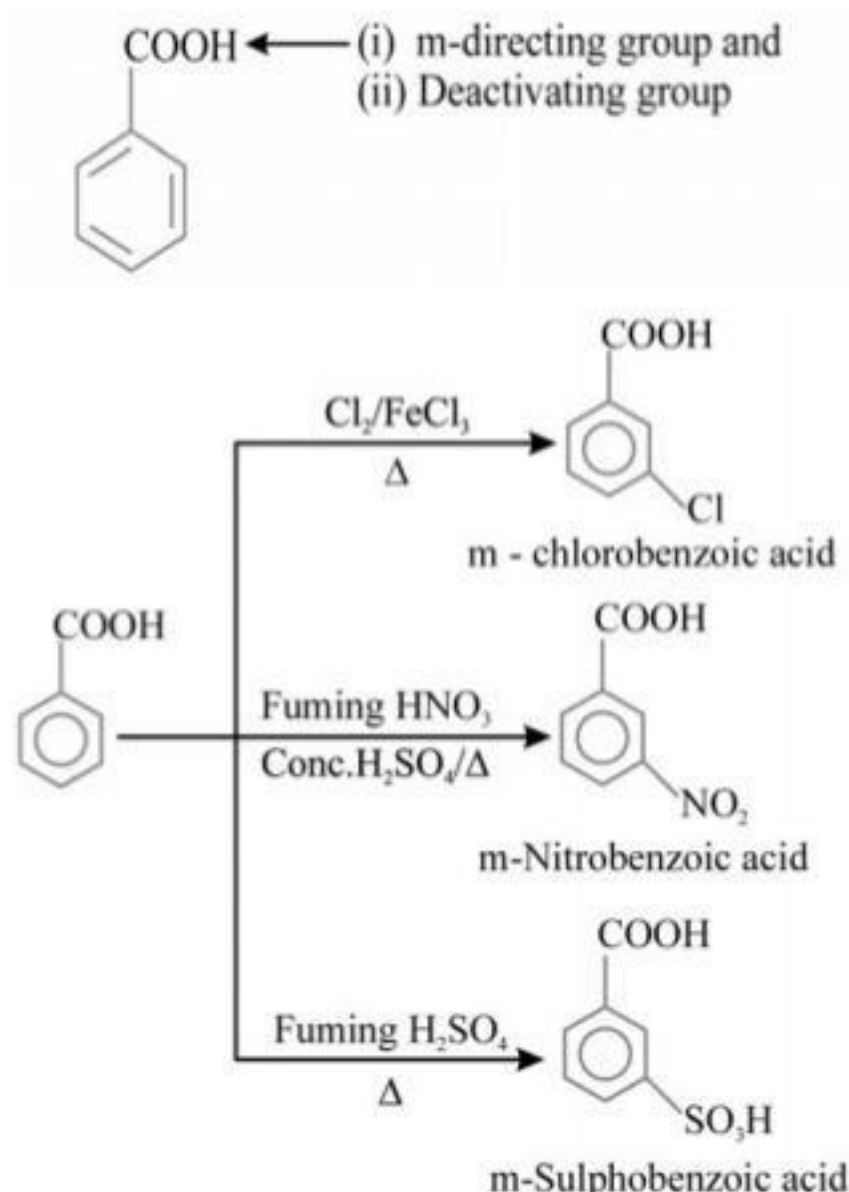


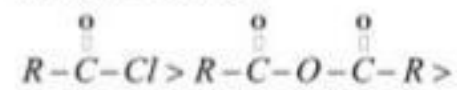
The acid present in red ants is..

CARBOXYLIC ACIDS

Continued from January 1st..



Acid derivatives: The main reaction of these compounds is nucleophilic substitution reaction. The order of reactivity for nucleophilic substitution is :

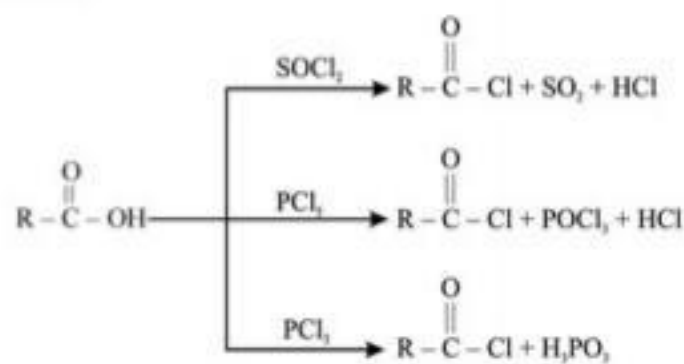


- Nucleophilic substitution reaction of acid and acid derivatives is called nucleophilic addition elimination reaction or acyl substitution reaction.

JEE ADVANCE

Acid Chloride:

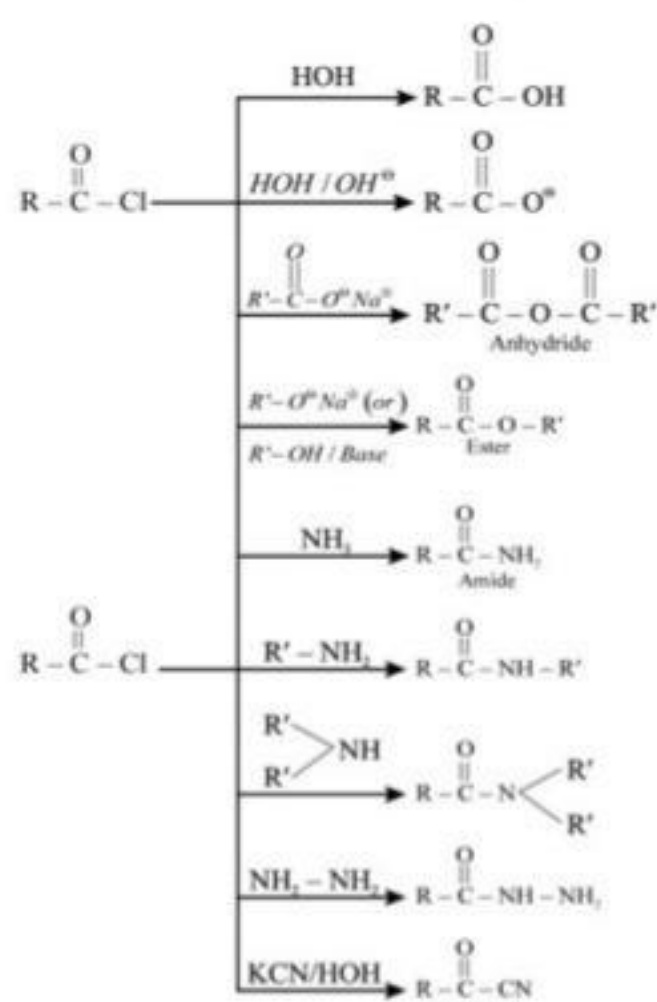
- **Preparation:** It is prepared from carboxylic acid.



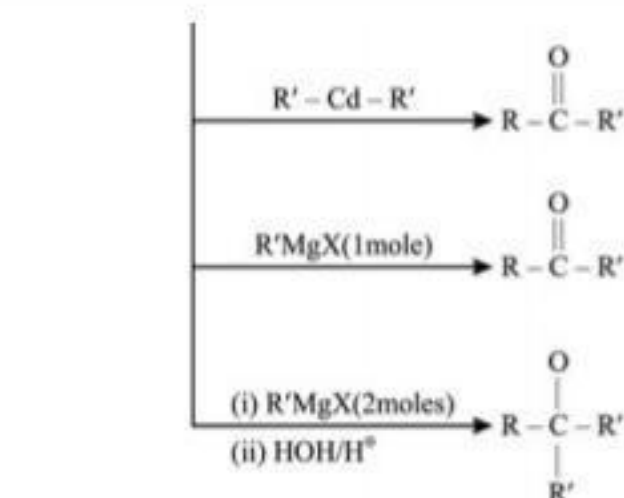
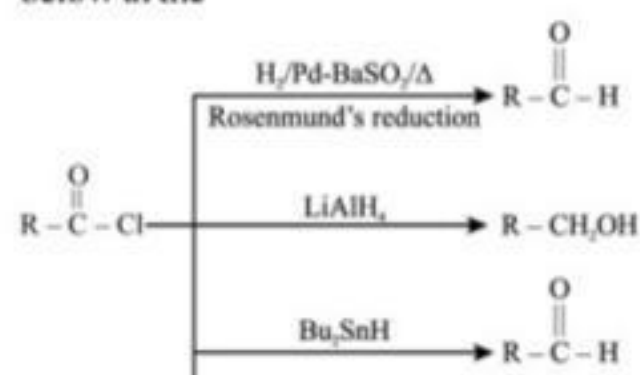
Chemical reactions: Acid chlorides give the following chemical reactions:

- (1) **Nucleophilic substitution reactions:**

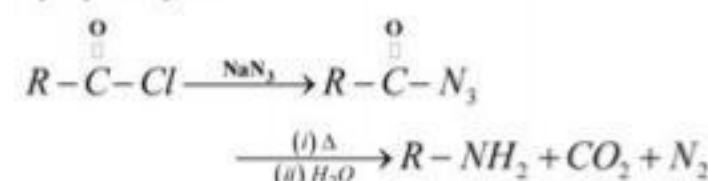
- The nucleophilic substitution reactions are given below in the table.



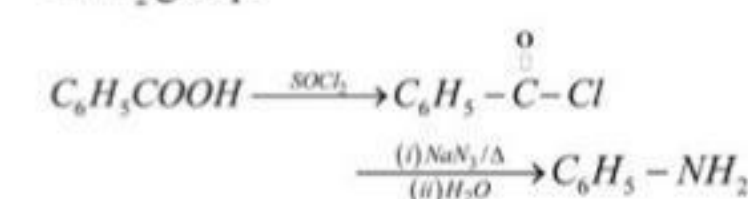
- (2) **Reduction reaction:** Reduction products of acid chlorides with various reducing agents are given below in the



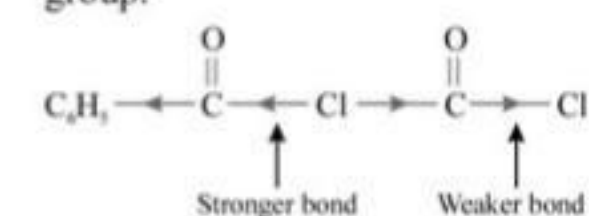
Curtius reaction: Acid chlorides give primary amines when heated with sodium azide followed by hydrolysis.



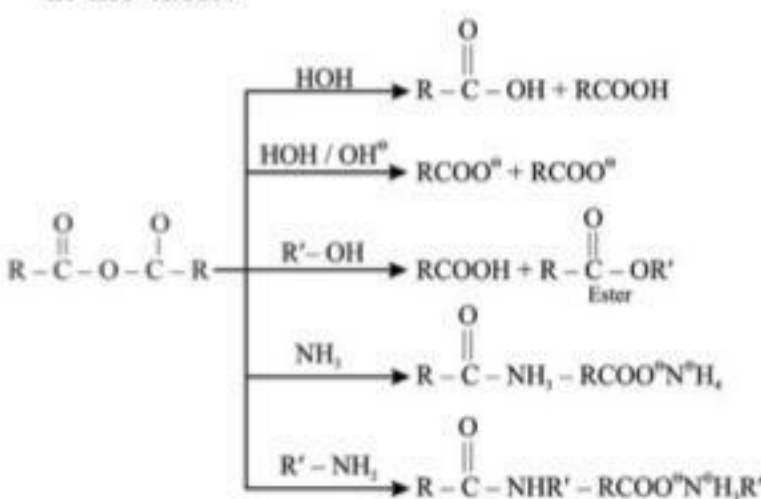
- This reaction is called Curtius rearrangement. In this reaction, $-\text{COCl}$ group converts into $-\text{NH}_2$ group.



- Benzoyl chloride is used as benzoylating agent for alcohols and amines. It is less reactive than acetyl chloride due to the $-I$ effect of phenyl group.



- Benzoylation can be carried out in aqueous (below 25°C) as well as in non-aqueous medium. Benzoylation of amines in aqueous medium is known as Schotten-Baumann reaction.
- Acid Anhydride:** Nucleophilic substitution reaction.
- The nucleophilic substitution are given below in the table.



LEVEL-I (C.W)

NOMENCLATURE

- The acid present in red ants is
1) HCOOH 2) $\text{C}_6\text{H}_5\text{COOH}$
3) CH_3COOH 4) $\text{CH}_3-\text{CH}(\text{OH})-\text{COOH}$
- β -chlorobutyric acid is named in IUPAC as
1. 2-chlorobutanoic acid 2. 2-chlorobutyric acid
3. 3-chlorobutanoic acid 4. 3-chlorobutyric acid
- A compound of general formula $\text{C}_n\text{H}_{2n}\text{O}_2$ could be
1) an acid 2) a diketone
3) an ether 4) an aldehyde

PREPARATION

- $\text{CH}_3\text{Cl} \xrightarrow{\text{KCN}} \text{A}$;
 $\text{A} \xrightarrow{\text{H}_2\text{O}} \text{B}$ (Final product) In this reaction 'B' is
1) $\text{CH}_3\text{COOC}_2\text{H}_5$ 2) CH_3COOH
3) HCOOH 4) CH_3CONH_2
- $\text{CH}_3\text{OH} \xrightarrow{(i) \text{X}, (ii) \text{Rb}/\Delta} \text{CH}_3\text{COOH}$. In this reaction 'X' is
1) CO_2 2) CO 3) MgO 4) C

PROPERTIES

- In vinegar the concentration of acetic acid is nearly
1) 5% 2) 2% 3) 6-10% 4) 100%
- 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
- 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) $\text{CH}_3\text{COCl}, \text{POCl}_3, \text{HCl}$

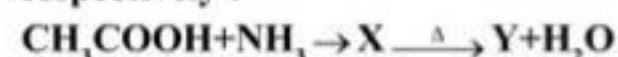
- Which of the following reduces carboxylic acid directly to primary alcohols
1) LiAlH_4 2) $\text{Na} + \text{C}_2\text{H}_5\text{OH}$
3) Lindlar's Catalyst 4) H_2

- Number of hydrogen bonds present between two acetic acid molecules when they are existing as dimer
1) 1 2) 0 3) 3 4) 2

- Which is false about acetic acid

- 1) it is a polar molecule
- 2) it forms H bonds
- 3) it is stronger than mineral acids
- 4) it has higher boiling point than corresponding alcohols.

- In the following reaction, X and Y are respectively :



- 1) $\text{CH}_3\text{CONH}_2, \text{CH}_4$
- 2) $\text{CH}_3\text{COONH}_4, \text{CH}_3\text{CONH}_2$
- 3) $\text{CH}_3\text{CONH}_2, \text{CH}_3\text{COOH}$
- 4) $\text{CH}_3\text{NH}_2, \text{CH}_3\text{CONH}_2$

- 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.

JEE MAIN Special

- Match the acids given in Column I with their correct IUPAC names given in Column II

- | Column I (Acids) | Column II (IUPAC names) |
|--------------------|-----------------------------------|
| i) Phthalic acid | a) Hexane-1, 6-dioic acid |
| ii) Oxalic acid | b) Benzene-1, 2-dicarboxylic acid |
| iii) Succinic acid | c) Pentane-1, 5-dioic acid |
| iv) Adipic acid | d) Butane-1, 4-dioic acid |
| v) Glutaric acid | e) Ethan-1, 2-dioic acid |
- 1) i - (b) 2) ii - (e) 3) iii - (d) 4) iv - (a) 5) v - (c)
 - 2) i - (e) 2) ii - (b) 3) iii - (d) 4) iv - (a) 5) v - (c)
 - 3) i - (b) 2) ii - (d) 3) iii - (e) 4) iv - (a) 5) v - (c)
 - 4) i - (b) 2) ii - (e) 3) iii - (a) 4) iv - (d) 5) v - (c)

LEVEL I A - KEY

- 1) 1 2) 3 3) 1 4) 2 5) 2 6) 3 7) 2
- 8) 4 9) 1 10) 4 11) 3 12) 2 13) 1 14) 1

LEVEL I B

NOMENCLATURE

- In CH_3COOH molecule, the C-C bond is formed by

- 1) $\text{sp}^3 - \text{sp}^3$ overlap 2) $\text{sp}^2 - \text{sp}^2$ overlap
- 3) $\text{sp}^3 - \text{sp}^2$ overlap 4) $\text{sp}^3 - \text{sp}$ overlap

- IUPAC name of

- 1) Benzoic acid
- 2) 2-phenyl ethanoic acid
- 3) Benzene 1,2 carboxylic acid
- 4) 1-phenyl ethanoic acid

- Which of the following is a pair of functional isomers? (2005E)

- 1) $\text{CH}_3\text{COCH}_3, \text{CH}_3\text{CHO}$
- 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) $\text{CH}_3\text{CO}_2\text{H}, \text{CH}_3\text{CHO}$

PREPARATION

- Toluene $\xrightarrow{\text{KMnO}_4/\text{KOH}/\text{H}_2\text{O}^\oplus} \text{A}$. What is A?
1) Acetic acid 2) Benzene
3) Benzoic acid 4) Benzaldehyde.
- Which of the following can't form CH_3COOH from $\text{C}_2\text{H}_5\text{OH}$
A) PCC B) PDC
C) $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}^+$ D) Mildermaaceti
- 1) A and B only 2) C and D only
3) Only A 4) All A,B,C,D

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For Feedback...

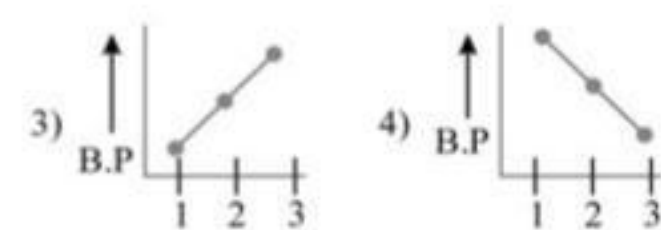
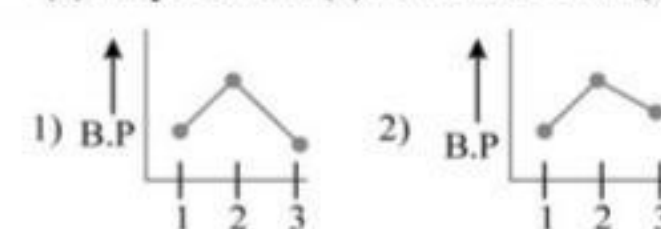
vijetha.nt@gmail.com

Dr. Krupakar Pendli
Centre Head
Urbane junior colleges
7893774888



PROPERTIES

- Lower carboxylic acids are soluble in water due to
1) Low molecular weight 2) Hydrogen bonding
3) Dissociation into ions 4) Easy hydrolysis
- Which of the following graphs represents the correct order of boiling points (B.P) of ethane (1) ethyl alcohol (2) and acetic acid (3)?



- Which of the following statements is/ are correct?

- 1) the two carbon-oxygen bond lengths in molecular formic acid are different
- 2) the two carbon-oxygen bond lengths in sodium formate are equal
- 3) partial resonance is there in formic acid
- 4) all of the above

- Which of the following will give readily a hydrocarbon?

- 1) $R-\text{COONa} \xrightarrow{\text{electrolysis}} R-\text{COOH}$
- 2) $\text{RCOO Ag} \xrightarrow{\text{I}_2/\text{H}^+} R-\text{COOH}$
- 3) $\text{CH}_3\text{CH}_2\text{I} \xrightarrow{\text{I}_2/\text{H}^+} \text{CH}_3\text{CH}_2\text{COOH}$
- 4) $(\text{CH}_3)_2\text{CCl}_2 \xrightarrow{\text{C}_2\text{H}_5\text{OH}} \text{CH}_3\text{CH}_2\text{COOH}$

- 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

- Acetic acid exists in a dimer state in benzene due to

- 1) condensation reaction
- 2) hydrogen bonding
- 3) presence of carbonyl group
- 4) presence of α -hydrogen

- Which hydrogen atom of acetic acid is replaced by Cl_2 in presence of Red P?

- 1) α -hydrogen 2) carboxylic hydrogen
- 3) both 1 & 2 4) oxygen of carboxylic group

- The correct order of increasing acidic strength is

- 1) Phenol < Ethanol < Chloroacetic acid < Acetic acid
- 2) Ethanol < Phenol < Chloroacetic acid < Acetic acid
- 3) Ethanol < Phenol < Acetic acid < Chloroacetic acid
- 4) Chloroacetic acid < Acetic acid < Phenol < Ethanol

- Assertion (A): Compounds containing -CHO group are easily oxidised to corresponding carboxylic acids

Reason (R) : Carboxylic acids can be reduced to alcohols by treatment with LiAlH_4

- 1) A and R both are correct and R is correct explanation of A
- 2) A is correct statement but R is wrong statement
- 3) A is wrong statement but R is correct statement
- 4) A and R both are correct statements but R is not correct explanation of A

LEVEL I - KEY

- 1) 3 2) 2 3) 2 4) 3 5) 1 6) 2 7) 3
- 8) 4 9) 1 10) 2 11) 2 12) 1 13) 3 14) 4