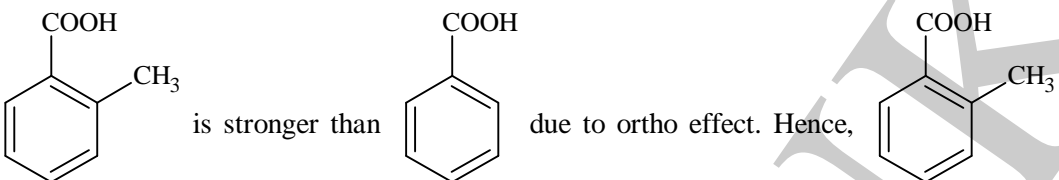
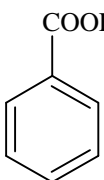
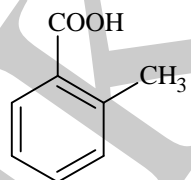
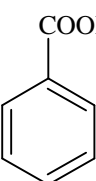


SOLUTION TEST-A

1. NaBH_4 does not reduce ester, LiAlH_4 and H_2/Ni reduces the ester to primary alcohol. DIBAL-H selectively reduces ester to an aldehyde.

The correct answer is (iii).

2.  is stronger than  due to ortho effect. Hence,  will have a

lower pK_a value than .

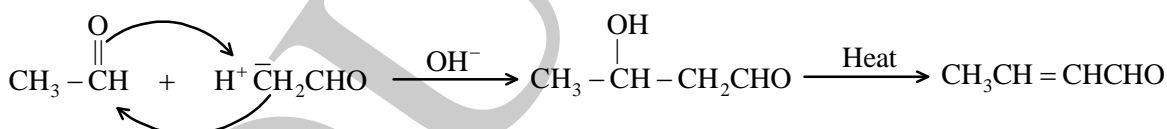
The correct answer is (ii).

3. Tollen's reagent will selectively oxidise $-\text{CHO}$ group to $-\text{COOH}$ without affecting the carbon-carbon double bond.

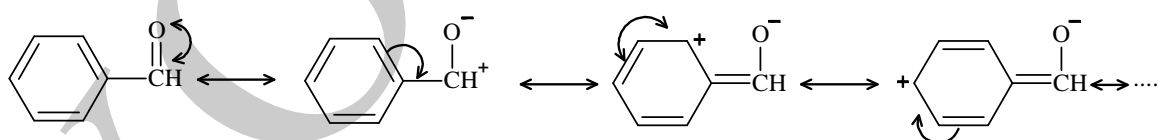
PCC does not affect $-\text{CHO}$ group.

KMnO_4 and H_2CrO_4 both will oxidise  to benzoic acid.

The correct answer is (iv).

4. 

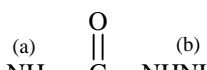
The correct answer is (i).

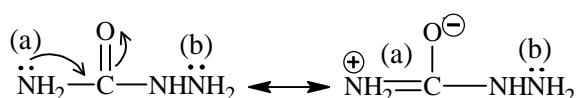
5. 

The correct answer is (i).

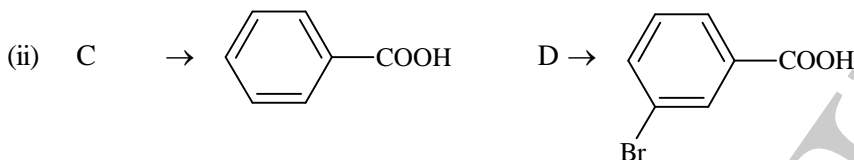
6. 3-Chloropent-3-enoic acid

7. $\text{CH}_2=\text{CH}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}=\text{NOH}$

8. (i)  has two NH_2 groups present but the NH_2 group labelled as (a) participates into resonance with the carbonyl group and hence does not show nucleophilic properties. Therefore, only NH_2 group labelled as (b) participates into condensation with carbonyl group.

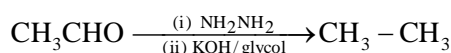
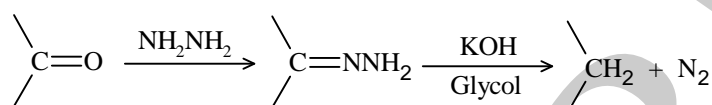


- (ii) This is due to
- extensive network of intermolecular hydrogen bonding in carboxylic acid.
 - their dimeric structure which is so stable that it exist even in the vapour phase.

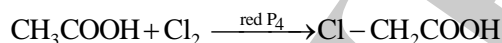
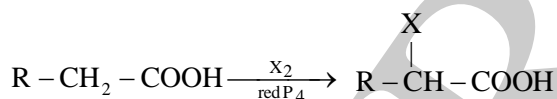


10. (i) **Wolff-Kishner reaction**

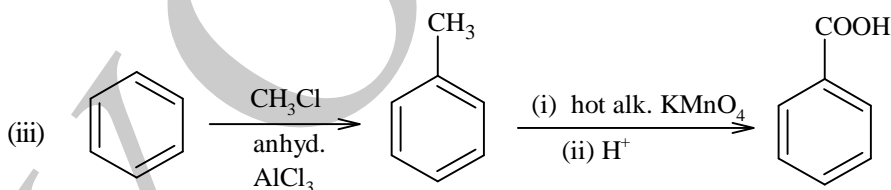
It is a method to convert the aldehyde/ketones into alkanes by converting them first into hydrazone using NH_2NH_2 followed by reaction with KOH/glycol .



- (ii) **Hell-Volhard-Zelinsky reaction** is the α -halogenation of carboxylic acids using $\text{X}_2/\text{red P}_4$ (where $\text{X} = \text{Cl}, \text{Br}$)



11. (i) $\text{C}_6\text{H}_5\text{CHO} < \text{CH}_3\text{COCH}_3 < \text{CH}_3\text{CH}_2\text{CHO} < \text{HCHO}$
 (ii) $\text{CH}_3\text{COOH} < \text{C}_6\text{H}_5\text{COOH} < \text{ClCH}_2\text{COOH} < \text{FCH}_2\text{COOH}$
 (iii) $\text{CH}_3\text{OCH}_3 < \text{CH}_3\text{CHO} < \text{CH}_3\text{COCH}_3 < \text{CH}_3\text{COOH}$



13. (a) (i) NaHCO_3

Methanoic acid gives a brisk effervescence with NaHCO_3 while both gives a positive test with Tollen's reagent.

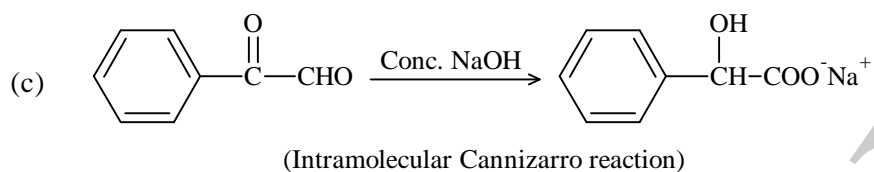
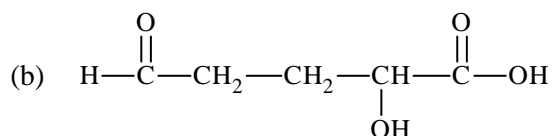
- (ii) I_2/NaOH

Acetophenone, $\text{CH}_3 - \overset{\text{O}}{\parallel}{\text{C}} - \text{C}_6\text{H}_5$ gives yellow precipitate of CHI_3 on reaction with I_2/NaOH .

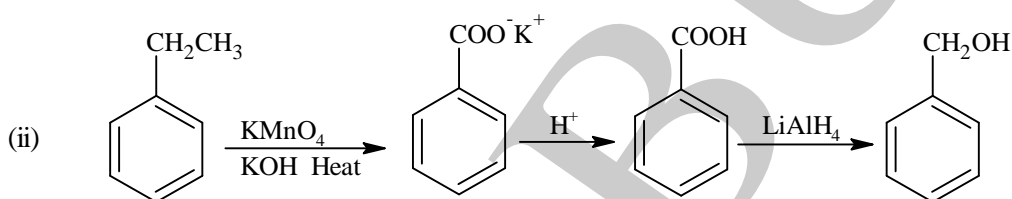
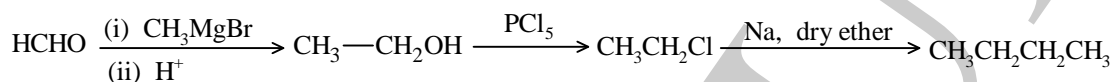
- (iii) I_2/NaOH and $[\text{Ag}(\text{NH}_3)_2]\text{OH}$

Propanone gives a yellow ppt. of CHI_3 with I_2/NaOH , propanal does not.

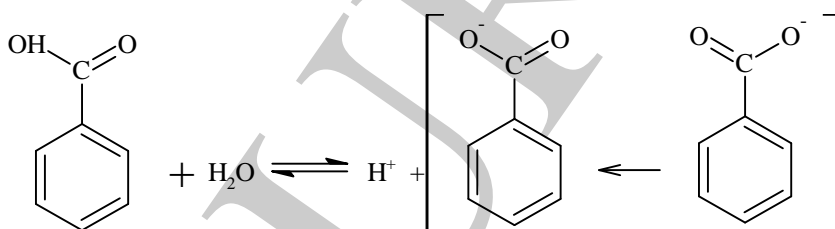
Propanal gives a silver mirror with Tollen's reagent $[\text{Ag}(\text{NH}_3)_2]\text{OH}$, while propanone does not.



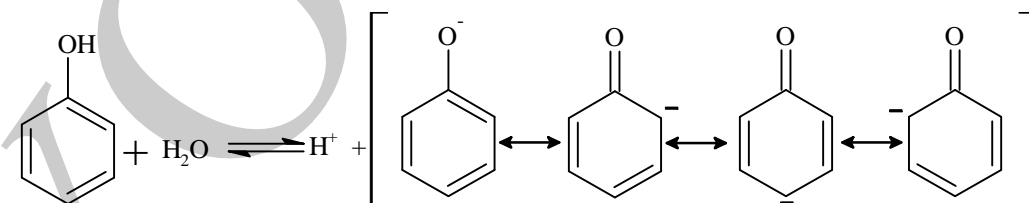
14. (a) (i)



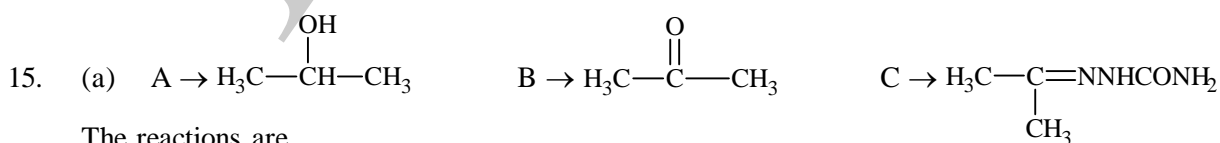
(b) Benzoic acid is stronger acid than phenol because the benzoate ion has two equivalent resonating structure with negative charge on more electronegative oxygen atom.

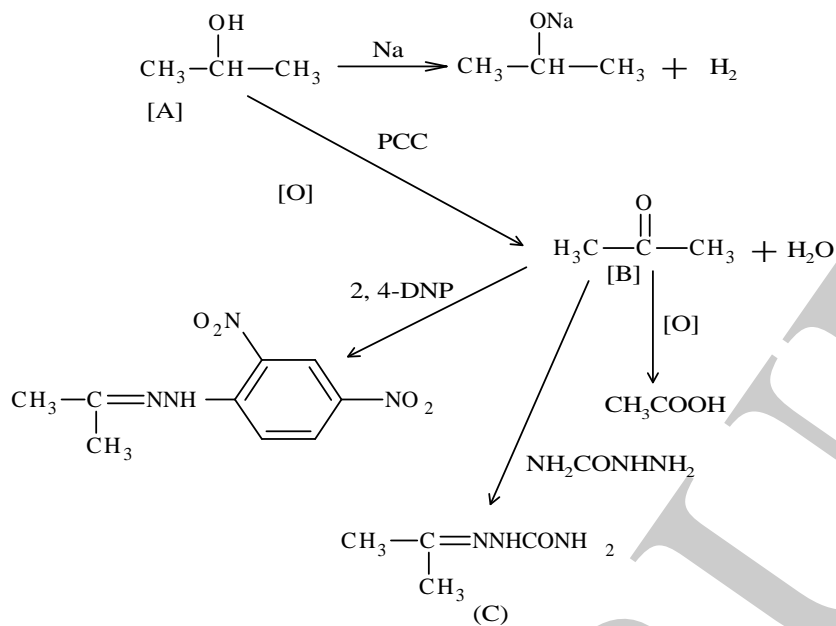


While phenoxide ion has five non-equivalent resonating structures with negative charge on less electronegative oxygen atom.



Therefore, the conjugate base of benzoic acid is more stable than the conjugate base of phenol. Hence, benzoic acid is stronger acid than phenol.





- (b) (i) $\text{C}=\text{O}$ (ii) $\text{C} \rightarrow \text{sp}^2$ (iii) $\text{C}^{\delta+}=\text{O}^{\delta-}$
- (iv) Geometry is trigonal planar.

