

Aldehydes, Ketones and Carboxylic Acids

Aldehydes

1. The compound that does not possess carbonyl group is

- 1) CH_3CHO 2) CH_3COCH_3
3) CH_3COOH 4) $\text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_3$

2. Hybridisation of the carbon atom of carbonyl group is

- 1) sp 2) sp^2 3) sp^3 4) sp^3d^2

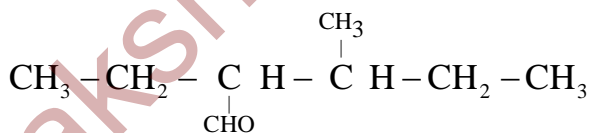
3. The Aldehydic group can occur

- 1) Anywhere in the carbon chain
2) In the middle of carbon chain
3) Only at the second carbon atom of the chain
4) Only at the end carbon atom of the chain

4. The shape of HCHO molecule is

- 1) Pyramid 2) Planar trigonal 3) Linear 4) Angular

5. IUPAC name of



- 1) 4-methyl hexanal-3 2) 3-ethyl-2-methyl pentanal
3) 2-ethyl-3-methyl pentanal 4) 4-methyl heptanal

6. IUPAC name of - hydroxybutyraldehyde

- 1) 1-hydroxy butanal 2) 2-hydroxy butanol
3) 2-hydroxy butanal 4) 2-hydroxy butyraldehyde

7. $\text{CH}_3\text{CH}_2\text{CHO}$ and CH_3COCH_3 are following type of isomers

- 1) Tautomers 2) Functional 3) Metamers 4) Chain

8. $\text{CH}_2=\text{CH}_2+\text{PdCl}_2+\text{H}_2\text{O} \xrightarrow{\text{CuCl}_2+\text{H}^+} \text{CH}_3\text{-CHO}+\text{Pd}+2\text{HCl}$. It is known as

- 1) Wacker's method
- 2) Rosenmund's reaction
- 3) Clemmensen's reaction
- 4) Tishchenko reaction

9. Controlled oxidation of ethyl alcohol gives

- 1) C_2H_4
- 2) CH_3COCH_3
- 3) CH_3CHO
- 4) $\text{CH}_3\text{COOC}_2\text{H}_5$

10. When ethyl alcohol is passed over red hot copper at the formula of the product formed is

- 1) CH_3CHO
- 2) CH_3COCH_3
- 3) C_2H_4
- 4) CH_3COOH

11. Compound formed when a mixture of vapours of formic and acetic acid is passed over 'MnO' at 300°C is

- 1) Acetone
- 2) Acetaldehyde
- 3) Acetic anhydride
- 4) Aldol

12. When a mixture of calcium acetate and calcium formate is heated, we get

- 1) Acetone
- 2) Acetic acid
- 3) Acetaldehyde
- 4) Methanol

13. Which of the following reactions is called Rosenmund reaction?

- 1) Aldehydes are reduced to alcohols.
- 2) Acids are converted to acid chlorides.
- 3) Alcohols are reduced to hydrocarbons.
- 4) Acid chloride are reduced to Aldehydes.

14. Rosenmund's reduction is used for the preparation of

- 1) Carboxylic acid
- 2) Aldehydes
- 3) Esters
- 4) Carbohydrates

15. $\text{CH}_3\text{COCl} + \text{H}_2 \xrightarrow[\text{catalyst}]{\text{Lindlar's}} \text{CH}_3\text{CHO} + \text{HCl}$

The above reaction is known as

- 1) Aldol condensation
- 2) Clemmensen's reduction
- 3) Rosenmund's reduction
- 4) Carbylamine reaction

16. Which of the following is a nucleophilic addition reaction?

- 1) $\text{CH}_3\text{CHO} + \text{NaHSO}_3 \rightarrow \text{CH}_3\text{CH}(\text{OH})\text{SO}_3\text{Na}$
- 2) $\text{CH}_3\text{CHO} + \text{NH}_2\text{OH} \rightarrow \text{CH}_3\text{-CH=NOH}$
- 3) $3(\text{CH}_3\text{CHO}) \rightarrow (\text{CH}_3\text{CHO})_3$
- 4) $\text{CH}_3\text{CHO} + 3\text{I}_2 + 4\text{NaOH} \rightarrow \text{HCOONa} + \text{CHI}_3 + 3\text{H}_2\text{O} + 3\text{NaI}$

17. Cyanohydrin is the product of following?

- 1) Acetic acid + SOCl_2
- 2) Ethyl alcohol + PCl_3
- 3) Carbonyl compound + HCN
- 4) Carbonyl compound + NH_2OH

18. The molecular formula of acetaldehyde semicarbazone is

- 1) $\text{CH}_3\text{-CH=N-CO-NH-NH}_2$
- 2) $\text{CH}_3\text{-CH=N-NH-CONH}_2$
- 3) $\text{CH}_3\text{-CH=N-OH}$
- 4) $\text{CH}_3\text{-CH=N-NH}_2$

19. Which of the following compound undergoes 'Aldol' condensation?

- 1) $\begin{array}{c} \text{H-C-H} \\ || \\ \text{O} \end{array}$
- 2) $\begin{array}{c} \text{CH}_3\text{-C-H} \\ || \\ \text{O} \end{array}$
- 3) $\begin{array}{c} \text{CH}_3\text{-C-CH}_3 \\ || \\ \text{O} \end{array}$
- 4) Both 2 and 3

20. The following does not undergo aldol condensation in the presence of alkali

- 1) CH_3CHO
- 2) CH_3COCH_3
- 3) $\text{CH}_3\text{CH}_2\text{CHO}$
- 4) CCl_3CHO

21. $\text{CH}_3\text{CHO} \xrightarrow{\text{OH}^-} \text{CH}_3\text{CH}(\text{OH})\text{CH}_2\text{CHO}$ represents?

- 1) Cannizaro's reaction
- 2) Benzoin's condensation
- 3) Aldol condensation
- 4) Perkin's reaction

22. $\text{CH}_3\text{-CHO} \xrightarrow{\text{OH}^-} \text{A}$. Then IUPAC name of 'A' is

- 1) Aldol
- 2) Prop-1-ene-2 ol
- 3) 4-Hydroxy-4 Methyl 2-Pentanone
- 4) 3-Hydroxy Butanal

23. Aldehydes and Ketones which do not have methyl groups adjacent to the carbonyl group do not undergo.

- | | |
|-----------------------|--------------------------|
| 1) Oxidation | 2) Reduction |
| 3) Halo form reaction | 4) Condensation reaction |

24. Acetaldehyde reacts with chlorine to form

- | | | | |
|------------|--------------------|-----------------|----------------|
| 1) Chloral | 2) Acetyl chloride | 3) Chloric acid | 4) Chlorethane |
|------------|--------------------|-----------------|----------------|

25. Match the following.

List-A

Aldehyde

1. Formaldehyde
2. Acetaldehyde
3. Propionaldehyde
4. Isobutyraldehyde

List-B

Oxidised product of Aldehyde

- A. Acetic Acid
- B. Propanoic acid
- C. Isobutyric acid
- D. Methanoic acid

- 1) 1-D, 2-A, 3-B, 4-C
- 3) 1-A, 2-C, 3-D, 4-B

- 2) 1-A, 2-D, 3-C, 4-B
- 4) 1-D, 2-B, 3-C, 4-A

26. The IUPAC name of β -methyl valeraldehyde is

- | | |
|----------------------|----------------------|
| 1) 2-methyl pentanal | 2) 3-methyl pentanal |
| 3) 2-methyl butanal | 4) 2-methyl butanal |

27. The IUPAC name of crotonaldehyde is ____

- | | | | |
|------------|---------------|---------------|------------------|
| 1) Butanal | 2) But-2-enal | 3) But-1-enal | 4) None of these |
|------------|---------------|---------------|------------------|

28. Two isomeric compounds 'A' and 'B' have the formula $C_3H_6Cl_2$. With aq.KOH solution 'A' gives propionaldehyde and 'B' gives acetone. Then A and B are

- 1) $CH_3-CCl_2-CH_3$ and $CH_3-CH_2-CHCl_2$
- 2) $CH_3-CHCl-CHCl_2$ and $CH_3-CH_2-CHCl_2$
- 3) $CH-CH_2-CHCl_2$ and $CH_3-CCl_2-CH_3$

4) None

29. An alkene on ozonolysis gives acetaldehyde and acetone. The alkene in question is

- 1) $\text{CH}_3 - \text{CH} = \overset{\text{CH}_3}{\underset{|}{\text{C}}} - \text{CH}_3$
- 2) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_2 - \text{CH}_3$
- 3) $\text{CH}_2 = \text{CH} - \text{CH}_3$
- 4) $(\text{CH}_3)_2\text{C} = \text{C}(\text{CH}_3)_2$

30. A compound 'X' has the formula $\text{C}_2\text{Cl}_3\text{OH}$. It gives a red precipitate of Cu_2O with Fehling solution. Then 'X' is

- 1) Chloral
- 2) Chloretone
- 3) Chloropicrin
- 4) Chloroform

31. $\text{CH}_3\text{CHO} \xrightarrow{\text{LiAlH}_4} \text{A} \xrightarrow{\text{H}^+ / 170^\circ\text{C}} \text{B} \xrightarrow{\text{excess HBr}} \text{C}$ In the above series of reaction 'C' is

- 1) $\text{CH}_3 - \text{CH}_2 - \text{OH}$
- 2) $\text{CH}_2 = \text{CH}_2$
- 3) $\text{CH}_3 - \text{CH}_2 \text{ Br}$
- 4) CO_2

32. $\text{CH}_3 - \text{CHO} \xrightarrow{\text{LiAlH}_4} \text{X} \xrightarrow{\text{HI}} \text{Z}$. Then 'Z' is

- 1) $\text{CH}_3 - \text{CH}_2 - \text{OH}$
- 2) CH_3COOH
- 3) $\text{CH}_3 - \text{CH}_3$
- 4) $\text{C}_2\text{H}_5\text{I}$

Key

1) 4 2) 2 3) 4 4) 2 5) 3 6) 3 7) 2 8) 1 9) 3 10) 1

11) 2 12) 3 13) 4 14) 2 15) 3 16) 1 17) 3 18) 2 19) 4 20) 4

21) 3 22) 4 23) 3 24) 1 25) 1 26) 2 27) 2 28) 3 29) 1 30) 1

31) 3 32) 4

Ketones

1. Ketones cannot be prepared by

- 1) Rosenmund's reaction
- 2) The hydrolysis of terminal gem dihalides
- 3) The oxidation of primary alcohols
- 4) All of these

2. When propyne is treated with aqueous sulphuric acid in presence of Mercuric sulphate, the major product is

- 1) Propanal
- 2) Propyl Hydrogen Sulphate
- 3) Propanol
- 4) Propanone

3. Isopropyl alcohol on oxidation forms

- 1) Acetaldehyde
- 2) Ethylene
- 3) Ether
- 4) Acetone

4. Isopropyl alcohol in presence of Cu at 300°C gives the following

- 1) Acetaldehyde
- 2) Acetone
- 3) Formaldehyde
- 4) Benzaldehyde

5. Compound formed when vapours of acetic acid passed over 'MnO' at 300°C.

- 1) Acetone
- 2) Acetaldehyde
- 3) Acetyl chloride
- 4) Ketol

6. Calcium acetate on heating gives the compound with formula

- 1) CH_3COCH_3
- 2) CH_3COOH
- 3) CH_3OH
- 4) $\text{CH}_3\text{COOCH}_3$

7. Acetone cannot be obtained from

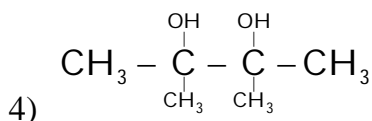
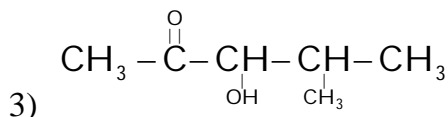
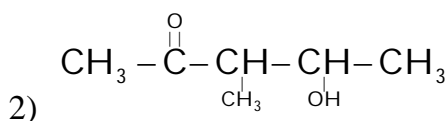
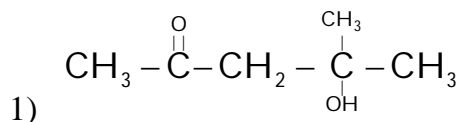
- 1) Hydrolysis of Isopropylidene Chloride
- 2) Hydration of Propyne
- 3) Dehydrogenation of Isopropyl Alcohol

- 4) Hydrolysis of Ester
8. The formation of cyanohydrin with acetone is an example for
- 1) Nucleophilic Addition
 - 2) Nucleophilic Substitution
 - 3) Electrophilic Addition
 - 4) Electrophilic Substitution
9. Acetone adds up the following without the formation of water molecule
- 1) NH_3
 - 2) 2, 4 - DNP
 - 3) H_2NOH
 - 4) HCN
10. Aromatic aldehydes react with aromatic primary amines to give
- 1) Amides
 - 2) Schiff's bases
 - 3) Oximes
 - 4) Cyanohydrins
11. When acetone is treated with Ba(OH)_2 it gives
- 1) Mesitylene
 - 2) Diacetone alcohol
 - 3) Urotropine
 - 4) Mercapto
12. $2\text{CH}_3\text{COCH}_3 \xrightarrow{\text{dryHCl}} \text{'X'}$. 'X' is
- 1) Mesityl oxide
 - 2) Phorone
 - 3) Acetic acid
 - 4) Mesitylene
13. The enol form of acetone contains
- 1) $9\sigma, 9\pi$ bonds
 - 2) $10\sigma, 8\pi$
 - 3) $8\sigma, 10\pi$
 - 4) $9\sigma, 1\pi$
14. The IUPAC name of methyl isopropyl ketone
- 1) 3-methyl-2-pentanone
 - 2) 3-methyl butan-2-one
 - 3) 2-pentanone
 - 4) 2-methyl pentanone
15. The first oxidation product of the following alcohol is a ketone with the same number of carbon atoms
- 1) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
 - 2) $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$
 - 3) $\text{CH}_3\text{CH(OH)CH}_3$
 - 4) $(\text{CH}_3)_3\text{C-OH}$
16. 2, 2-dichloro propane treated with aq. KOH gives an unstable product. It is
- 1) CH_3COCH_3
 - 2) $\text{CH}_3\text{CH(OH)CH}_3$
 - 3) $\text{CH}_3\text{C(OH)}_2\text{CH}_3$
 - 4) $\text{CH}_3\text{CH(OH)CH}_2\text{CHO}$

17. On ozonolysis 2-methyl-2-butene gives

- 1) 2moles of $\text{CH}_3\text{-CHO}$
- 2) 2moles of CH_3COCH_3
- 3) CH_3CHO & CH_3COCH_3
- 4) CH_3CHO & HCHO

18. Which of the products formed when acetone is reacted with barium hydroxide solution?



19. $\text{CH}_3\text{-CHO} + \text{CH}_3\text{-CO-CH}_3 \xrightarrow[\Delta]{\text{Ba(OH)}_2}$ the possible products are

- 1) $\text{CH}_3\text{-CH(OH)-CH}_2\text{-CO-CH}_3$
- 2) $\text{CH}_3\text{-CH(OH)-CH}_2\text{-CHO}$
- 3) $(\text{CH}_3)_2\text{C(OH)-CH}_2\text{-CO-CH}_3$
- 4) All

20. The reaction of acetaldehyde and acetone in the presence of dilute alkali is called

- 1) Crossed aldol condensation
- 2) Perkins condensation
- 3) Aldol condensation
- 4) Benzoin condensation

21. Which of the following aldehyde will undergo Cannizzaro's reaction?

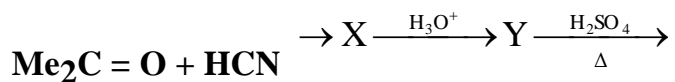
- 1) Ethanal
- 2) 2-Methylpropanal

- 3) 2, 2– Dimethylpropanal 4) Phenylacetaldehyde
22. $(\text{CH}_3)_2\text{C}=\text{O} \xrightarrow{\text{Zn-Hg/ConHCl}} \text{X}$ Here 'X' is
- 1) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{OH}$ 2) $\text{CH}_3\text{-C(OH)-CH}_3$
- 3) $\text{CH}_3\text{-CH}_2\text{-CHO}$ 4) $\text{CH}_3\text{-CH}_2\text{-CH}_3$
23. In Stephen's reduction which of the following group is converted to – CHO group
- 1) – CH_2OH 2) – COCl 3) – CN 4) – NC
24. Two isomeric compounds 'A' and 'B' have the formula $\text{C}_3\text{H}_6\text{Cl}_2$. With aq KOH solution 'A' gives propionaldehyde and 'B' gives acetone. Then 'A' and 'B' are
- 1) $\text{CH}_3\text{-CCl}_2\text{-CH}_3$ and $\text{CH}_3\text{-CH}_2\text{-CHCl}_2$
- 2) $\text{CH}_3\text{-CHCl-CHCl}_2$ and $\text{CH}_3\text{-CH}_2\text{-CHCl}_2$
- 3) $\text{CH}_3\text{-CH}_2\text{-CHCl}_2$ and $\text{CH}_3\text{-CCl}_2\text{-CH}_3$
- 4) $\text{CH}_3\text{-CHCl-CHCl}_2$ and $\text{CH}_3\text{-CCl}_2\text{-CH}_3$
25. An organic compound $\text{CH}_3\text{CH(OH)CH}_3$ on treatment with acidified $\text{K}_2\text{Cr}_2\text{O}_7$ gives compound 'Y' which reacts with I_2 and sodium carbonate to form triiodomethane. The compound 'Y' is
- 1) CH_3OH 2) CH_3COCH_3
- 3) CH_3CHO 4) $\text{CH}_3\text{CH(OH)CH}_3$
26. The molecular weight of acetone is M. The molecular weight of diacetone alcohol is
- 1) M 2) $\text{M}/2$ 3) 2M 4) 3M
27. Compound 'A' with formula $\text{C}_3\text{H}_6\text{O}$ forms phenylhydrazone and gives negative Tollen's test. Compound 'A' on reduction gives propane. Then compound 'A' is
- 1) A primary alcohol 2) An aldehyde 3) A ketone 4) A secondary alcohol

28. $CH_3C \equiv CH \xrightarrow[H^2SO_4, 60^\circ]{HgSO_4} B$. Then 'B' is

- | | |
|-----------------|---------------------|
| 1) Acetone | 2) Trichloroacetone |
| 3) Acetaldehyde | 4) Chloral |

29. Identify the final product Z in the following reaction sequence



- | | |
|---------------------------|-----------------------|
| 1) $(CH_3)_2C(OH)COOH$ | 2) $CH_2=C(CH_3)COOH$ |
| 3) $HO-CH_2-CH(CH_3)COOH$ | 4) $CH_3-CH=CHCOOH$ |

Key

- | | | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1) 4 | 2) 4 | 3) 4 | 4) 2 | 5) 1 | 6) 1 | 7) 4 | 8) 1 | 9) 4 | 10) 2 |
| 11) 2 | 12) 1 | 13) 4 | 14) 2 | 15) 3 | 16) 3 | 17) 3 | 18) 1 | 19) 4 | 20) 1 |
| 21) 3 | 22) 4 | 23) 3 | 24) 3 | 25) 2 | 26) 3 | 27) 3 | 28) 1 | 29) 2 | |

Aromatic Aldehydes

- The solvent used in Etard's reaction during the formation of benzaldehyde from toluene is**
1) Acetic Acid 2) Water 3) liq.NH₃ 4) CS₂
- The final product obtained when toluene is subjected to side chain chlorination followed by hydrolysis at 737 K is**
1) Phenol 2) Benzaldehyde 3) Acetophenone 4) Chlorobenzene
- The product formed in Gattermann-Koch formylation reaction is**
1) Chlorobenzene 2) Benzoyl chloride 3) Benzaldehyde 4) Acetophenone
- Which of the following can be used as formulating agent in the presence of AlCl₃?**
1) HCOOH + HCl 2) CO + HCl 3) CO + Cl₂ 4) HCl + O₂
- Etard's reaction involves the preparation of benzaldehyde from**
1) Toluene 2) Ethyl benzene 3) Benzoyl chloride 4) Sodium benzoate
- Oxidation of toluene with CrO₃ in the presence of (CH₃CO)₂O gives a product A which on treatment with aq. NaOH produce**
1) C₆H₅CHO 2) C₆H₅COONa 3) (C₆H₅CO)₂O 4) (CH₃CO)₂O
- Benzaldehyde can be prepared by**
1) Etard reaction 2) Gattermann-koch formylation
3) Oxidation of benzyl alcohol 4) All the above
- Chloroacetaldehyde and acetyl chloride are____**
1) Position isomers 2) Chain isomers
3) Metamers 4) Functional group isomers
- Benzaldehyde can be prepared by oxidation of toluene by**
1) Acidic KMnO₄ 2) K₂Cr₂O₇ 3) CrO₂Cl₂ 4) All

10. Hydrogenation of benzoyl chloride in the presence of Pd and BaSO₄ gives

- 1) Benzyl Alcohol 2) Benzaldehyde 3) Benzoic acid 4) Phenol

11. In Etard reaction of preparation of Benzaldehyde the reagent used is

- 1) Chromyl chloride 2) Acetyl chloride 3) Water 4) Benzyl nitrate

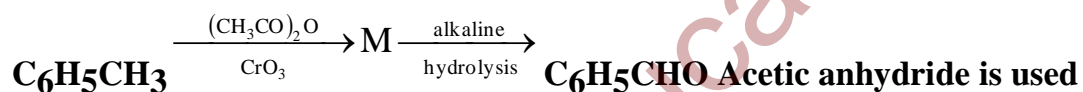
12. Benzaldehyde is obtained from toluene by

- 1) Rosenmund's reduction 2) Cannizzaro reaction
3) Kolbe's reaction 4) Etard reaction

13. $C_6H_6 + CO + HCl \xrightarrow{Anhyd. AlCl_3} X + HCl$ compound X is

- 1) $C_6H_5CH_3$ 2) $C_6H_5CH_2Cl$ 3) C_6H_5CHO 4) C_6H_5COOH .

14. In the reaction

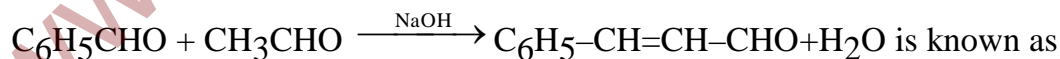


- 1) As a catalyst
2) As an oxidising agent
3) To form a non-oxidizable derivative of benzaldehyde
4) To help the reaction to proceed smoothly

15. For cannizzaro's reaction. Which is necessary?

- 1) Presence of $\alpha - C$ 2) Absence of $\alpha - C$
3) Presence of $\alpha - H$ 4) Absence of $\alpha - H$

16. The reaction



- 1) Cannizzaro reaction 2) Aldol condensation
3) Claisen – Schmidt condensation 4) Benzoin condensation

17. $C_6H_5CHO + HCN \rightarrow C_6H_5CH(CN)OH$ the product would be

- 1) Racemate 2) Optically active 3) A meso compound 4) Ethyl formate

18. Benzaldehyde reacts with NH_3 to give

- 1) Phenyl Cyanide 2) Hydrobenzamide 3) Aniline 4) Benzamide

19. Which of the following does not undergo benzoin condensation?

- 1) Benzene carbaldehyde 2) p - Toluene carbaldehyde
3) Phenylethanal 4) 4 - Methoxybenzaldehyde

20. Reaction of $\text{C}_6\text{H}_5\text{CHO}$ with CH_3NH_2 gives

- 1) $\text{C}_6\text{H}_5\text{COOH}$ 2) $\text{C}_6\text{H}_5 - \text{N} = \text{NCl} + 2\text{H}_2\text{O}$
3) $\text{C}_6\text{H}_5 - \text{CH} = \text{N} - \text{CH}_3$ 4) $\text{C}_6\text{H}_5\text{NH}_2$

21. Nitration of acetophenone using nitrating mixture produces mainly

- 1) o - nitro acetophenone 2) p - nitro acetophenone
3) m - nitro acetophenone 4) m - nitrobenzoic acid

Key

1) 4 2) 2 3) 3 4) 2 5) 1 6) 1 7) 4 8) 4 9) 3 10) 2

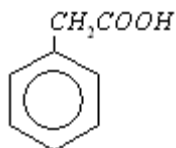
11) 1 12) 4 13) 3 14) 3 15) 4 16) 2 17) 2 18) 4 19) 3 20) 3

21) 3

Carboxylic Acids

1. IUPAC name of β - Chloro - α -methyl butyric acid

1. 3-chloro-2 methyl Butanoic acid 2. 2-chloro-3-methyl Butanoic acid
3. 2-chloro-3- methyl-Butan-4-acid 4. 3-chloro-isopentanoic acid



2. IUPAC name of

- 1) Benzoic acid 2) 2-Phenyl Ethanoic Acid
3) Benzene 1, 2 carboxylic acid 4) 1-Phenyl Ethanoic Acid

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

- 1) CH_3COCH_3 , CH_3CHO 2) $\text{C}_2\text{H}_5\text{CO}_2\text{H}$, $\text{CH}_3\text{CO}_2\text{CH}_3$
3) $\text{C}_2\text{H}_5\text{CO}_2\text{H}$, $\text{CH}_3\text{CO}_2\text{C}_2\text{H}_5$ 4) $\text{CH}_3\text{CO}_2\text{H}$, CH_3CHO

4. The weaker acid among the following is

- 1) CH_3COOH 2) ClCH_2COOH 3) $\text{C}^{\text{Cl}_3}\text{COOH}$ 4) $(\text{CH}_3)_2\text{CHCOOH}$

5. The correct order of decreasing acid strength of trichloroacetic acid (A), trifluoro acetic acid (B), acetic acid (C) and formic acid (D) is

- 1) $A > B > C > D$ 2) $A > C > B > D$ 3) $B > A > D > C$ 4) $B > D > C > A$

6. Which of the following orders is true regarding the acidic nature of COOH ?

- 1) Formic acid > Acetic acid > Propanoic acid
2) Formic acid > Acetic acid < Propanoic acid
3) Formic acid < Acetic acid < Propanoic acid
4) Formic acid < Acetic acid > Propanoic acid

7. On hydrolysis an ester gave a carboxylic acid. The 'K' salt of that acid on Kolbe's electrolysis gave ethane. That ester is
- 1) Methyl ethanoate 2) Methyl Methanoate
 - 3) Ethyl Methanoate 4) Ethyl Propanoate
8. $\text{CH}_3\text{OH} \xrightarrow[(ii) Rh; \Delta]{(i) X} \text{CH}_3\text{COOH}$. In this reaction 'X' is
- 1) CO_2 2) CO 3) MgO 4) C
9. $\text{C}_6\text{H}_5\text{CONH}_2 \xrightarrow[\Delta]{\text{H}_3\text{O}^+} \text{A} + \text{NH}_3$ What is A?
- 1) C_6H_6 2) $\text{C}_6\text{H}_5\text{COOH}$ 3) $\text{C}_6\text{H}_5\text{NH}_2$ 4) $\text{C}_6\text{H}_5\text{CN}$
10. $\text{CH}_3\text{-Mg-Br} + \text{CO}_2 \rightarrow \text{X} \xrightarrow{\text{H}_3\text{O}^+} \text{Y}$. In this reaction 'Y' is
- 1) HCOOH 2) CH_3COOH 3) $\text{C}_2\text{H}_5\text{COOH}$ 4) HCHO
11. Methyl cyanide on hydrolysis gives following.
- 1) Acetic Acid 2) Acetaldehyde 3) Acetone 4) Methyl Amine
12. The reaction of CH_3MgBr on dry ice followed by acid hydrolysis gives
- 1) Acetic Acid 2) Formic Acid 3) Acetone 4) Acetaldehyde
13. $\text{C}_6\text{H}_5\text{COOC}_2\text{H}_5 \xrightarrow[\Delta]{\text{H}_3\text{O}^+} \text{A} + \text{C}_2\text{H}_5\text{OH}$, What is A?
- 1) C_6H_6 2) $\text{C}_6\text{H}_5\text{NH}_2$ 3) $\text{C}_6\text{H}_5\text{C}_2\text{H}_5$ 4) $\text{C}_6\text{H}_5\text{COOH}$
14. Toluene $\xrightarrow{\text{KMnO}_4 / \text{KOH} / \text{H}_3\text{O}^+} \text{A}$. What is A?
- 1) Acetic Acid 2) Benzene 3) Benzoic Acid 4) Benzaldehyde
15. Which of the following has highest boiling point?
- 1) $\text{C}_2\text{H}_5\text{OH}$ 2) CH_3COOH 3) CH_3COCH_3 4) HCOOCH_3

16. $\text{CH}_3 - \overset{\text{O}}{\parallel} \text{C} - \text{OH} + \text{X} \rightarrow$ Fruity smell compound. Then 'X' is
1) Aldehyde 2) Chloroform 3) Alcohol 4) Base
17. The products formed when PCl_5 reacts with acetic acid are
1) $\text{CH}_3\text{COCl}, \text{H}_3\text{PO}_3$ 2) $\text{CH}_3\text{COCl}, \text{H}_3\text{PO}_4$
3) $\text{CH}_3\text{COCl}, \text{HCl}$ 4) $\text{CH}_3\text{COCl}, \text{POCl}_3, \text{HCl}$
18. An organic compound A gives effervescences on treatment with aqueous saturated sodium bicarbonate. 'A' can be
1) An Alkane 2) An Alkyl Halide
3) A Carboxylic Acid 4) Acetone
19. An organic compound reacts (i) with metallic sodium to liberate hydrogen and (ii) with Na_2CO_3 solution to liberate CO_2 . The compound is
1) An Alcohol 2) A Carboxylic Acid 3) An Ether 4) An Ester
20. Which compound will give brisk effervescence of CO_2 on treatment with NaHCO_3 ?
1) Ethyl Alcohol 2) Acetaldehyde 3) Acetone 4) Acetic Acid
21. Acetic acid reacts with ethanol in the presence of H_2SO_4 to form 'X' and water. Which of the following is 'X'?
1) $\text{CH}_3\text{CH}_2\text{COOC}_2\text{H}_5$ 2) CH_3COCH_3
3) $\text{CH}_3\text{COC}_2\text{H}_5$ 4) $\text{CH}_3\text{COOC}_2\text{H}_5$
22. Which hydrogen atom of acetic acid is replaced by Cl_2 in presence of P?
1) α - hydrogen 2) Carboxylic Hydrogen
3) Both 4) Oxygen of Carboxy group

23. $\text{CH}_3\text{COOH} \xrightarrow[\Delta]{\text{P}_4\text{O}_{10}} \text{X}$ In this reaction 'X' is
- 1) CH_3COCl 2) CH_3CONH_2
3) $(\text{CH}_3\text{CO})_2\text{O}$ 4) $\text{CH}_3\text{COOC}_2\text{H}_5$
24. Acetyl chloride can't be obtained from Acetic acid with following reagent.
- 1) PCl_3 2) PCl_5 3) SOCl_2 4) S_2Cl_2
25. Which of the following compound does not undergo H.V.Z reaction?
- 1) $\text{CH}_3 - \overset{\text{CH}_3}{\underset{|}{\text{CH}}} - \text{COOH}$ 2) $\text{CH}_3 - \text{CH}_2 - \text{COOH}$
3) $(\text{CH}_3)_3\text{C} - \text{COOH}$ 4) $\text{CH}_3 - \text{COOH}$
26. In vinegar the concentration of acetic acid is nearly
- 1) 5% 2) 2% 3) 6-10% 4) 100%
27. $\text{A} + \text{HCN} \xrightarrow{\text{dil. H}_2\text{SO}_4} \text{Lactic Acid}$ Here 'A' is
- 1) HCOOH 2) CH_3COOH 3) CH_3CHO 4) $\text{CH}_3 - \text{CH}_2\text{OH}$
28. $2\text{CH}_3\text{COOH} \rightarrow (\text{CH}_3\text{CO})_2\text{O}$ Here the dehydrating agent used is
- 1) conc. H_2SO_4 2) P_2O_5 3) CaO 4) CaCl_2
29. During Kolbe's electrolysis of potassium acetate solution the anode products are
- 1) $\text{CH}_3 - \text{CH}_3, \text{CO}_2$ 2) $\text{CH}_3 - \text{CH}_3, \text{H}_2$
3) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3, \text{CO}_2$ 4) $\text{CH}_4, \text{CH}_3 - \text{CH}_3$
30. Two isomeric compounds A and B have the formula $\text{C}_2\text{H}_4\text{O}_2$. Among them only 'B' gives brisk effervescence with NaHCO_3 solution. Then 'A' and 'B' are
- 1) $\text{HCOOCH}_3, \text{CH}_3\text{COOH}$ 2) $\text{HCOOCH}_3, \text{CH}_3\text{CH}_2\text{OH}$
3) $\text{CH}_3\text{COOH}, \text{HCOOCH}_3$ 4) $\text{HCOOH}, \text{CH}_3\text{COOH}$

31. $\text{CH}_3\text{COOH} + \text{CaCO}_3 \rightarrow \text{A} \xrightarrow{\Delta} \text{B} \xrightarrow{\text{Ba(OH)}_2} \text{C}$. Here C is

- | | |
|-------------------------|--------------------|
| 1) Acetone Cyanohydrins | 2) Diacetone Amine |
| 3) Diacetone Alcohol | 4) Methylene |

32. The catalyst used in the manufacture of acetic acid from acetaldehyde by the atmospheric oxygen is

- | | |
|---|---|
| 1) $(\text{CH}_3\text{COO})_2\text{Mn}$ | 2) $(\text{CH}_3\text{COO})_2\text{Zn}$ |
| 3) CH_3COOK | 4) CH_3COONa |

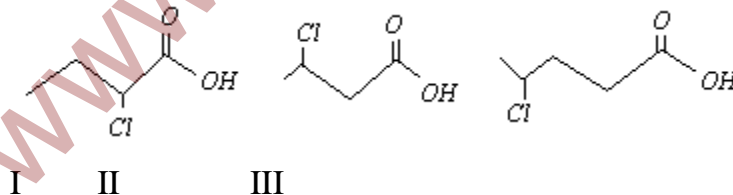
33. Which of the following is the correct order of strength of carboxylic acids?

- 1) $\text{HCOOH} > \text{CH}_3\text{COOH} > \text{C}_2\text{H}_5\text{COOH} > (\text{CH}_3)_2\text{CHCOOH}$
- 2) $\text{CCl}_3\text{COOH} > \text{CHCl}_2\text{COOH} > \text{CH}_2\text{ClCOOH} > \text{CH}_3\text{COOH}$
- 3) $\text{CF}_3\text{COOH} > \text{CCl}_3\text{COOH} > \text{CBr}_3\text{COOH} > \text{CI}_3\text{COOH}$
- 4) All of these

34. The decreasing strength of the acids is

- 1) $\text{CHCl}_2\text{COOH} > \text{CH}_2\text{ClCOOH} > \text{CH}_3\text{COOH}$
- 2) $\text{CH}_3\text{COOH} > \text{CH}_2\text{ClCOOH} > \text{CHCl}_2\text{COOH}$
- 3) $\text{CH}_2\text{ClCOOH} > \text{CHCl}_2\text{COOH} > \text{CH}_3\text{COOH}$
- 4) $\text{CH}_2\text{Cl}_2\text{COOH} > \text{CH}_3\text{COOH} > \text{CHCl}_2\text{COOH}$

35. The correct order of increasing acidic strength of the following acids is



- | | | | |
|--|--|--|--|
| 1) $\text{I} < \text{II} < \text{III}$ | 2) $\text{I} < \text{III} < \text{II}$ | 3) $\text{III} < \text{II} < \text{I}$ | 4) $\text{II} < \text{III} < \text{I}$ |
|--|--|--|--|

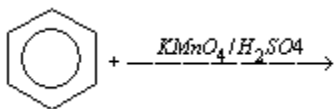
36. Which of the following orders is true regarding the acetic nature of monosubstituted acetic acid?

- 1) Fluoroacetic acid > Chloroacetic acid > Bromoacetic acid
- 2) Fluoroacetic acid < Chloroacetic acid < Bromoacetic acid
- 3) Fluoroacetic acid < Chloroacetic acid > Bromoacetic acid
- 4) Fluoroacetic acid < Chloroacetic acid < Bromoacetic acid

37. Assertion (A): CH_3CN on hydrolysis gives Acetic Acid

Reason (R): Cyanides on hydrolysis liberates ' NH_3 ' gas

1. Both 'A' and 'R' are true and 'R' is the correct explanation of A
2. Both 'A' and 'R' are true and 'R' is not the correct explanation of A
3. 'A' is true but 'R' is false
4. 'A' is false but 'R' is true.



38. A. What is A?

- 1) Oxalic acid
- 2) Malonic acid
- 3) Succinic acid
- 4) Adipic acid

39. Which of the following will not undergo Hell Volhard Zelinsky Reaction?

- 1) CH_3COOH
- 2) $\text{CH}_3\text{CH}_2\text{COOH}$
- 3) 2, 2-dimethyl propionic acid
- 4) 2-methyl propionic acid

40. $\text{CH}_3\text{-Mg-Br} + \text{CO}_2 \rightarrow \text{X} \xrightarrow{\text{H}_3\text{O}^+} \text{Y}$. In this reaction 'Y' is

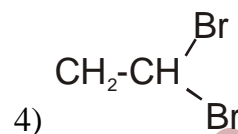
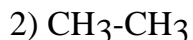
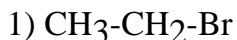
1. HCOOH
2. CH_3COOH
3. $\text{C}_2\text{H}_5\text{COOH}$
4. HCHO

41. $\text{CH}_3\text{COOH} \xrightarrow{\text{LiAlH}_4} \text{A} \xrightarrow[\text{H}_2]{\text{Ni}} \text{B}$ In this reaction A and B respectively are

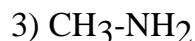
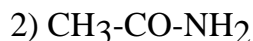
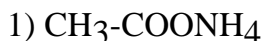
1. CH_3OH & CH_4
2. $\text{C}_2\text{H}_5\text{OH}$ & C_2H_6



42. $\text{CH}_3\text{-COOH} \xrightarrow{\text{AgOH}} \text{A} \xrightarrow{\text{Br}_2/\text{CCl}_4} \text{B}$. In the above reaction 'B' is

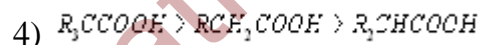
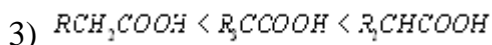
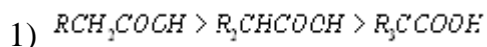


43. $\text{CH}_3\text{-COOH} + \text{N}_3\text{H} \xrightarrow[\Delta]{\text{H}_2\text{SO}_4} \text{A}$. In the above reaction A is

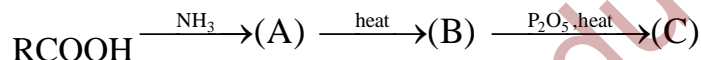


4) None

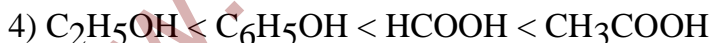
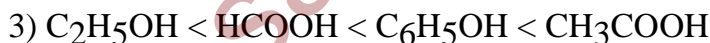
44. The relative order of esterification of acids is



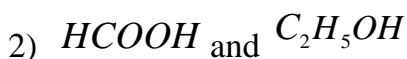
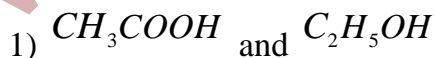
45. The product 'C' in the following reaction is



46. The order of increasing acid strength is

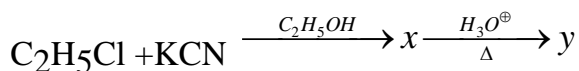


47. The organic compounds A and B react with sodium metal and release H_2 gas. A and B react with each other to give ethyl acetate. Then A and B are



4) CH_3COOH and $HCOOH$

48. In the reaction sequence,



What is the molecular formula of Y?

- 1) $C_3H_6O_2$ 2) C_3H_5N 3) $C_2H_4O_2$ 4) C_2H_6O

49. Oxidation product of 'X' with molecular formula C_2H_4O is Y with molecular formula $C_2H_4O_2$. The compound Y is

- 1) Acetic Acid 2) Formic Acid 3) Propionic Acid 4) Buteric Acid

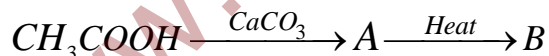
50. Acetic acid is reacted with metallic sodium to form hydrogen and 'X'. When 'X' is heated with soda lime, 'Y' and sodium carbonate are formed. 'Y' is

- 1) C_2H_6COOH 2) CH_4 3) CH_3COONa 4) CH_3CONH_2

51. Compounds X and Y give effervescence with Na_2CO_3 solution. X gives a white precipitate with ammonical $AgNO_3$ while Y given a sweet smelling compound on heating with alcohol. X and Y are

- 1) $HCOOH$ and CH_3COOH 2) CH_3CHO and CH_3COOH
3) CH_3COOH and CH_3COCH_3 4) CH_3COCH_3 and $HCOOH$

52. Consider the following reactions



Compound B is

- 1) An Ether 2) An Alcohol 3) An Aldehyde 4) A Ketone

53. The percentage of carbon in the product formed when acetic acid reacts with hydrogen in the presence of Nickel under pressure at elevated temperature is

- 1) 75% 2) 80% 3) 90 % 4) 70 %

54. Which on oxidation will not give a carboxylic acid with the same number of carbon atoms?

- 1) CH_3COCH_3 2) CCl_3CH_2CHO 3) $CH_3CH_2CH_2OH$ 4) CH_3CH_2CHO

55. The treatment of CH_3CH_2COOH with chlorine in the presence of phosphorus gives

- 1) CH_3CH_2COCl 2) $CH_3CH_2CH_2Cl$
3) $CH_3CH(Cl)COOH$ 4) $CH_2(Cl)CH_2COOH$

Key

- 1) 1 2) 2 3) 2 4) 4 5) 3 6) 1 7) 1 8) 2 9) 2 10) 2
11) 1 12) 1 13) 4 14) 3 15) 2 16) 3 17) 4 18) 3 19) 2 20) 4
21) 4 22) 1 23) 3 24) 4 25) 3 26) 3 27) 3 28) 2 29) 1 30) 1
31) 3 32) 1 33) 4 34) 1 35) 3 36) 1 37) 1 38) 4 39) 3 40) 2
41) 2 42) 3 43) 1 44) 2 45) 2 46) 1 47) 1 48) 1 49) 1 50) 2
51) 1 52) 4 53) 2 54) 1 55) 3