

IDENTIFICATION OF FUNCTIONAL GROUP

ALDEHYDE

S. No	EXPERIMENT	OBSERVATION	INFERENCE
I	PRELIMINARY TEST		
1.	Colour of the substance is noted	Colourless	Presence of aldehydes, ketones or acids
2.	Odour of the substance is noted	Odour of bitter almond	Presence of aldehyde
3.	A little of a substance is placed on a moist litmus paper	No change	Presence of aldehydes or ketones
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and shown to flame	Burns with a sooty flame	Presence of Aromatic substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken with dil. KMnO_4	No decolourisation	Presence of saturated substance
IV	TEST FOR THE IDENTIFICATION OF THE FUNCTIONAL GROUP		
1.	A little of the substance is warmed with concentrated H_2SO_4	No characteristic observation	Absence of amines
2.	A little of the substance is warmed with concentrated solution of sodium bicarbonate (NaHCO_3)	No Characteristic observation	Absence of carboxylic acid
3.	A little of substance in water is treated with few drops of neutral ferric chloride solution	No characteristic observation	Absence of phenol
4.	A little of the substance is treated with Borsche's reagent and heated on water bath for about five minutes	yellowish orange precipitate is obtained	Presence of aldehydes or ketones
V	CONFIRMATORY TEST		
	a) A little of the substance is treated with Schiff's reagent b) A little of the substance is added to about 2ml of Tollen's reagent and heated in boiling water bath.	Pink colour is obtained. A Black precipitate or Bright Silver mirror on the sides of the test tube is obtained.	Presence of aldehyde is confirmed Presence of aldehyde is confirmed

RESULT

The given organic substance is Aldehyde → Aromatic saturated Aldehyde

KETONE

S. No	EXPERIMENT	OBSERVATION	INFERENCE
I	PRELIMINARY TEST		
1.	Colour of the substance is noted	Colourless	Presence of aldehydes, ketones or acids
2.	Odour of the substance is noted	No characterisitic odour	Absence of amines, phenol or aldehyde
3.	A little of a substance is placed on a moist litmus paper	No change	Presence of aldehydes or ketones
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and shown to flame	Burns with a Non - sooty flame	Presence of Aliphatic substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken with dil. KMnO_4	No decolourisation	Presence of saturated substance
IV	TEST FOR THE IDENTIFICATION OF THE FUNCTIONAL GROUP		
1.	A little of the substance is warmed with concentrated H_2SO_4	No characteristic observation	Absence of amines
2.	A little of the substance is warmed with concentrated solution of sodium bicarbonate (NaHCO_3)	No Characteristic observation	Absence of carboxylic acid
3.	A little of substance in water is treated with few drops of neutral ferric chloride solution	No characteristic observation	Absence of phenol
4.	A little of the substance is treated with Borsche's reagent and heated on water bath for about five minutes	yellowish orange precipitate is obtained	Presence of aldehydes or ketones
V	CONFIRMATORY TEST		
	A little of substance is treated with Sodium bisulphate (NaHSO_3)	White crystalline precipitate is obtained	Presence of ketone is confirmed

RESULT

The given organic substance is Ketone → Aliphatic saturated Ketone

PHENOL

S. No	EXPERIMENT	OBSERVATION	INFERENCE
I	PRELIMINARY TEST		
1.	Colour of the substance is noted	Brown black	Presence of Phenol or amines
2.	Odour of the substance is noted	Carbolic smell	Presence of phenol
3.	A little of a substance is placed on a moist litmus paper	Blue litmus turns red	Presence of phenol or carboxylic acid
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and shown to flame	Burns with a sooty flame	Presence of Aromatic substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken with dil. KMnO_4	No decolourisation	Presence of saturated substance
IV	TEST FOR THE IDENTIFICATION OF THE FUNCTIONAL GROUP		
1.	A little of the substance is warmed with concentrated H_2SO_4	No characteristic observation	Absence of amines
2.	A little of the substance is warmed with concentrated solution of sodium bicarbonate (NaHCO_3)	No Characteristic observation	Absence of carboxylic acid
3.	A little of substance in water is treated with few drops of neutral ferric chloride solution	Violet colour appears	Presence of phenol
V	CONFIRMATORY TEST		
	A little of the substance is heated with sodium nitrite cooled and add 4 drops of conc. H_2SO_4 diluted with water.	A deep dark red coloured solution is obtained which turns green with NaOH	Presence of Phenol is confirmed

RESULT

The given organic substance is Phenol → Aromatic saturated Phenol

CARBOXYLIC ACID

S. No	EXPERIMENT	OBSERVATION	INFERENCE
I	PRELIMINARY TEST		
1.	Colour of the substance is noted	Colourless	Presence of aldehydes, ketones or acids
2.	Odour of the substance is noted	No characterisitic odour	Absence of amines, phenol, aldehyde or acids
3.	A little of a substance is placed on a moist litmus paper	Blue litmus turns red	Presence of carboxylic acid and phenols
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and shown to flame	Burns with a sooty flame	Presence of Aromatic substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken with dil. KMnO_4	No decolourisation	Presence of saturated substance
IV	TEST FOR THE IDENTIFICATION OF THE FUNCTIONAL GROUP		
1.	A little of the substance is warmed with concentrated H_2SO_4	No characteristic observation	Absence of amines
2.	A little of the substance is warmed with concentrated solution of sodium bicarbonate (NaHCO_3)	Brisk effervescence with liberation of Carbon dioxide	Presence of carboxylic acid
V	CONFIRMATORY TEST		
	little of the substance is heated with 1 ml of ethanol and few drops of conc. H_2SO_4 cooled and poured into water.	Pleasant fruity smell	Presence of carboxylic acid is confirmed

RESULT

The given organic substance is Acid \rightarrow Aromatic saturated carboxylic acid.

AMINES

S. No	EXPERIMENT	OBSERVATION	INFERENCE
I	PRELIMINARY TEST		
1.	Colour of the substance is noted	Brown black	Presence of phenol or amines
2.	Odour of the substance is noted	Fishy odour	Presence of amines
3.	A little of a substance is placed on a moist litmus paper	Red litmus turns blue	Presence of amines
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and shown to flame	Burnt with smoky flame(sooty)	Presence of aromatic substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken with dil. KMnO_4	No decolourisation	Presence of saturated substance
IV	TEST FOR THE IDENTIFICATION OF THE FUNCTIONAL GROUP		
1.	A little of the substance is warmed with concentrated H_2SO_4	White precipitate which dissolves in excess of acid	Presence of amines
V	CONFIRMATORY TEST		
	A little of substance is dissolved in dil HCl and cooled in the ice water and a 10% solution of sodium nitrite is added and cooled again. An alkaline solution of β naphthol is then added to the above cold solution.	Scarlet red dye is formed.	Presence of amine is confirmed

RESULT

The given organic substance is Amine \rightarrow Aromatic saturated Amine