

Model Question Paper
Carboxylic Acids - part II

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 : 80

5 x 1 = 5

Part-A

- 1) $\begin{array}{c} \text{H} \\ | \\ \text{C} = \text{O} \\ | \\ \text{HO} \end{array} \xrightarrow{160^\circ\text{C}} ?$ The product is
- (a) $\text{CO} + \text{H}_2\text{O}$ (b) HCOOH (c) $\text{H}_2 + \text{CO}_2$ (d) $\text{HCHO} + \text{O}_2$
- 2) When chlorine is passed through acetic acid in presence of red P, it forms
- (a) acetyl chloride (b) Trichloro acetaldehyde (c) Trichloro acetic acid (d) Methyl chloride
- 3) When propanoic acid is treated with aqueous sodium - bicarbonate, CO_2 is liberated. the "C" of CO_2 comes from
- (a) methyl group (b) carboxylic acid group (c) methylene group (d) bicarbonate
- 4) Carboxylic acids are more acidic than phenol and alcohol because of
- (a) inter molecular hydrogen bonding (b) formation of dimers (c) highly acidic hydrogen (d) greater resonance stabilisation of their conjugate base
- 5) Among the following the strongest acid is
- (a) ClCH_2COOH (b) Cl_3CCOOH (c) CH_3COOH (d) Cl_2CHCOOH

Part-B

5 x 3 = 15

- 6) Write two tests of carboxylic acid.
- 7) Give the resonance structure of carboxylate anion.
- 8) Mention the inductive effect in monochloro acetic acid.
- 9) Write a note on esterification reaction with an example.
- 10) What happens when calcium salt of acetic acid is distilled.

Part-C

8 x 5 = 40

- 11) Compound C_3H_6 (A) reacts with chlorine to give $\text{C}_3\text{H}_6\text{Cl}_2$ (B). Reaction of B with aqueous sodium hydroxide gives $\text{C}_3\text{H}_8\text{O}_2$ (C) which on oxidation using a mild oxidising agent gives $\text{C}_3\text{H}_6\text{O}_3$ (D) which is present in sour milk. Identify A,B,C and D. Explain the reactions involved.
- 12) Oxidation of CH_2O (A) using acidified $\text{K}_2\text{Cr}_2\text{O}_7$ gives CH_2O_2 (B) which is present in red ants. When B is heated to 160°C , it undergoes decarboxylation and gives (C). Dry distillation of calcium salt of (B) gives back H_2O (A). Identify (A), (B) and (C) and explain the reactions involved.
- 13) How will you get acetic from (i) acetonitrile, (ii) methyl acetate, (iii) carbon dioxide?
- 14) How is benzoic acid obtained from (i) ethyl benzene, (ii) phenyl cyanide and (iii) carbon dioxide?
- 15) Account for the reducing property of formic acid.
- 16) Explain the following reactions (i) esterification, (ii) dehydration, (iii) decarboxylation.
- 17) Explain the following reactions i) HVZ reaction ii) Distillation of Calcium acetate
- 18) Explain the electrophilic substitution reaction of benzoic acid.

Part-D

2X10=20

- 19) a) What are the uses of formic acid?
b) Explain the manufacture of oxalic acid.
- 20) a) How is lactic acid manufactured in large scale? How can it be converted into cyclic diester?
b) i) How is lactic acid synthesised from acetylene? ii) How can it be converted into cyclic diester?
