INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet for the Academic Year 2023-24

CLASS: 12 SUBJECT: CHEMISTRY DATE: 04/07/2023

LESSON : CH – 8 ALDEHYDES KETONES AND CARBOXYLIC ACIDS

Q.1. Give the IUPAC name of the following compound
(a) $CH_3CH=CHCHO$ (b) $(CH_3)_2C=CHCOOH$

Q.2. Describe the following reactions.
(i) Cannizaro's reaction. (ii) Stephen Reaction
(iii) Cross aldol condensation (iv) Gatterman – Koch Reaction

Q.3 (a) Write the chemical equations for the reaction involved in Cannizzaro reaction.
(b) Draw the structure of semicarbazone of ethanol.
(c) Why pKa of $F\text{-}CH_2\text{-}COOH$ is lower than that $Cl\text{-}CH_2\text{-}COOH$
(d) Write the product in the following reaction.

$$CH_3\text{-}CH=CH\text{-}CH_2CN \xrightarrow[\text{(ii) } H_2O]{\text{(i) DIBAL-H}}$$

(f) How can you distinguish between propanal and propanone?

Q.4 Convert the following into benzoic acid:
(a) Ethylbenzene (b) Acetophenone (c) Bromobenzene (d) Styrene

Q.5 An organic compound with molecular formula $C_9H_{10}O$ forms 2,4, –DNP derivative, reduces Tollens' reagent and undergoes Cannizzaro's reaction. On vigorous oxidation it gives 1,2-benzenedicarboxylic acid. Idenfify the compound.

Q.6 Account for the following:
(a) Aromatic carboxylic acids do not undergo Friedel-Crafts reaction.
(b) pK_a value of 4-nitrobenzoic acid is lower than that of benzoic acid.
(c) Chloroacetic acid is stronger than acetic acid.

Q.7 An organic compound 'X' with the molecular formula $C_5H_{10}O$ forms 2,4 – DNP derivative, does not reduce Tollen's reagent but gives positive iodoform test on heating with I_2 in the presence of NaOH.Compound 'X' gives ethanoic acid and propanoic acid on vigorous oxidation. Write the (a) Structure of the compound 'X'

(b) Structure of the product obtained when compound 'X' reacts with 2,4-DNP reagent
(c) Structure of the product obtained when compound 'X' is heated with I_2 in the presence of NaOH.

Q.8 An organic compound (A) having molecular formula $C_9H_{10}O$ forms an orange red precipitate (B) with 2, 4 – DNP reagent. Compound (A) gives a yellow precipitate (C) when heated in the presence of iodine and NaOH along with a colourless compound (D). (A) does not reduce Tollen's reagent or Fehling's solution nor does it decolorize bromine water. On drastic oxidation of (A) with chromic acid, a corboxylic acid (E) of molecular formula $C_7H_6O_2$ is formed. Deduce the structures of the organic compounds (A) to (E).

Q.9 (a) Given chemical tests to distinguish between
(i) ethanal and propanal (ii) benzaldehyde and acetophenone.
(b) How would you obtain
(i) but-2-enal from ethanal,
(ii) butanoic acid from butanol,
(iii) benzoic acid from ethylbenzene?

Q.10 Which of the following undergoes Cannizzaro'sreaction?
(a) CH_3CHO (b) CH_3CH_2CHO (C) $(CH_3)_2CH_2CHO$ (d) HCHO

Q.11 Benzoyl Chloride on reduction with H_2/ Pd-$BaSO_4$ produces
(a) benzoic acid (b) benzyl alochol (c) benzoyl sulphate (d) benzaldehyde

Q.12 Which of the following acids does not form anhydride?
(a) Formic add (b) Acetic acid (c) Propionic add (d) n-butyric acid

Q.13 The acid which does not contain -COOH group is
(a) Ethanoic acid (b) Lactic acid (c) Picric add (d) Palmitic acid

Q.14 What is the test to differentiate between penta-2-one and pentan-3-one?
(a) Iodoform test (b) Benedict's test (c) Fehling's test (d) Aldol condensation test

Q.15 Schiff's reagent gives pink colour with
(a) acetaldehyde (b) acetone
(c) acetic acid (d) methylacetate