EXPERIMENT

Aim

Identify the Functional Group Present in the Given Organic Compound.

Table.1 .

Experiment	Observation	Inference
Test for unsaturation Dissolved 0.2 ml of organic compound in 2 ml CCl_4. Then added bromine-water dropwise.	Brown colour of bromine is not discharge	No unsaturation is present.
Test for carboxylic group Add a pinch of $NaHCO_3$ to 0.2 ml of organic compound in a test tube.	No effervescence is observed	Carboxylic group is absent.
Test for phenolic group Add 0.2 ml of the organic compound to 2-3 neutral Fe solutions in test tube-tube.	No green or violet colour obtained.	Phenolic group is absent.
Test for the alcoholic group Add a small piece of sodium to 1 ml of the given liquid in a dry test tube.	No effervescence.	Alcoholic group is absent.
Test for carbonyl group Shook 0.2 ml of organic compound with 2-3 ml of 2, 4-dinitrophenyl hydrazine in a test-tube.	Orange-yellow ppt. formed.	Carbonyl group is present. May be an aldehyde or a ketone.
Test for aldehyde group Warm 1 ml of organic compound with 1 ml of Tollen's reagent in a test-tube over a water bath.	Silver mirror formed on inner side of test-tube.	Aldehyde is present.
Test for amine group To a small amount of organic liquid in the test-tube, add 1 ml, conc. HCl and a few drops of $CHCl_3$. Then, added 2 ml of alc. KOH solution and warm the test-tube.	No offensive smell gas evolved.	Amino group absent.

Result

The given organic compound contains aldehyde group $\left(\begin{array}{c} -\ C-OH \\ \| \\ O \end{array}\right)$

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Q1. What is a functional group?

Ans. The group of atoms that largely determines the properties of an organic compound is called functional group.

Q2. Name any four functional groups.

Ans. Hydroxyl group —OH
Amino group —NH_2
Carboxyl group —COOH
Aldehyde group —CHO

Q3. Name the functional groups present in alkenes and alkynes.

Ans. Alkenes are unsaturated hydrocarbons with C = C bond present in them. Alkynes are unsaturated hydrocarbons with C ≡ C bond present in them.

Q4. What is Baeyer's test for unsaturation?

Ans. When Baeyer's reagent (alkaline potassium permanganate) is added to unsaturated compound, its color gets discharged indicating presence of C = C or C ≡ C in the compound.

Q5. Do alkynes turn blue litmus paper red?

Ans. No.

Q6. Which is more acidic: an alcohol or a phenol?

Ans. A phenol.

Q7. Why is alcohol dried before carrying out sodium metal test?

Ans. Because water also reacts with sodium and gives hydrogen gas with brisk effervescence.

Q8. What is the use of Lucas reagent?

Ans. It is used to distinguish between primary, secondary and tertiary alcohols.

Q9. Which of the two is more acidic; phenol or carboxylic acid?

Ans. Carboxylic acid.

Q10. Name a test by which you can distinguish between hexylamine ($C_6H_{13}NH_2$) and aniline ($C_6H_5NH_2$).

Ans. Dye test.

Q11. Name two tests which distinguish aldehydes from ketones?

Ans. Tollen's test and Fehling's test.

Q12. Name a reagent used to detect carbonyl group in a compound.

Ans. DNP (2, 4-dinitrophenylhydrazine).

Q13. What is Tollen's reagent?

Ans. It is ammoniacal silver nitrate solution.

Q14. What is the use of Schiff's reagent?

Ans. Schiff's reagent is used to detect aldehyde group.