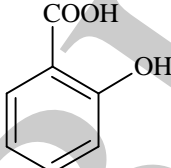


## SOLUTION TEST-B

1. The iodoform test is given by compounds containing  $\text{CH}_3-\overset{\text{OH}}{\underset{|}{\text{C}}}-\text{H/R/Ar}$  or  $\text{CH}_3-\overset{\text{O}}{\underset{||}{\text{C}}}-\text{H/R/Ar}$

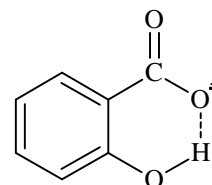
Ethanal,  $\text{CH}_3-\overset{\text{O}}{\underset{||}{\text{C}}}-\text{H}$  and ethanoic acid,  $\text{CH}_3-\overset{\text{O}}{\underset{||}{\text{C}}}-\text{OH}$  can be distinguished by  $\text{I}_2/\text{NaOH}$ .

The correct answer is (ii).

2. Acidic strengths and pKa value are inversely related  is the strongest acid due to

(a) ortho effect

(b) the conjugate base is stabilised by intramolecular hydrogen bonding.



The correct answer is (iv).

3. The compound A is  $\text{CH}_3-\overset{\text{O}}{\underset{||}{\text{C}}}-\text{H}$
- The compound B is  $\text{CH}_3-\overset{\text{O}}{\underset{||}{\text{C}}}-\text{NHC}-\text{NH}_2$   
 $\quad \quad \quad |$   
 $\quad \quad \quad \text{H}$

The correct answer is (iii).

4. The assertion is wrong.  
 Benzaldehyde does not react with Fehlings solution.  
 Fehling's solution test is given by only aliphatic aldehydes.

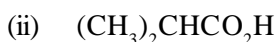
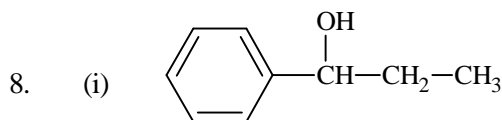
The correct answer is (iv).

5. HVZ reaction is given by carboxylic acids containing  $\alpha$ -hydrogen. These acids on reaction with  $\text{X}_2/\text{red P}$  gives  $\alpha$ -haloacids.

The correct answer is (i).

6. In benzoic acid, the alpha carbon atom is  $\text{sp}^2$  hybridised and has more percentage s-character and more electronegativity than alpha carbon atom of ethanoic acid. The  $\text{sp}^2$  carbon decrease the electron density around hydrogen of  $-\text{COOH}$  group and makes it easier to remove as  $\text{H}^+$  ion. Hence, benzoic acid is stronger acid than ethanoic acid.

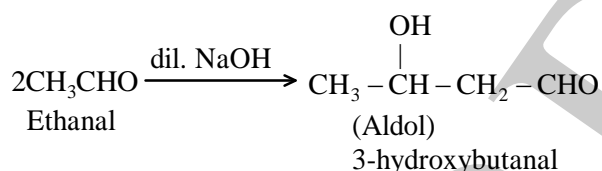
7. 2-methylcyclopent-3-ene cabaldehyde



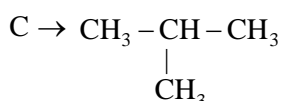
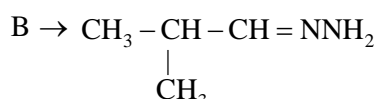
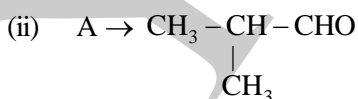
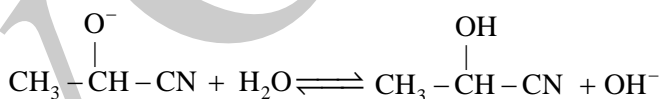
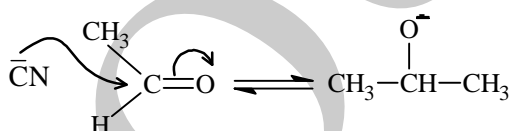
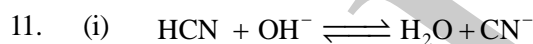
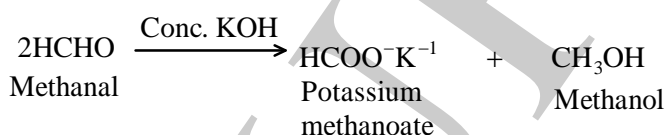
9. (i) Due to more crowding or steric hindrance around carbonyl carbon in 2, 2, 6- trimethyl cyclohexanone, the reactivity is less towards HCN and does not form cyanohydrin.

(ii) In propanone due to more polar C = O group the intermolecular forces of attraction are strong dipole-dipole attractions than in propanal where the C = O groups is less polar. As a result propanone has a higher boiling point and less volatility than propanal.

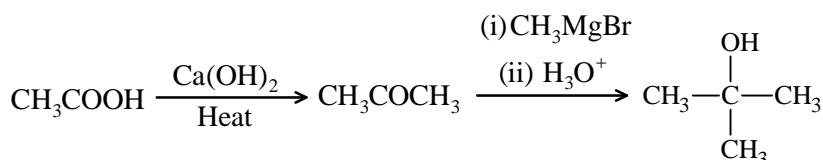
10. (i) Aldehydes/Ketones having atleast one  $\alpha$ -hydrogen undergo a condensation reaction in the presence of dilute alkali as catalyst to form  $\beta$ -hydroxy aldehyde/ketones. The reaction is known as **aldol condensation**.

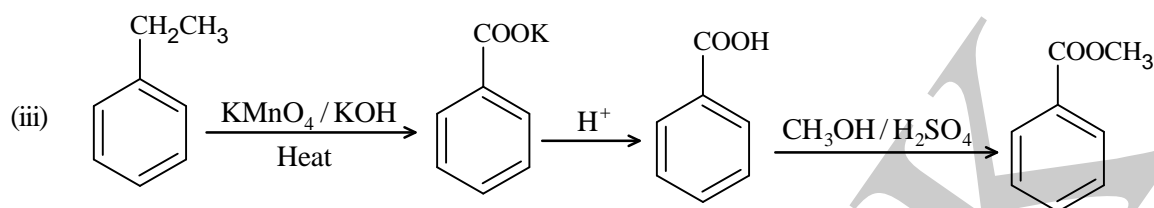
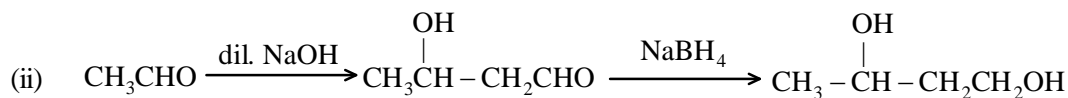


(ii) **Cannizzaro reaction:** Aldehydes which do not have an  $\alpha$ -hydrogen atom, undergo self oxidation and reduction (or disproportionation) reaction on treatment with conc. alkali



12. (i)

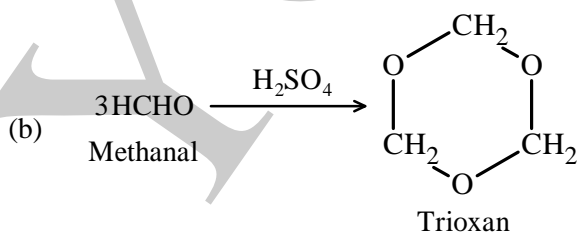




13.

(i)	<b>Test</b>	<b>Ethanal</b>	<b>Propanal</b>
		$\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$	$\text{CH}_3\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$
	Iodoform Test $\text{I}_2/\text{NaOH}$ warm	It gives a yellow precipitate of $\text{CHI}_3$	It does not react
(ii)	<b>Test</b>	<b>Ethanoic acid</b>	<b>Methanoic acid</b>
		$\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$	$\text{H}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$
	Tollen's reagent test $[\text{Ag}(\text{NH}_3)_2]\text{OH}$ warm	No reaction	It gives a silver mirror
(iii)	<b>Test</b>	<b>Benzoic acid</b> $\text{C}_6\text{H}_5\text{COOH}$	<b>Phenol</b> $\text{C}_6\text{H}_5\text{OH}$
	$\text{NaHCO}_3$ Test	It gives a brisk effervescence due to liberation of $\text{CO}_2$ gas	No reaction

14. (a) (i) Propanone is completely miscible in water as it is capable of forming hydrogen bonds with water. Due to presence of bulky benzene ring, acetophenone cannot form hydrogen bonds with water, hence immiscible.
- (ii) This is due to ortho effect that 2-methyl benzoic acid is under strain. To relieve a strain, it gives away  $\text{H}^+$  ion more easily than benzoic acid.



15. (a) (i) A  $\rightarrow$   $\text{CH}_3\text{CH}_2\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
- B  $\rightarrow$   $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$
- C  $\rightarrow$   $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$

(ii) IUPAC name of A is butyl butanoate

