

**Model Question Paper**  
**Carboxylic Acids - Part I**

12th Standard

**Chemistry**

Reg.No. : 

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I. Answer all the questions.

II. Use blue pen only.

Time : 01:30:00 Hrs

Total Marks : 85

5 x 1 = 5

**Part-A**

- 1) Which of the following is least acidic  
(a)  $C_2H_5OH$  (b)  $CH_3COOH$  (c)  $C_6H_5OH$  (d)  $ClCH_2COOH$
- 2) Weakest acid among the following is  
(a) Acetic acid (b) Phenol (c) Water (d) Acetylene
- 3) Ester formation involves the reaction of  
(a) an aldehyde and a ketone (b) An alcohol with  $RMgX$  (c) Two molecules of an acid with dehydrating agent (d) An acylhalide with an alcohol
- 4) Heating a mixture of sodium acetate and soda lime gives  
(a) methane (b) ethane (c) acetic acid (d) benzene
- 5) The acid which reduces Tollen's reagent is  
(a) acetic acid (b) benzoic acid (c) formic acid (d) oxalic acid

**Part-B**

5 x 3 = 15

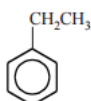
- 6) What are carboxylic acids ?
- 7) Give the source and trivial names of (i)  $C_3H_7COOH$  and (ii)  $HCOOH$  (iii)  $C_{11}H_{23}COOH$
- 8) How is the conversion of acetonitrile to acetic acid effected ?
- 9) Boiling point of carboxylic acids are higher than those of alcohols of same molecular mass - reason out.
- 10) Formic acid reduces Tollen's reagent, but acetic acid does not-Give reasons.

<b>B</b>	<i>I</i>	$\times_2$	$\times^2$
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**Part-C**

7 X 5 = 35

- 11)  $C_2H_4O$ (A) is formed by passing acetylene into dilute sulphuric acid and mercuric sulphate. Reaction of (A) with HCN followed by acid hydrolysis gives  $C_3H_6O_3$ (B) which is the main constituent of sour milk. (B) gives positive answer for iodoform test. When (B) is heated with catalytic amount of con.  $H_2SO_4$  a cyclic diester (C) is obtained. Identify (A),(B) and (C) and explain the reactions involved.
- 12) Compound (A) of molecular formula  $C_6H_6O$  gives violet colour with neutral ferric chloride solution. Sodium salt of (A) when allowed to react with  $CO_2$  at 403K under pressure gives (B). Compound (B) when acidified gives (C) which is a white crystalline solid. (C) also gives violet colour with neutral ferric chloride solution. (C) decolourises bromine water and forms a white precipitate (D). Identify (A),(B),(C) and (D) and explain the reactions involved.
- 13) An aromatic hydrocarbon (A) reacts with  $C_2H_3OCl$ (B) in the presence of anhydrous  $AlCl_3$  to give  $C_8H_8O$ (C) which is used as a hypnotic.(B) is a very reactive acid derivative. (B) fumes in moist air to give  $C_2H_4O_2$ (D). Identify A,B,C and D explain the reactions involved.
- 14) Explain the following :
  - (i) Chloro acetic acid is stronger acid than acetic acid.
  - (ii) Fluoro acetic acid is stronger acid than chloro acetic acid.
  - (iii) Formic acid is stronger acid than acetic acid.

- 15) How is benzoic acid obtained from (a)  (b) phenyl cyanide (c) carbon dioxide

- 16) Explain the mechanism of Kolbe's reaction.
- 17) Explain the following: i) Hell-Volhard-Zelinsky reaction (HVZ) ii) Claisen ester condensation.

**Part-D**

3 x 10 = 30

- 18) a) How is oxalic acid manufactured from sodium formate ?  
b) Explain the isomerism exhibited by carboxylic acids.
- 19) a) Write a note on the acidic nature of acetic acid.  
b) Give the mechanism involved in the esterification of a carboxylic acid with alcohol.
- 20) a) Explain why carboxylic acids behave as acids. Discuss briefly the effect of electron withdrawing and donating substituents on acid strength of carboxylic acids.  
b) Account the reducing nature of Formic acid with suitable illustration

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