



PREVIOUS COMPETATIVE QUESTIONS JEE MAINS

1. In the presence of a small amount of phosphorous, aliphatic carboxylic acids react with chlorine or bromine to yield a compound in which α hydrogen has been replaced by halogen. This reaction is known as [J.M.O.L-2015]

1) Rosenmund reaction

Solution :

2) Etard reaction

Hell-Volhard- Zelinsky reaction

3) Wolff-Kischner reaction

Hell - volhard - Zelinsky reaction

$$CH_{3} - C - OH \xrightarrow{Cl_{2}/Red'P'} CH_{2} - C - OH$$



 An organic compound A upon reacting with NH₃ gives B. On heating, B gives C. C in presence of KOH reacts with Br₂ to give CH₃CH₂NH₂. A is
 (JEE MAINS- 2013)

1) CH₃COOH

2) CH₃CH₂CH₂COOH

3) CH₃ – CH – COOH | CH₃

4) CH₃CH₂COOH

Solution :

$CH_{3}CH_{2}COOH+NH_{3} \longrightarrow CH_{3}CH_{2}COONH_{4}$ (A) $CH_{3}CH_{2}COONH_{4} \longrightarrow CH_{3}CH_{2}CONH_{2}+H_{2}O$ (B) (C)

 $CH_3CH_2CONH_2+Br_2+KOH \longrightarrow CH_3CH_2NH_2+KBr+K_2CO_3+H_2O$

KEY:4

4. Monocarboxylic acids are functional isomers of:



Esters are the functional isomers of mono carboxylic acids. Ex. CH₃COOH and HCOOCH₃

Acetic acid and methyl formate are functional isomers

5. Which of the following reagent(s) used for the conversion



Solution :

Ester on hydrolysis followed by reduction gives alcohol. Glycol / LiA/H_4 / H_3O^+



Solution :

 $CH_3COOH + C_2H_5OH \rightarrow CH_3COOC_2H_5 + H_2O$ Esters have fruity smell



-I effect increase acidic strength

+I effect decrease acidic strength

- 8. Among the following acids which has the lowest pKa value?

Least +I effect in HCOOH hence maximum k_a . \therefore Least p K_a 9. P-cresol reacts with chloroform in alkaline medium to give the compound A which adds hydrogen cyanide to form, the compound B. The latter on acidic hydrolysis gives chiral carboxylic acid. The structure of the carboxylic acid is [AIEEE-2005]





10. When CH₂ = CH-COOH is reduced with LiAlH₄ the compound obtained will be [AIEEE-2003]
CH₂ = CH-CH₂OH
2) CH₃ - CH₂ - CH₂OH
3) CH₃ - CH₂ - CHO
4) CH₃ - CH₂ - COOH

Solution :

$$CH_2 = CH - COOH \xrightarrow{LiA/H_4} CH_2 = CH - CH_2OH$$



12. On vigorous oxidation by permanganate solution



[AIEEE-2002]



13. Bouveault- Blanc reduction reaction involves

[J.M.O.L-2016]

1) Sodium oxalate and H₂

2) Oxalic acid and H₂

Sodium oxalate

4) CO₂ and caustic soda

Solution :

Bouveault – Blanc reduction reaction involves reduction of ester with Na/ C_2H_5OH to obtain primary alcohol

PREVIOUS COMPETATIVE QUESTIONS EAMCET

1. Identify the reagents A and B respectively in the following reactions

 $\begin{array}{ccc} CH_{3}COOH & \stackrel{A}{\rightarrow} & CH_{3}COCl \\ CH_{3}COOH & \stackrel{B}{\rightarrow} & CH_{3}CHO \end{array}$

[AP E -2015] $SOCl_2, H_2/Pd - BaSO_4$ $2) H_2/Pd - BaSO_4, SOCl_2$ $3) SOCl_2, H_2O_2$ $4) SOCl_2, OsO_4$

2. Which one of the following is used in the hardening of leather?

[TS E -2015]

1) Light sensitive silver bromide in gelatin

2) Sodium lauryl sulphate

3) Alum





3) Methyl acetate 4) Ethyl acetate

Solution :

$$CH_{3} - Mg - Br + CO_{2} \xrightarrow{Dry \text{ ether}} CH_{3} - \overset{O}{C} - O - Mg Br$$
$$\xrightarrow{H_{3}O^{+}} CH_{3} - \overset{O}{C} - OH + Mg(OH)Br$$

4. Which one of the following reactions is not correct?

1)
$$CH_3CHO + \frac{1}{2}O_2 \xrightarrow{Mn(OAC)_2/air} CH_3COOH$$
 [M-2013]

2) $CH_3CH_2OH+O_2 \xrightarrow{\text{Micoderma}} CH_3COOH+H_2O$

3) CH₃MgBr $\xrightarrow{(1)CO_2}_{(2)H_30^{\oplus}}$ CH₃COOH+Mg(OH)Br

 $\checkmark CH_3OH+CO \xrightarrow{Ca/\triangle} CH_3COOH$

5. CH_3 COOH+N H_3 \rightarrow X .Identify X in the following :

[E-2011]

1) H₃CCN H₃CCOONH₄ 3) (H₃CCO)₂O 4) H₃CCONH₂

Solution :

 $CH_3 \text{COOH} + NH_3 \longrightarrow CH_3 \text{COON}H_4$ (X)

6. When sodium formate is heated at 360°C, main product is:

[JIPMER-2008]



- 2) Oxalic acid and H₂
- 3) Sodium oxalate
- 4) CO₂ and caustic soda





8. Identify A and B in the following reaction: CH₃CH₃ ← CH₃COOH → CH₃CH₂OH A B HI + red P LiAlH₄ Ni/∆ LiAlH₄ 3) Pb - BaSO₄ Zn + HCl LiAlH₄ HI + red P

[AMU-2008]



10. Which of the following is a pair of functional isomers ?

1) CH₃COCH₃, CH₃CHO
 C₂H₅COOH, CH₃COOCH₃
 3) C₂H₅COOH, CH₃COOC₂H₅
 4) CH₃COOH, CH₃CHO
 Solution :

Carboxylic acids and esters are functional isomers

[E-2005]

11. $CH_3COOH+Br_2 \xrightarrow{\text{red }P} CH_2(Br)COOH$. The reaction is called 1) Schotten - Baumann reaction

Hell - Volhard - Zelinsky

3) Finkelstein reaction

4) none of the above

Solution :

 $CH_3COOH + Br_2 \xrightarrow{red P} CH_2(Br)COOH + HBr$

12. Acid hydrolysis of X yields two different organic compounds. Which one of the following is X ? [E-2003]

1) CH_3COOH 2) CH_3CONH_2 $\checkmark CH_3COOC_2H_5$ 4) $(CH_3CO)_2O$

Solution :

 $CH_3COOC_2H_5 + H_2O \xrightarrow{H^+} CH_3COOH + C_2H_5OH$

13. In the reaction sequence, $C_2H_5Cl + KCN \xrightarrow{C_2H_5OH} x \xrightarrow{H_3O^{\oplus}} y$ What is the molecular formula of Y ? $C_3H_6O_2$ 2) C_3H_5N 3) $C_2H_4O_2$ 4) C_2H_6O

Solution :

$$C_2H_5Cl + KCN \xrightarrow{C_2H_5OH} C_2H_5CN \xrightarrow{H_3O^{\oplus}} C_2H_5COOH$$



 $CH_3COOH \xrightarrow{\text{NH}_3} CH_3COONH_4 \xrightarrow{\text{Heat}} CH_3CONH_2 \xrightarrow{P_2O_5} CH_3CN+H_2O$

15. What is the reagent used in the preparation of chloro acetic acid from acetic acid ? [M-2001]
1) PCl₅
Cl₂ / red P
3) PCl₃
4) SOCl₂

Solution :

α - Halogination (HVZ reacton)

16. Acetic acid is reacted with metallic sodium to form hydrogen and "X". When 'X' is heated with soda lime, 'Y' and sodium carbonate are formed. 'Y' is [E-2001]
1) C₂H₆COOH
1) C₂H₆COOH
3) CH₃COONa
4) CH₃CONH₂

Solution :

 $CH_{3}COONa + NaOH \xrightarrow{CaO} CH_{4} + Na_{2}CO_{3}$

17. Which of the following converts acetic acid to acetyl chloride?

1) NaCl		[E-2000]
2) HCl		
3) Cl ₂ /P		
PCl ₃		
Solution :		
	$CH_{3}COOH \xrightarrow{PCl_{3}} CH_{3}COCl$	



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