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	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 ₂ SO 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	No change	Presence of aldehydes or
	moist litmus paper		ketones
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and	Burns with a Non -	Presence of Aliphatic
	shown to flame	sooty flame	substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken	No decolourisation	Presence of saturated
	with dil. KMnO ₄		substance
IV	TEST FOR THE IDENTIFICATION		
1.	A little of the substance is warmed	No characteristic	Absence of amines
	with concentrated H2SO4	observation	
2.	A little of the substance is warmed	No Characteristic	Absence of carboxylic acid
	with concentrated solution of	observation	
	sodium bicarbonate (NaHCO ₃)		
3.	A little of substance in water is	No characteristic	Absence of phenol
	treated with few drops of neutral	observation	
	ferric chloride solution		2 111 1
4.	A little of the substance is treated	yellowish orange	Presence of aldehydes or
	with Borsche's reagent and heated	precipitate is obtained	ketones
	on water bath for about five		
V	minutes CONFIRMATORY TEST		
V	A little of substance is treated with	White arrestalling	Presence of ketone is
	Sodium bisulphate (NaHSO ₃)	White crystalline precipitate is obtained	confirmed
	Socium discipliate (NarisO3)	precipitate is obtained	Commined

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	Blue litmus turns red	Presence of phenol or
	moist litmus paper		carboxylic acid
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and	Burns with a sooty	Presence of Aromatic
	shown to flame	flame	substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken	No decolourisation	Presence of saturated
	with dil. KMnO ₄		substance
IV	TEST FOR THE IDENTIFICATION	ON OF THE FUNCTIONAL	
1.	A little of the substance is warmed	No characteristic	Absence of amines
	with concentrated H2SO4	observation	
2.	A little of the substance is warmed	No Characteristic	Absence of carboxylic acid
	with concentrated solution of	observation	
	sodium bicarbonate (NaHCO ₃)		
3.	A little of substance in water is	Violet colour appears	Presence of phenol
	treated with few drops of neutral		
	ferric chloride solution		
V	CONFIRMATORY TEST		
	A little of the substance is heated	A deep dark red	Presence of Phenol is
	with sodium nitrite cooled and add	coloured solution is	confirmed
	4 drops of conc. H ₂ SO ₄ diluted	obtained which turns	
	with water.	green with NaOH	

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	Blue litmus turns red	Presence of carboxylic acid
	moist litmus paper		and phenols
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and	Burns with a sooty	Presence of Aromatic
	shown to flame	flame	substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken	No decolourisation	Presence of saturated
	with dil. KMnO ₄		substance
IV	TEST FOR THE IDENTIFICATION	ON OF THE FUNCTIONAL	L GROUP
1.	A little of the substance is warmed	No characteristic	Absence of amines
	with concentrated H ₂ SO ₄	observation	
2.	A little of the substance is warmed	Brisk effervescence with	Presence of carboxylic acid
	with concentrated solution of	liberation of Carbon	
	sodium bicarbonate (NaHCO ₃)	dioxide	
V	CONFIRMATORY TEST		
	little of the substance is heated	Pleasant fruity smell	Presence of carboxylic acid
	with 1 ml of ethanol and few drops		is confirmed
	of conc. H ₂ SO ₄ cooled and poured		
	into water.		

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	Red litmus turns blue	Presence of amines
	moist litmus paper		
II	TEST TO FIND OUT WHETHER ALIPHATIC OR AROMATIC		
	A little of the substance is taken and	Burnt with smoky	Presence of aromatic
	shown to flame	flame(sooty)	substance
III	TEST TO FIND OUT WHETHER SATURATED OR UNSATURATED		
	A little of the substance is shaken	No decolourisation	Presence of saturated
	with dil. KMnO ₄		substance
IV	TEST FOR THE IDENTIFICATION	ON OF THE FUNCTIONAL	L GROUP
1.	A little of the substance is warmed	White precipitate which	Presence of amines
	with concentrated H2SO4	dissolves in excess of	
		acid	
V	CONFIRMATORY TEST		
	A little of substance is dissolved in	Scarlet red dye is	Presence of amine is
	dil HCl and cooled in the ice water	formed.	confirmed
	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.		

RESULT

The given organic substance is Amine → Aromatic saturated Amine