

16. An organic compound contains 69.77% carbon, 11.63% hydrogen and rest oxygen. The molecular mass of the compound is 86. It does not reduce Tollen's reagent but forms an addition compound with sodium hydrogensulphite and give positive iodoform test. On vigorous oxidation it gives ethanoic and propanoic acid. Write the possible structure of the compound.
17. Identify A to E in the following sequence.

$$\text{CH}_3\text{CH}_2\text{COOH} \xrightarrow[\Delta]{\text{NH}_3} \text{A} \xrightarrow{\text{Br}_2/\text{KOH}} \text{B} \xrightarrow{\text{HONO}} \text{C} \xrightarrow{[\text{O}]} \text{CH}_3\text{COOH} \xrightarrow[\text{Dil. HCl}]{\text{Ca(OH)}_2} \text{D} \xrightarrow{\text{LiAlH}_4} \text{E}$$
18. Complete the following equation giving the names of the reactants and the products.
 (i) $(\text{CH}_3\text{COO})_2\text{Ca} \xrightarrow{\Delta}$ (ii) $\text{C}_6\text{H}_6 + \dots \xrightarrow{\text{Anhyd. AlCl}_3} \text{C}_6\text{H}_5\text{COCH}_3$
 (iii) $(\text{CH}_3)_2\text{CO} \xrightarrow{\text{LiAlH}_4}$
19. What is α -hydrogen in a carbonyl compound? Write similarities and differences on the reactivity of the compound CH_3CHO and $\text{C}_6\text{H}_5\text{CHO}$ with the reagents.
 (i) NaOH (ii) Tollen's reagent

Long Answer Type

(5 Mark)

20. An organic compound (A) (molecular formula $\text{C}_8\text{H}_{16}\text{O}_2$) was hydrolysed with dilute sulphuric acid to give a carboxylic acid (B) and an alcohol (C). Oxidation of (C) with chromic acid produced (B). (C) on dehydration gives but-1-ene. Write equations for the reactions involved.
21. An organic compound X undergoes acid hydrolysis to form two compounds Y and Z, Y reacts with Na_2CO_3 to form A. A is heated with soda lime to form B (CH_4). Y on reduction with LiAlH_4 forms Z. Identify X, Y, Z, A, B and write the reactions involved.
22. An organic compound (A) on treatment with acetic acid in presence of conc. H_2SO_4 produces (B), (A) on mild oxidation gives (C), (C) reacts with 50% KOH followed by acidification with dil HCl generates (A) and (D), (D) reacts with PCl_5 followed by reaction with ammonia gives (E), (E) on dehydration produces hydrocyanic acid. Identify the compounds (A) to (E) and write chemical reactions involved.
23. An organic compound (A) on treatment with ethyl alcohol gives a carboxylic acid (B) and compound (C). Hydrolysis of (C) under acidified conditions gives (B) and (D). Oxidation of (D) with KMnO_4 also gives (B), (B) on heating with Ca(OH)_2 and dry distillation gives (E) having molecular formula $\text{C}_3\text{H}_6\text{O}$. (E) does not give Tollen's test and does not reduce Fehling solution but forms a 2, 4 dinitrophenyl hydrazone. Identify A, B, C, D and E.
24. How will you prepare the following compounds from benzene? You may use any inorganic reagent and any organic reagent having not more than one carbon atom.
 (i) Methyl benzoate (ii) m-nitrobenzoic acid (iii) p-nitrobenzoic acid
 (iv) Phenyl acetic acid (v) p-nitrobenzaldehyde
25. Some commercially important carboxylic acids are methanoic acid (formic acid), ethanoic acid (acetic acid) and benzoic acid. These are used in various industries.
 (i) How is methanoic acid manufactured?
 (ii) Give important uses of methanoic acid?
 (iii) How is methanol converted into ethanoic acid?
 (iv) What are the important uses of ethanoic acid?
 (v) Which salt of benzoic acid is used as food preservative?