

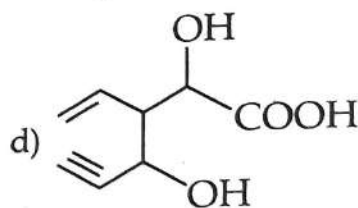
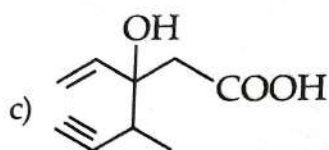
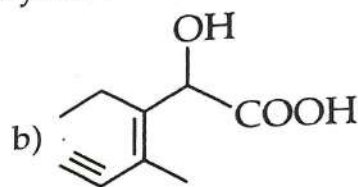
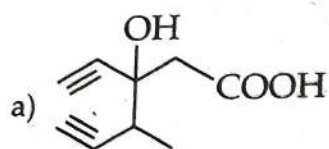
**Introduction, classifications and nomenclatures of aldehydes, ketones and carboxylic acids**

[MHT-CET 2009]

1. The IUPAC name of crotonaldehyde is  
 a) butenaldehyde    b) butanal-1    c) but-2-en-1-al    d) prop-2-en-1-ol

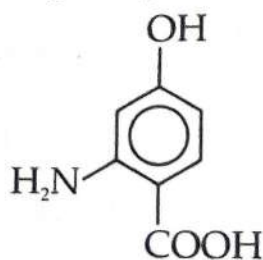
[MHT-CET 2013]

2. Structure of the compound whose IUPAC name is  
 3-ethyl-2-hydroxy-4-methylhex-3-en-5-ynoic acid is



[MHT-CET 2014]

3. Write the IUPAC name of following compound.



- a) 2-amino-4-hydroxybenzoic acid    b) 6-amino-4-hydroxybenzoic acid  
 c) 3-amino-4-carboxyphenol    d) 2-carboxy-4-hydroxyaniline

[MHT-CET 2016]

4. Which of the following carboxylic acids is a tricarboxylic acid ?

- a) Oxalic acid    b) Citric acid    c) Succinic acid    d) Adipic acid

[MHT-CET 2017]

5. The acid which contains both -OH and -COOH groups is

- a) phthalic acid    b) adipic acid    c) glutaric acid    d) salicylic acid

[MHT-CET 2018]

6. Which of the following is a tricarboxylic acid ?

- a) Citric acid    b) Malonic acid  
 c) Succinic acid    d) Malic acid

[MHT-CET 2019]

7. The correct IUPAC name of Glyceraldehyde is

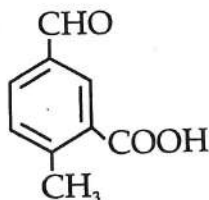
- a) 2, 3-Dihydroxypropanal    b) 2, 3-Dihydroxybutanal  
 c) 3-Hydroxypropanal    d) Hydroxy ethanal

[MHT-CET 2020]

- What is IUPAC name of mesityl oxide ?
- a) 1-Phenylbutan-2-one  
b) 4-Methylpent-3-en-2-one  
c) 4-Methylbenzaldehyde  
d) 2-Bromohexan-3-one
- What is IUPAC name of acrolein ?
- a) 3-methylbut-2-enal  
b) 2-methylbut-2-enal  
c) Prop-2-enal  
d) But-2-enal
- Which of the following is NOT dicarboxylic acid ?
- a) Succinic acid  
b) Acrylic acid  
c) Malonic acid  
d) Phthalic acid
- Which of the following is a tricarboxylic acid ?
- a) Caproic acid  
b) Valeric acid  
c) Citric acid  
d) Oxalic acid
- What is the molecular formula of glyceraldehyde ?
- a)  $C_2H_2O_4$   
b)  $C_4H_6O_4$   
c)  $C_3H_6O_3$   
d)  $C_3H_4O_2$
- What is IUPAC name of succinic acid ?
- a) Ethanedioic acid  
b) Propanedioic acid  
c) Butanedioic acid  
d) Pentanedioic acid
- Which of the following compounds is not isomeric with diethyl ether ?
- a) n-Propyl methyl ether  
b) Butanone  
c) Butan-1-ol  
d) 2-Methylpropan-2-ol
- How many carbon atoms are present in a molecule of benzylmethyl ketone ?
- a) Ten  
b) Seven  
c) Nine  
d) Eight

[MHT-CET 2021]

16. What is IUPAC name of following compound ?



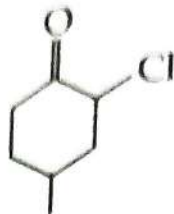
- a) 3-Carboxy-4-methyl benzaldehyde  
b) 5-Carboxy-4-methyl benzaldehyde  
c) 3-Formyl-6-methyl benzoic acid  
d) 5-Formyl-2-methyl benzoic acid
17. Which among the following is a pair of dicarboxylic acids ?
- a) Glutaric acid and Malonic acid  
b) Succinic acid and Valeric acid  
c) Oxalic acid and Caproic acid  
d) Propionic acid and Adipic acid
18. What is the IUPAC name of glyoxal ?
- a) Propanedial  
b) Ethanedial  
c) 2-Methyl propanal  
d) Prop-2-enal

[MHT-CET 2022]

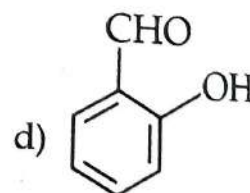
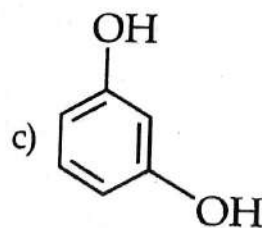
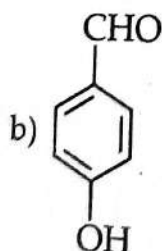
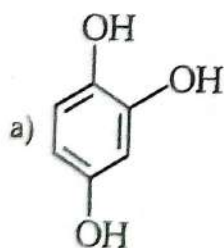
19. Identify the symmetrical ketone from the following compounds.
- a) Ethyl phenyl ketone  
b) Acetophenone  
c) Ethyl methyl ketone  
d) Benzophenone



20. What is the number of  $-\text{COOH}$  groups present in phthalic acid ?  
 a) 3                      b) 2                      c) 1                      d) 4
21. What is the IUPAC name of compound ?



- a) 4-Methyl-2-chlorocyclohexanone  
 b) 4-Methyl-6-chlorocyclohexanone  
 c) 2-Chloro-4-methylcyclohexanone  
 d) 6-Chloro-4-methylcyclohexanone
22. What is the IUPAC name of mesityl oxide ?  
 a) 4-Methylpent-2-oxo-3-ene  
 b) 4-Methylpent-3-en-2-one  
 c) 2-Methylpent-2-en-4-one  
 d) 2-Methylpent-4-oxo-2-ene
23. Which among the following is dicarboxylic acid ?  
 a) Butyric acid                      b) Valeric acid                      c) Caproic acid                      d) Glutaric acid
24. What is the source of L-Lactic acid from the following ?  
 a) Tamarind                      b) Vinegar                      c) Lemon                      d) Curd
25. When two  $-\text{COOH}$  groups are attached to adjacent carbon atoms of benzene then the name of compound is  
 a) Salicylic acid                      b) Benzoic acid                      c) Phthalic acid                      d) o-Toluic acid
26. What is the IUPAC name of salicylic acid ?  
 a) 2-Methylbenzoic acid                      b) 2-Hydroxybenzoic acid  
 c) Benzene-1, 2-dicarboxylic acid                      d) Benzoic acid
27. Which among the following is an aromatic aldehyde ?  
 a) Butyraldehyde                      b) Acetaldehyde  
 c) Benzaldehyde                      d) Cyclohexane aldehyde
28. The correct structure of salicylaldehyde is



29. Which among the following organic compounds is present in tamarind paste ?  
 a) Tartaric acid                      b) Acetic acid                      c) Citric acid                      d) Butyric acid
30. What is the key ingredient of vinegar from the following ?  
 a) Benzoic acid                      b) L-lactic acid                      c) Acetic acid                      d) Citric acid
31. Identify the common name of  $\text{H}_3\text{C}-\underset{\text{OH}}{\text{CH}}-\text{COOH}$   
 a) Oxalic acid                      b) Lactic acid  
 c) Acrylic acid                      d) Propylene glycol

## Preparation of aldehyde

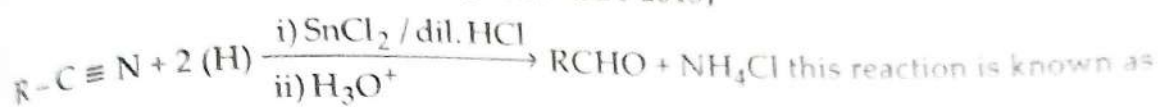
[MHT-CET 2006]

Compound A (molecular formula  $C_3H_6O$ ) is treated with acidified potassium dichromate to form a product B (molecular formula  $C_3H_6O$ ). B forms a shining silver mirror on warming with ammoniacal silver nitrate. B when treated with an aqueous solution of  $H_2NCONHNH_2$ ,  $HCl$  and sodium acetate gives a product C. Identify the structure of C.

- a)  $CH_3CH_2CH=NNHCONH_2$   
 c)  $(CH_3)_2C=NCONHNH_2$

- b)  $(CH_3)_2C=NNHCONH_2$   
 d)  $CH_3CH_2CH=NCONHNH_2$

[MHT-CET 2015]



- a) Etard reaction  
 c) Hell-Vohland-Zelinsky reaction  
 b) Stephen reaction  
 d) Balz-Schiemann reaction

[MHT-CET 2016]

What is the reagent used in Etard reaction?

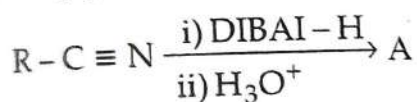
- a) Chromyl chloride  
 c)  $SnCl_2$  and  $HCl$   
 b) Ethanoyl chloride  
 d) Cadmium chloride

[MHT-CET 2020]

Which of the following is obtained by hydrogenation of benzoyl chloride in presence of  $Pd$  on  $BaSO_4$ ?

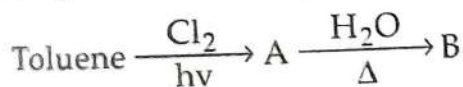
- a) Benzoic acid  
 b) Benzene  
 c) Benzaldehyde  
 d) Benzyl alcohol

Identify product 'A' in the following reaction,



- a)  $R-CONH_2$   
 b)  $R-COOH$   
 c)  $R-CH_2NH_2$   
 d)  $R-CHO$

Identify 'A' and 'B' respectively in following reaction,



- a) Benzyl chloride and benzaldehyde  
 c) Benzoyl chloride and benzoic acid  
 b) Benzyl chloride and benzoic acid  
 d) Benzoyl chloride and benzaldehyde

Chromyl chloride converts methyl group to a chromium complex, which on acid hydrolysis gives corresponding aldehyde. This reaction is called

- a) Etard reaction  
 c) Stephen reaction  
 b) Wolf-Kishner reaction  
 d) Rosenmund reaction

Identify 'A' in the following reaction,  $A \xrightarrow[Pd-BaSO_4]{H_2} C_6H_5CHO + HCl$

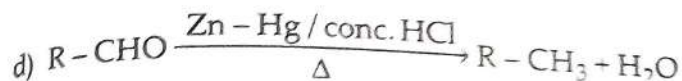
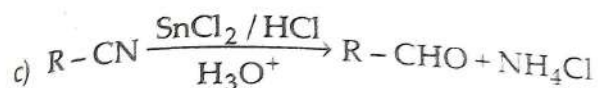
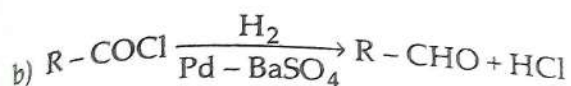
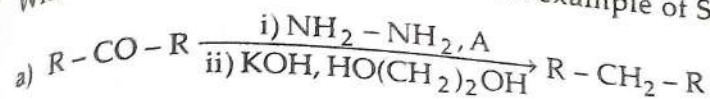
- a) Benzoic acid  
 b) Chlorobenzene  
 c) Benzyl chloride  
 d) Benzoyl chloride

An acylchloride is hydrogenated over catalyst palladium on barium sulphate to form an aldehyde. This reaction is called as

- a) Wolff-Kishner reduction  
 c) Etard reaction  
 b) Rosenmund reduction  
 d) Stephen reaction



Which from following reactions is an example of Stephen reaction ?



51. The reagent used in Gatterman-Koch formylation of arene is

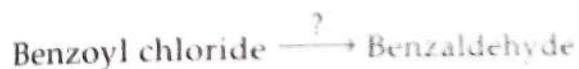
- a)  $CO_2, HCl$       b)  $CrO_2Cl_2$       c)  $CO, HCl$       d)  $DiAl-H$

52. Identify the reagent used in following conversion,



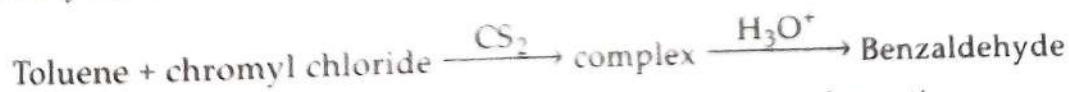
- a)  $CO, HCl / AlCl_3$       b)  $CrO_2Cl_2 \cdot H_3O^+$   
c)  $AlH(i-Bu)_2, H_3O^+$       d)  $CrO_3, (CH_3CO)_2O$

53. Which of the following reagents is used in the reaction shown below ?



- a)  $DIBAL-H$       b)  $SnCl_2 / HCl$       c)  $H_2 / Pd - BaSO_4$       d) Dimethyl cadmium

54. Identify the name of following reaction,

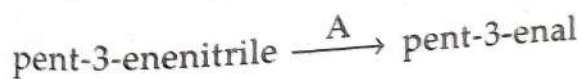


- a) Stephen reaction      b) Rosenmund reaction  
c) Etard reaction      d) Wolf-Kishner reaction

55. Identify the product formed when benzoyl chloride is reduced by hydrogen using palladium catalyst poisoned with barium sulphate.

- a) Chlorobanene      b) benzyl alcohol      c) Benzene      d) Benzaldehyde

56. Identify the reagent used in following conversion,

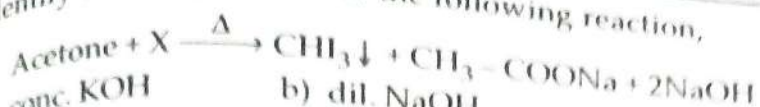


- a)  $AlH(i-Bu)_2 / H_3O^+$       b)  $K_2Cr_2O_7 / H_2SO_4$   
c)  $H_2 / Pd, BaSO_4$       d)  $SnCl_2 \cdot HCl$

57. What is the product formed when side chain chlorination of toluene is carried out followed by acid hydrolysis at 373 K ?

- a) Benzaldehyde      b) Benzal chloride      c) Chlorobenzene      d) Benzoic acid

Identify the compound X in the following reaction,



a) conc. KOH

b) dil. NaOH

c) NaOI

d)  $\text{K}_2\text{Cr}_2\text{O}_7$ 

The reaction,  $\text{CH}_3\text{-}\overset{\text{O}}{\parallel}\text{C-H} + 4[\text{H}] \xrightarrow[\Delta]{\text{conc. HCl, Zn-Hg}} \text{CH}_3\text{-CH}_3 + \text{H}_2$ , is called as

a) Aldol condensation

c) Clemmensen reduction

b) Cannizzaro reaction

d) Wolf-Kishner reduction

When aldehyde is treated with excess of monohydric alcohol, it forms.

a) Hemiacetal

b) Acetal

c) Imine

d) Oxime

Identify from following reactions that which converts carbonyl group of aldehydes and ketones to methylene group.

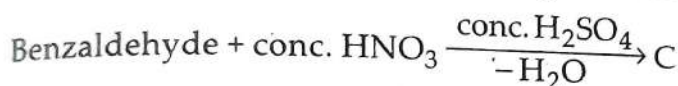
a) Stephen reaction

b) Rosenmund reduction

c) Etard reaction

d) Clemmensen reduction

Identify the product C in the following reaction,



a) o-Nitro benzaldehyde

b) p-Nitro benzaldehyde

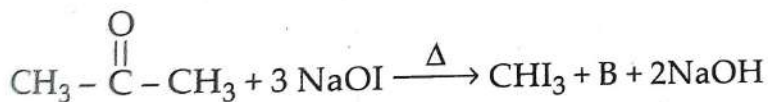
c) Benzyl alcohol

d) m-Nitro benzaldehyde

Which of the following compounds reacts with  $\text{R}-\overset{\text{O}}{\parallel}\text{C}-\text{R}$  to form oxime?

a)  $\text{NH}_2\text{OH}$ b)  $\text{H}_2\text{N}-\text{NH}-\text{CONH}_2$ c)  $\text{C}_6\text{H}_5-\text{NHNH}_2$ d)  $\text{H}_2\text{N}-\text{NH}_2$ 

Identify compound B in the following reaction,



a) Acetic acid

b) Propionic acid

c) iso-Propyl alcohol

d) Sodium acetate

Which from following compounds has smell of pistachio and is used in ice-cream?

a) Butyraldehyde

b) Cinnamaldehyde

c) Vanillin

d) Acetophenone

Which among the following compounds has highest boiling point?

a) Butyraldehyde

b) Acetaldehyde

c) Valeraldehyde

d) Propionaldehyde

### Preparation of carboxylic acids

[MHT-CET 2004]

Which of the acids cannot be prepared by Grignard reagent?

a) Acetic acid

b) Succinic acid

c) Formic acid

d) All of these

[MHT-CET 2020]

Which of the following compounds on heating with potassium permanganate and dilute sulphuric acid forms adipic acid?

a) Cyclohexene

b) Phenylethene

c) Methylbenzene

d) n-Butylbenzene

What type of product is obtained when formaldehyde reacts with  $\text{C}_6\text{H}_5\text{MgBr}$  in dry ether?

- Primary alcohol with same number of carbon atoms as in aldehyde
- Primary alcohol with one carbon atom more than aldehyde
- Secondary alcohol with one carbon atom more than aldehyde
- Tertiary alcohol with two carbon atoms more than aldehyde

Which from following compounds is NOT a mono carboxylic acid?

- Phthalic acid
- Salicylic acid
- $\alpha$ -toluic acid
- Benzoic acid

Which from following is NOT a dicarboxylic acid?

- Citric acid
- Oxalic acid
- Malonic acid
- Glutaric acid

Which of the following is Stephen reaction?

- $\text{R}-\text{COCl} \xrightarrow[\text{Pd}-\text{BaSO}_4]{\text{H}_2} \text{R}-\text{CHO} + \text{HCl}$
- $\text{R}-\text{CN} \xrightarrow[\text{ii) H}_3\text{O}^+]{\text{i) SnCl}_2, \text{HCl}} \text{R}-\text{CHO} + \text{NH}_4\text{Cl}$
- $\text{R}-\text{CHO} \xrightarrow[\Delta]{\text{Zn-Hg conc. HCl}} \text{R}-\text{CH}_3 + \text{H}_2\text{O}$
- $\text{R}-\text{CHO} \xrightarrow[\text{ii) KOH.HO-CH}_2\text{-CH}_2\text{-OH}]{\text{i) H}_2\text{N-NH}_2} \text{R}-\text{CH}_2-\text{R}$

What is IUPAC name of Acrylic acid?

- Propanoic acid
- Prop-2-enoic acid
- 2-Methylpropanoic acid
- 2-Hydroxypropanoic acid

Which of the following compounds when treated with ammoniacal silver nitrate exhibits silver mirror test?

- Ethanol
- Ethanal
- Ethoxyethane
- Ethanoic acid

(NEET - 2024)

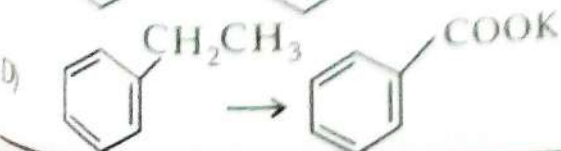
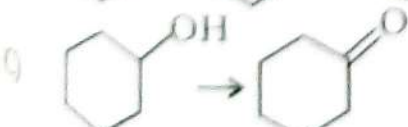
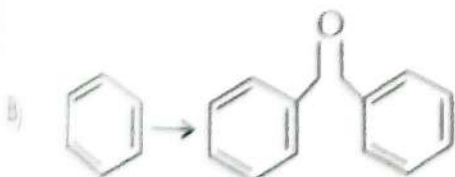
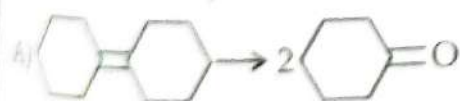
Fehling's solution 'A' is

- aqueous copper sulphate
- alkaline copper sulphate
- alkaline solution of sodium potassium tartrate (Rochelle's salt)
- aqueous sodium citrate

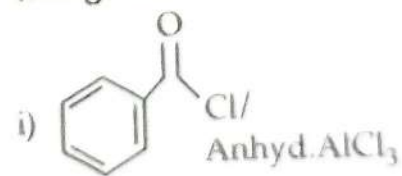
(NEET - 2024)

Match List I with List II.

List I  
(Reaction)



List II  
(Reagents/condition)



ii)  $\text{CrO}_3$

iii)  $\text{KMnO}_4/\text{KOH}, \Delta$

iv) (i)  $\text{O}_3$  (ii)  $\text{Zn-H}_2\text{O}$