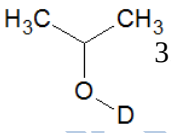
8. 

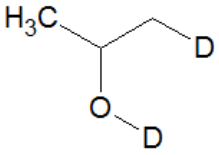
9. 

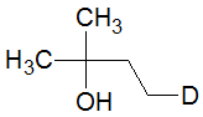
**Answers**

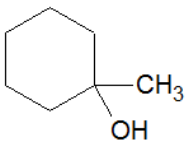
**A. Try Out 1:**

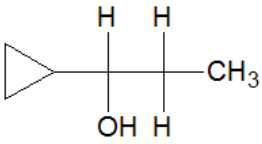
1. 

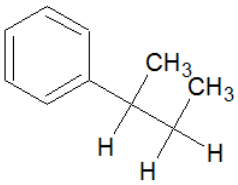
2. 

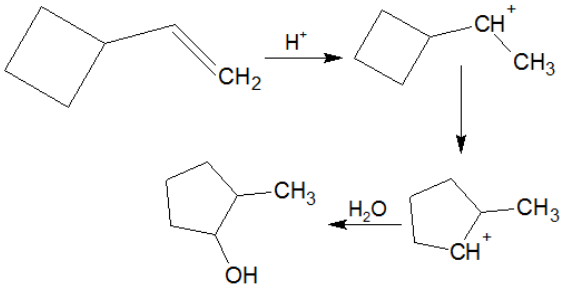
3. 

4. 

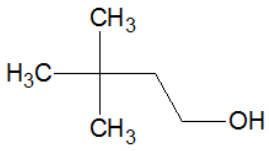
5. 

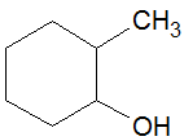
6. 

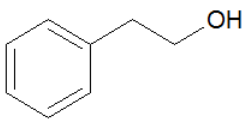
7. 

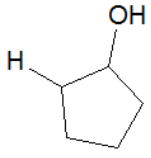
8. 

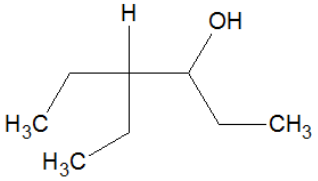
**B. Try Out 2:**

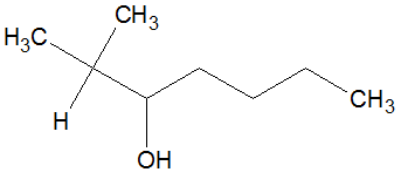
1. 

2. 

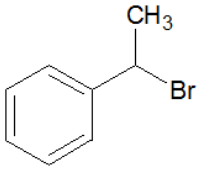
3. 

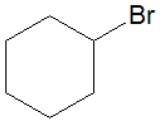
4. 

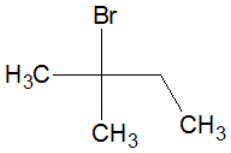
5. 

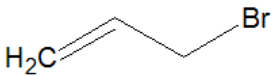
6. 

**C. Try Out 3:**

1. 

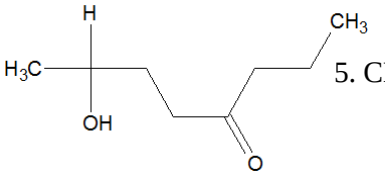

2. 

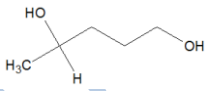

3. 

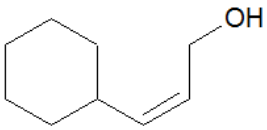

4. 

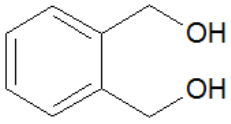

**D. Try Out 4:**

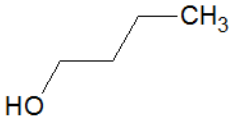
1. $(CH_3)_3C - CH(OH)CH_3$ 2. $CH_3CH_2CH_2OH$ and $CH_3OH$ 3. $(CH_3)_3C(OH)$

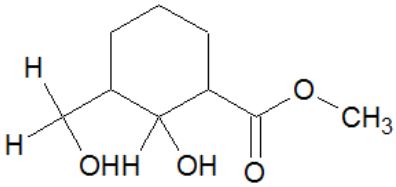
4. 

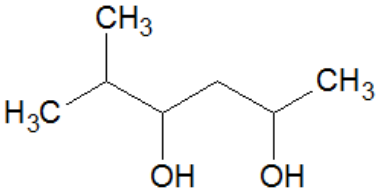

5. $CH_3CH(OH) - CH_2 - CH(OH)CH_3$ 6. 


7. 

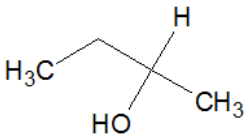

8. 

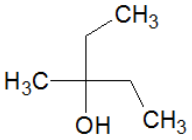

9. 

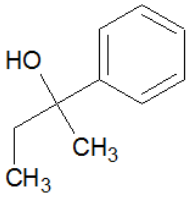

10. 

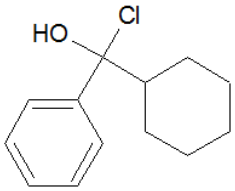

11. 

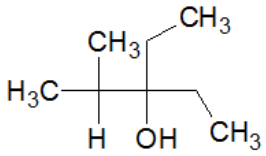

**E. Try Out 5:**

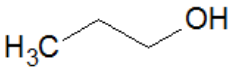
1. 

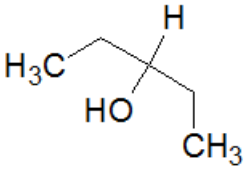

2. 

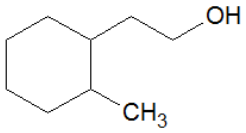

3. 


4. 

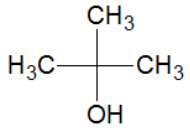

5. 

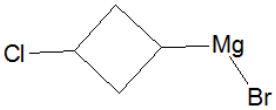

6. 

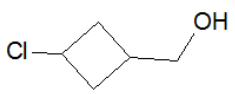

7. 

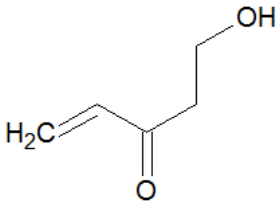

8. 

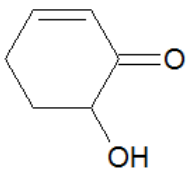

F. **Try Out 6:**

1. 


2. B = 

C = 


3. 


4. 


5. a

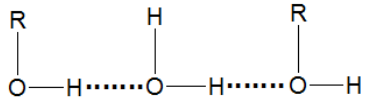
7. Ethanol forms ethoxide and hydrogen gas with Na. and forms an additiue compound with $CaCl_2$.

8. Glycerol contains 3 OH groups which help in formation of strong intermolecular hydrogen

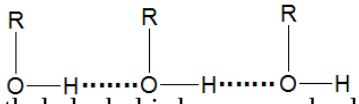
bond.

9. Under acidic conditions, alcohol get protonated, loses $H_2O$ to form carbocation. HCl products $Cl^-$ and $H_2SO_4$produces $HSO_4^-$. $HSO_4^-$ is a weak nucleophile and cannot participate in the nucleophilic substitution. Conc $HNO_3$ is a powerful oxidizing agent which oxidises alcohol to acid.

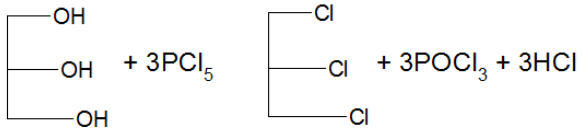
10. Alcohol forms intermolecular H-bonding with water.



11. Alcohol has intermolecular H-bonding



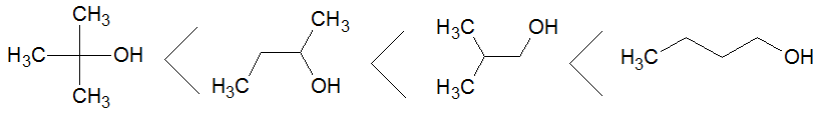
12. 100% ethyl alcohol is known as absolute alcohol

13. 

From the no of moles of HCl formed, we determine the no of OH group in an alcohol.

**G. Try out 7:**

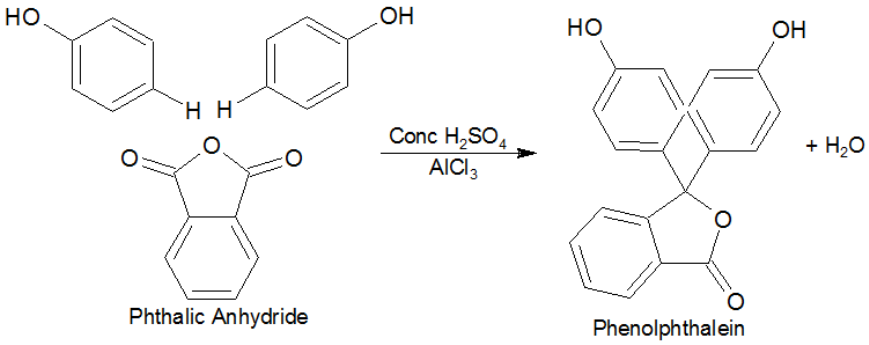
1. RCOCl, as $Cl^-$ is a good leaving group.

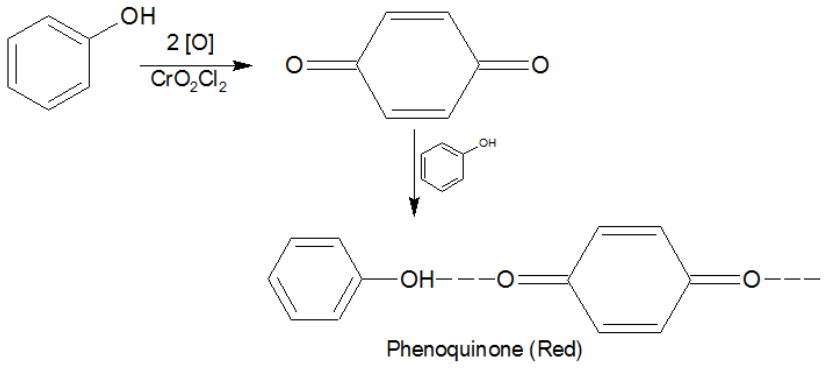
2. 

3. i) $CH_3OH < CCl_3OH < CF_3OH$ ii) $CH_2ClOH < CHCl_2OH < CCl_3OH$

iii) $CH_3CH_2CH(OH)CH_3 < (CH_3)_3C(OH) < CH_3CH_2CH_2CH_2OH$ iv) $CH_3CH_2CH_2OH < CH_3CH_2OH < CH_3OH$

**H. Try out 8:**

1. 


2. 

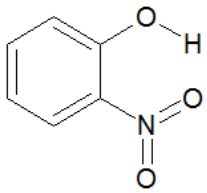

3. Phenol gets oxidized to p-benzoquinone and with excess phenol to form a red coloured phenoquinone,

4. i) With neutral $FeCl_3$, forms a violet coloured solution.

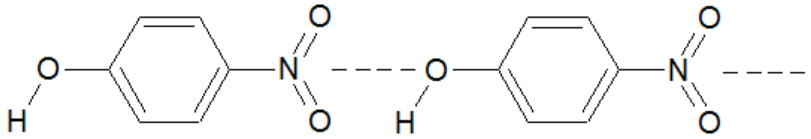
$$Ph - OH + FeCl_3 \rightarrow [Fe(O + C_6H_5)_6]^{3-}$$

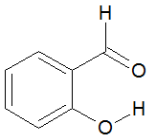
ii) With bromine water, a white ppt of 2,4,6 – tribromophenol is formed (Red colour disappears).
iii) Libermann reaction:- Crystals of sodium nitrite and a few drops of conc $H_2SO_4$ is warmed in a test tube and then drops of phenol is added to the resulting cooled mixture.
At first a red and then a deep blue colourdevelops.
On diluting with water the blue colour changes to red. On adding NaOH, the red colour changes to blue.

5. In o-nitrophenol, intra molecular hydrogen bonding exists as a result the molecules cannot form intermolecular hydrogen bond- boiling pt and solubility decreases.



In p-nitrophenol, inter-molecular hydrogen bonding increases B.P and solubility.



[Use the same concept for  o-hydroxyanal, p-hydroxybenzaldehyde]

**I. Try Out 9:**

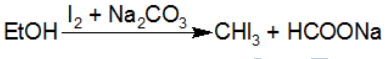
i. Phenol gives greenish violet colouration with a neutral solution of $FeCl_3$ while ethanoldoes not give this test.
$C_6H_5OH + FeCl_3 \rightarrow$ greenish violet colour
$C_6H_5OH + FeCl_3 \rightarrow$ No colour change

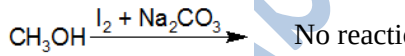
ii. Benzoic acid produces effervescence with sodium bicarbonate but phenol does not.
$C_6H_5COOH + NaHCO_3 \rightarrow C_6H_5COONa + H_2O + CO_2(g)$
[This proves $Ph - OH < H_2CO_3 < Ph - COOH$ (Acidity) ]

iii. Phenol decolourises bromine water but cyclohexanol does not.

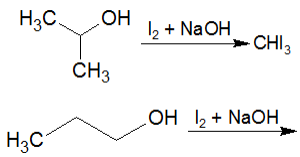
iv. On heating with aniline and KOH chloroform carbylamine (bad smell) but phenol does not.
$CHCl_3 + 3KOH + C_6H_5NH_2 \rightarrow C_6H_5NC + 3KCl + 3H_2O$

v. Ethanol gives iodoform test while methanol does not.





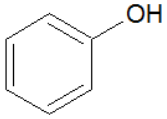
vi. Propan – 2 ol gives iodoform but propan – 1 – ol does not.

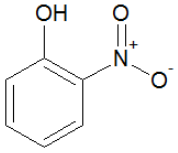


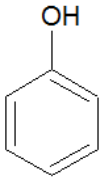
vii. Butan – 2 – ol gives iodoform but Butan – 1 – ol does not.

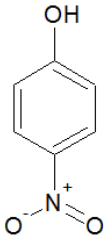
viii. Phenol responds to bromine water test but aliphatic alcohol does not.

**J. Try Out 10:**

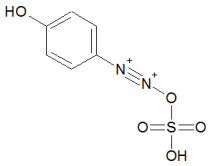
1. i) 

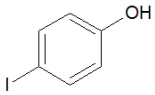
ii) 

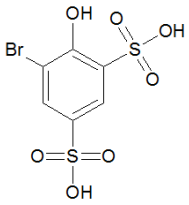
iii) 

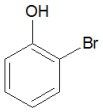
iv) 

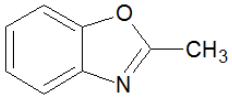

2. Alhyl alcohol, 3. Ethanol, 4.Bacteria, 5. HCOOH

6. C: 

D: 

7.A: 

B: 


8. 

9.