ORGANIC QUALITATIVE ANALYSIS :-

Lassaige's Test :-

A little amount of the sample was heated with a piece of sodium metal in a dry fusion tube at first slowly and then strongly for 2-3 min. till the lower part of the tube become red hot. then it was plunged into 5 ml of distilled water taken in a mortar and the broken mass was filtered with the filtrate the following tests were performed.

Experiment	Observations
1. Test for S :- To 1 ml of the filtrate 2-drops of sodium nitroprusside solution was added.	violet (Purple) coloration.
2. Test for N :- To 2ml of the filtrate 2ml of freshly prepared $FeSO_4$ Sol^n was heated to boil cooled and acidified with dil H_2SO_4.	Prussian blue coloration (or Precipitate)

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Test for halogens (If N Present)

2 ml of Na extract was boiled with conc. HNO_3 till the volume conc. to half then cooled and $AgNO_3$ sol^n was added.	liquor NH_4OH or A yellow ppt in. Soluble in hot liquar NH_4OH or a pale yellow ppt soluble in hot.
If the test 3 is positive the following test must be Performed :- 2 ml of Na-extract was acidified with dil H_2SO_4 and then few drops at CCl_4/ $CHCl_3$ was added. After that excess chlorine water was added and mixture was shaken.	organic layer turned brown or violet.

Test for non-nitrogenous functional groups :-

Experiment	Observation
Test for COOH group :- ⓐ To a saturated $NaHCO_3$ sol^n alcoholic sol^n of the sample was added.	Effervesence due to evolution of CO_2.
ⓑ To 0.5 gm of the sample 1 ml MeOH and few drops of conc. H_2SO_4	Sweet smell of ester.

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Was containing $NaHCO_3$ taken in a beaker.

Test of Phenolic -OH group:-

(a) To an alcholic solution of sample neutral $FeCl_3$ solution was added drop wise. — violet / blue / green red coloration.

(b) Back dye Test: Few drops of aniline was dissolved in dil HCl and cooled then Freshly Prepared $NaNO_2$ soln was carefully added to it. the resulting mixture was poured slowly to a cold alkaline solution of the sample. — red dye.

Test for carbonyl group:-
To an alcoholic solution of the sample in dry Test tube excess 2,4 DNP solution was added and the contents of the tube was placed on a water bath for 5 minutes cooled and scratched with a glass rod. — Orange / yellow / red ppt

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Test For Nitrogenious Functional groups :

Test for aromatic $-NH_2$ group :-

Experiments	observation
Diazo-Test : To a sample solution in dil HCl, freshly Prepared $NaNO_2$ solution was added and the mixture was poured into a cold alkaline β-napthol solution was carefully added to it. the Resulting mixture was Poured slowly to a cold alkaline solution of the sample.	Immediate Scarlet or red Ppt.
Test for anilide (-CONHAr) group: (If NH_2 group is absent) 0.5 gm of the sample was dissolved in conc HCl and boiled for a few minutes. the mixture was cooled and dilute with water. then the diazo-test was Performed.	Immediate scarlet or red ppt.
Test for aromatic NO_2 group :-	
ⓐ Mulliken Barker's test :- 0.1 gm of the sample was mixed with a Pitch of	A black or grey ppt on silver mirror.

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Zn dust, 0.5 gm NH_4Cl, 2 ml of alc and a few drops of water. the mixture was boiled for 2-3 minute and then filtered hot in freshly prepared tollen's reagent.

(Tollen's Reagent: 1 ml $AgNO_3$ sol^n was taken in a Test tube. Few drops of dil NaOH was added to it. When a dark grey ppt appeared Dilute NH_4OH was added till the dissolution of the ppt.

(b) When $-NH_2$ or $-CONHAr$ groups are absent the following Test can be Performed.

0.5 gm of the sample was mixed with 2 ml of conc HCl and few Pieces of Sn or Zn. the mixture was boiled for 3-5 minutes and then cooled and the diazo-Test was Performed after dilution.

Immediate scarlet or red dye.

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Preparation of derivative for identification of a known organic compound.

1. Preparation of Benzoyl derivative (Amide gr)

Dissolve 1 gm of the substance in 5 ml of acetone in a 100 ml conical flask and add to it. 2 ml of benzoyl chloride and 20 ml of 10% Sodium hydroxide Soln to the flask cork the flask and shake the contents vegorously until the odour of benzoyl chloride just disappears and a Precipitate is formed. Filter the solid wash it with a little water and then crystallise from alcohol.

2. Preparation of Benzoyl derivative :-

Dissolve 500 mg of the substance in 5 ml of a 100 ml conical flask and add to it 2 ml of benzoyl chloride and 20 ml of 10% NaOH Soln to the flask cork the flask and shake the contents vegorously until the odour of benzoyl chloride just disappears and a ppt is formed.

filter the solid wash it with a little water and then crystallise from alcohol. Dry and determine the M.P of the benzoyl derivative of the Phenolic compound.

3. Preparation of amides and anilides derivatives :-

Carboxylic acids may be converted to the corresponding acids chlorides by the action of Pcl5.

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☑ Preparation of acid - chloride :-

Taking a mixture of 500 mg of the given organic acid and 5 ml of thionyl chloride in a 100 ml round bottle flask filled with a water containing a calcium chloride guard tube. The mixture gently refluxed for 30 mint. distill of excess of thionyl chloride under reduced pressure.

☑ Preparation of Amide :-

To one Part of the acid chloride add 2 ml of liquar NH_3 in cold condition little of a time when rigorous reaction has ceased, stir cool and filter.

crystallise the Product from minimum value of cold water or aq. alcohol. Filter. dry and determine the M.P of the amide derivative.

4. Preparation of 2,4- Dinitrophenyl hydrazone derivative:-

Dissolve 0.2 gm of the sample in minimum vol^m of alc. then add 2 ml of 2,4-DNP hydrazine reagent in it. If the product does not ppt. out Immediately or an scoratching the side of the test tube. heat the mixture on steam bath for 5 mint. adding one drop of conc. H_2SO_4 Filter the orrange or red ppt wash it with cold water and crystallise the Product from ethanol.

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5. Preparation of Nitro derivative :-

take 500 mg of the sample in a test tube, add dropwise with constant shaking about 5 ml of nitrating mix. heat the mixture for 15 mint on a water bath cooled and then pour the reaction product with stirring to 25 ml of ice cold water, Filter the solid under suction pump, wash with cold water till acid free recrystallise from dil alcohol.

6. Preparation of Bromo derivative :-

Take a sol^n of 1 gm of the substance in 5ml glacial acetic acid in a 100 ml conical flask immersed in an ice bath and add to it a sol^n of 1 ml bromine in 5ml of glacial acetic acid wise and with constant shaking keep the resulting mixture of room temperature for a few mint. and pour into a beaker containing crushed ice. Add just sufficient saturation sol^n of $NaHCO_3$ to destroy the excess of bromine if the resulting mixture is appreciably coloured, Filter the solid separated wash water and crystallise it from aqueous ethanol.

7. Hydrolysis of Amide :-

Amides are hydrolysed with Sodium hydroxide to the corresponding acids and if it is solid serve as a derivative.

Heat a mixture of 1 gm of the substance 2gm of sodium hydroxide and 5 ml of water

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taken in a test tube for about 3 minute. cool and acidity with dilute HCl filter the PPt, wash with water and crystallise from aqueous ethanol dry and note the M.P.

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Organic qualitative Analysis for unknown organic compound :-

- Physical Character : 1. colour - Brown
  2. Nature - crystalline
  3. Odour - No characteristic odour
- Melting Point : 187 - 189°c

Solubility :-

water	Dil HCl	Dil NaOH	Sat $NaHCO_3$	Alc
-	-	+	+	+

conclusion :

As the Sample was soluble in water and sat $NaHCO_3$. It was strongly acidic in nature and may contains -COOH group.

Lassaigs test :-

A little of the sample was heated with a Piece of sodium metal in a dry fusion tube of first slowly and then strongly for 2-3 minutes till the lower part of the tube become red hot . then it was Plunged into 5ml of distilled water taken in a mortor, and the broken mass was filtered with the filtrate the following Tests were performed .

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Experiment	Observation	Interences
1 ml of the filtrate 2 drops of sodium nitroprusside soln was added.	No violet colouration observed.	Sulpher absent.
2. Test for N: To 2ml of the filtrate of freshly prepared $FeSO_4$ soln was added heated to boil cooled and acidified with dil H_2SO_4.	Prussian blue colouration observed.	Nitrogen Present.
3. Test for halogens: 2ml of Na extract was boiled with conc. HNO_3 till the volume come to half then cooled and $AgNO_3$ soln was added.	No appreciable changed	Cl, Br, I absent.

Primary conclusion :-

Nitrogen is present as special element then for both nitrogenous and non nitrogenous functional group is performed.

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Test for nitrogenous functional group :-

Experiment	Observation	Interance
Test for Ar-NH_2 gr: Diazo-Test: To a sample sol^n in dil HCl freshly Prepared $NaNO_2$ sol^n was added and the mixture was cooled to 0-5°c then the mixture was poured into cold alkaline β-napthanal sol^n.	Red colouration ppt observed.	Definitly NH_2 gr Present.

Test for anilide (-CONHAr) gr :-

As-NH_2 group is Present the test for anilide (-CONHAr) group was not Performed.

Experiment	observation	Interence
Test for Ar-NH_2 group :- Mulliken Barker's Test :- 0.1 gm of the sample was mixed with a pinch of Zn dust 0.5 gm of NH_4Cl, 2 ml of alcohol and a few drops of water. the mixture was boiled for 2-3 min. and then filt-hot in a freshly Prepared tolling's reagent.	No grey ppt or silver mirror found.	$-NO_2$ gr absent.

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Experiment	Observation	Inference
Test for amide gr:- To a little sample 2 half beads of NaOH and 1 ml of water were added and the mixture was heated strongly till evolution of fumes	NO smell of NH_3	$-CONH_2$ gr. absent

Test for non-nitrogenous function gr:

Experiment	Observation	Inference
Test for -COOH gr:- ⓐ To a saturated $NaHCO_3$ sol^n alc. sol^n of the sample added.	Effervesence due to evolution of CO_2.	-COOH gr Present.
ⓑ To 0.5 gm of sample 1ml MeOH and few drops of conc. H_2SO_4 was added then the sol^n mixture was warmed was and poured into water containing ~~water~~ $NaHCO_3$ taken in a beaker.	Sweet smell of ester.	Definitely -COOH gr Present.

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Test for Phenolic OH gr:

ⓐ To an alcoholic soln of the sample neutral $FeCl_3$ soln was added drops wise.	Red dry colouration observed due to Presence of amino acid	-OH gr absent
ⓑ Back dye test: Few drops of aniline was dissolved in dil HCl and cooled then freshly Prepared $NaNO_2$ soln was carefully added to it. the resulting mixture was poured slowly to a cold alkaline soln of the sample.	No-red dye observed	-OH gr absent.

Test for carbonyl gr:-

To an alcoholic soln of the sample in dry Test tube, excess 2,4 DNP soln was added and the contents of the tube was placed on a water bath for 5 min cooled and scratched.

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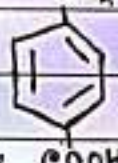
Experiment	Observation	Inference
with a glass rod as the above test in negative the test for aldehyde with Tollen's reagent was not performed.	NO orange yellow/red PPt	carbonyl gr absent.
Test for unsaturation	Decolorisation	unsaturation
(a) To a sample sol^n in alcohol bromide water was added.	of bromine colour.	absent.
(b) To an acetone sol^n of the sample dilute aqueous $KMnO_4$ sol^n was added.	Decolouration of $KMnO_4$ colour	unsaturation absent.

Conclusion :-	
Special element Present	Functional gr Present
N	$-NH_2$, $-COOH$

☑ As the compound display M.P 187-189° and has $-NH_2$ and $-COOH$ functional group. So from lit survey it can be concluded that unknown compound is p-amino benzoic acid.



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Organic qualitative Analysis for unknown compound :-

Physical character :- 1. Colour - White
2. Nature - crystalline
3. Odour - No characteristic odour.

Melting Point : 113° - 115°

Solubility :-

Water	Dil HCl	Dil NaOH	Sat $NaHCO_3$	Alc
-	-	-	-	+

Solubility classification :- As the sample was not soluble in any solvent. It was neutral in nature and may contains @ Carbonyl (if N absent) ⓑ Nitro / amido (if N present)

☑ Lassigne's Test : A little of sample was heated with a Piece of Sodium metal in dry fusion Tube at first slowly and then strongly for 2-3 minutes till the lower part of the tube become red hot. then it was plunged into 5 ml of distilled water taken in a mortar and the broken mass was filtered with the filterate the following tests were performed.

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Experiment	Observation	Inference
1. Test for S: 1 ml of the filtered 2 drops of Sodium nitroprussside sol^n was added.	No violet colouration observed	Sulpher absent.
2. Test for N: To 2 ml of the filtrate 2ml of freshly prepared $FeSO_4$ sol^n was added heated to boil cooled and acidified with dil H_2SO_4.	Prussian blue colouration observed.	Nitrogen Present.
3. Test for halogens:- 2 ml of Na extract was boiled with conc. HNO_3 then cooled and $AgNO_3$ sol^n was added.	No appreciable changed.	halogen absent.

Primary conclusion:- As nitrogen is Present as special element then test for both nitrogenous and not nitrogen functional group is Performed.

☑ Test for Nitrogenous function gr:-

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Experiment	Observation	Inference
Test for Ar-NH_2 gr:-		
To a sample soln in dil	NO	Ar-NH_2
HCl freshly prepared	appreciable	group
$NaNO_2$ soln was added	change.	absent.
and the mixture was		
cooled to 0-5°c. then the		
mixture was poured into		
a cold alkaline β-nap-		
thol soln.		
Test for anilide		
(CONHAr) gr:		
@ 0.5 gm of the sample		
was dissolved in conc		
HCl and boiled for a		
few minutes. the		
mixture was cooled cond	Immediate	CONHAr
dilute with water then	red ppt	group
the Diazo test Perfor-	observed.	Present.
med.		
ⓑ 0.5 gm of sample was		
dissolved in 75% H_2SO_4		
and boiled for a few		
minute. the mixture was		
cooled and dilute with		
water. then Diazo test		
Performed.		

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Experiment	Observation	Inference
Test for NH_2 gr: Mulliken Barker's Test: 0.1 gm of the sample was mixed with a Pinch at Zn-dust 0.5 gm of NH_4Cl 2ml of alcohol and few drops of water. The mixture was boiled for 2-3 mint, and ~~the~~ filtered hot in a freshly Prepared Tollen's Reagent.	No Black or grey ppt observed.	$-NO_2$ group absent.
Test for amide gr:- To a little sample 2 half Peaces of NaOH and 1 ml of water were added and the mixture was heated strongly till evalution of fumes.	No smell of NH_3	$-CONH_2$ gr. absent

Test for non-nitrogenous function group :-

Experiment	observation	Inference
Test for -COOH gr: To a Sat. $NaHCO_3$ Sol^n alcoholic Sol^n of the Sample added.	No evolution of CO_2	-COOH gr absent.

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Test for Phenolic OH gr. To an alcoholic sol^n of the sample neutral Ferric sol^n was added dropwise.	No Evolution of CO_2 No appreciable Changed.	Phenolic -OH gr absent.
Test for carbonyl gr:- To an alcoholic sol^n of the sample in dry test tube excess 2,4-DNP sol^n was added and Placed an water bath.	No appreciable Changed.	carbonyl group absent
Test for unsaturation:- ① To a sample sol^n in alcohol bromine water was added.	No decoloration on of Bromine colour.	unsaturation absent.
② To an acetone sol^n of sample add dil aq. $KMnO_4$.	No decoloration of $KMnO_4$ colour.	unsaturation absent.

Conclusion : In the supplied sample.

Special element Present	Functional gr: Present
N	-CONHAr

☑ As the compound exhibits M.P 113-115°c and it contains -CONHAr functional group. so form lit survey it can be concluded that unknown compound is Acetanilide.

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Organic qualitative Analysis for unknown compound:

☑ Physical Charecters :- ① Texture - crystalline
② Colour - light green
③ odour - Pungent

Melting Point : 97-100°C

Solubility:

Water	Dil HCl	Dil NaOH	Sat $NaHCO_3$	Alc
-	-	+	+	+

Solubility classification:

As the sample was soluble in NaOH the sample may be acids or nitrophenol.

☑ Lassaigene's Test :- A little of the sample was heated with a piece of Sodium metal in a dry fussion Tube at first slowly and then strongly for 2-3 min. till the lower Part of the tube become red hot. then it was plunged into 5ml of distilled water taken in a mortal and the broken mass was filtered with the filtrate the following tests were performed.

	Experiment	Observation	Inference
1	Test for N: To 2ml of the filtrate 2ml of freshly prepared $FeSO_4$ soln was added, heated to boil cooled and acidified with H_2SO_4.	Prussian blue colouration observed.	Nitrogen Present.
2.	Test for S:- To 1ml of the filtrate 2 drops of $Na_2[Fe(CN)_5NO]$ soln was added.	No violet colouration observed.	Sulpher absent.

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Test for Halogen: 2ml of Na extract was boiled with conc. HNO_3 till volm come to half then cooled and $AgNO_3$ soln added.	No appreciable changed.	Cl, Br, I Absent.

Primary conclusion: As nitrogen is Present as Special element then test for both nitrogenous and non-nitrogenous group is Performed.

Test for nitrogenous functional group:

Experiment	Observation	Inference
Test for Ar-NH_2 gr: Diazo Test: To a sample soln in dil HCl freshly Prepared $NaNO_2$ soln was added and the mixture was cooled to 0-5°c then the mixture was Poured into cool alkaline B-napthol soln.	No appreciable changed.	Ar-NH_2 group absent.
Test for anilide (-CONHAr): 0.5 gm of the sample was dissolved in conc. HCl and boiled for a few minute the mixture was cooled and dilute with water then the diazo test Performed.	No appreciable changed.	-CONHAr group absent

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Test for aromatic NO_2 group :- Mulliken Barker's Test :- 0.1 gm of the sample was mixed with a Pinch of Zn-dust, 0.5 gm of NH_4Cl, 2 ml of alcohol and a few drops of water. The mixture was boiled for 2-3 min and then filtered hot in a freshly prepared Tollen's reagent.	A black ppt observed	Definitely $-NO_2$ group Present.
(b) 0.5 gm of the sample was mixed with 2ml of conc. HCl and few pieces of Sn or Zn the mixture was boiled for 3-5 minutes and then cooled and the diazo test was Performed.	immediate scarlet ppt observed.	$-NO_2$ group Present.
Test for amino group :- To a little sample 2 half beads of NaOH and 1 ml of water were added and the mixture was heated strongly till evolution of fumes.	No smell of NH_3	$-CONH_2$ group absent

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Test for non-nitrogenous function group :

Experiment	Observation	Inference
Test for -COOH gr: To an alcoholic sol^n of the sample neutral $FeCl_3$ sol^n was added.		
(b) To 0.5 gm of the sample 1 ml MeOH and few drops of conc. H_2SO_4 was added then sol^n mixture was warmed and poured into water containing $NaHCO_3$ taken in a beaker.		
Test for Phenolic -OH gr: To a.c sol^n of the sample neutral $FeCl_3$ sol^n was added dropwise	Winered colouration observed.	Phenolic -OH group Present.
Back dye test: Few drops of aniline was dissolved in dil HCl and cooled then freshly prepared $NaNO_2$ sol^n was carefully added to it. the resulting mixture was warmed and Poured water containing $NaHCO_3$.	No red dye observed.	As NO_2 is strong electron with drawing gr. it deactivates the ring so the Test was -ve.

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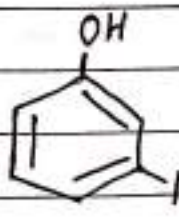
Test for carbonyl gr:- To an alcohol sol^n of the sample in dry test tube excess 2,4 DNP sol^n. was added and the contents of the tube was placed on a water bath for 5 min cooled and scratched with a glass rod.	No appreciable changed.	carbonyl group absent.
Test for unsaturation :-		
(a) To a sample sol^n in alcohol bromine water was added.	NO decolouration of Bromine colour.	unsaturation absent
(b) To an acetone sol^n of the sample dilute aquous KMnO$_4$ sol^n was added	NO decolouration of KMnO$_4$ colour!	unsaturation absent.

In the supplied sample

Special element Present	Fundional group Present
N	$-NO_2$, OH

☑ From lit survey and from M.P study it can be concluded that unknown compound is m-nitrophenol.



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Organic qualitative analysis for unknown organic compound:

Physical characteristis: ① Texture - Amorphous
② colour - white
③ odour - No characteristic odour

M.P - 237 - 239°C

Solubility

water	Dil HCl	Dil NaOH	Sat $NaHCO_3$
-	-	+	+

Solubility classification:- As the sample was insoluble in both water and dil HCl and soluble in dil NaOH and sat $NaHCO_3$ sol^n, it was strenghtly acidic in nature and may contain acids, nitrophenols.

Lassaigne's Test :- A little of the sample was heated with a Piece of Na-metal in a dry fusion Tube at first slowly and then strenglY for 2-3 mint till the lower Part of the tube become red hot then it was Plunged into 5 ml distilled water taken in a mortor and the broken mass was filtered with the filtrate the following tests were Performed.

Experiment	observation	Interfence
1. Test for S:- 1ml of filtrate 2-drops of Na-nitroprussi de sol^n added.	No violet colouration observed	Sulphur absent.

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Test for anilide gr:- 0.5 gm of the sample was dissolved in conc. HCl and boiled cooled and dil with water. then diazo Test was Performed.	NO immediate Scarlet red PPt observed.	-CONHAr group absent.
Test for Ar-NO_2 gr:-		
① 0.5 gm of the sample was mixed with 2 mL of conc. HCl and few Pieces of Sn or Zn. the mixture was boiled, cooled and the diazo-test was Performed.	Immediate Scarlet for red PPt.	-NO_2 gr Present
② Mulliken Baskar's Test: 0.1 gm of the sample was mixed with a Pinch of Zn dust 0.5 gm of NH_4Cl, 2mL of alcohol and water the mixture was freshly prepared tollen's reagent.	A black grey PPt observed	Definitly -NO_2 gr Present.

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Test for non-nitrogenous functional gr:-

Experiment	Observation	Inference
Test for -COOH group:-		
ⓐ To a saturated $NaHCO_3$ sol^n alcoholic sol^n of the sample was added.	Effervesence due to CO_2.	-COOH gr. Present.
ⓑ To 0.5 gm of the sample 1 ml MeOH and few drops of conc. H_2SO_4 was added then the sol^n mixture was warmed and poured into water containing $NaHCO_3$ taken in Beaker.	Sweet smell of ester.	Definitly -COOH gr Present.
Test for Phenolic -OH gr:- To an alcoholic sol^n of the sample neutral $FeCl_3$ sol^n was added dropwise.	No violet blue colouration observed.	Phenolic -OH gr absent
Test for carbonyl gr:- To an alc sol^n of the sample in dry test tube excess 2,4 DNP sol^n was added and the contents of the tube was placed on a water bath for 5 min, cooled and scratched.	No appreciable changed.	Carbonyl group absent.

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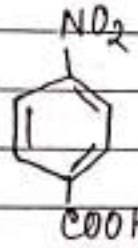
Conclution :- In this supplied sample

Special element Present	Functional gp. Present
Nitrogen	$-NO_2$ and $-COOH$ group.

☑ Lit survey of M.P studies it can be concluded that the unknown compound is p-nitrabenzoic acid.



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Experiment	Observation	Inference
2. To 2 ml of the filtrate 2 ml of freshly prepared $FeSO_4$ sol^n was added, heated, cooled and acidified with dil H_2SO_4.	Prussian blue colouration observed.	N- Present.
3. Test for halogen :- 2 ml of NA - extract was boiled with conc. HNO_3 till the vol^m come to half then cooled and $AgNO_3$ sol^n was added.	NO appreciable changed.	Cl, Br, I halogen absent.

Primary conclusion :-

The sample was amphoteric in nature and nitrogen (N) and sulphur (S) was present in it as a special element.

B Detection of function groups :-

As nitrogen (N) is present as special element test for bath nitrogenous and non-nitrogenous functional group were Performed.

Test for nitrogeneous functional groups :-

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Experiment	Observation	Interence
Test for Ar-NH_2 gr:		
To a simple sol^n in dil HCl, freshly prepared $NaNO_2$ sol^n was added and the mixture was cooled to 0-5°c. Then the mixture was poured into a cold alkaline β-napthol sol^n.	Immediate scarlet or red ppt. observed.	Ar-NH_2 group Present.
Test for Ar-NH_2 gr:- 0.1 gm of the sample was mixed with a pinch of Zn dust 0.5 gm of NH_4Cl, 2 mL of alc. and a few drops of water. The mixture was boiled for 2-3 min and then filtered hot in a freshly prepared Tollen's reagent.	No black ppt or No grey ppt.	Ar-NO_2 group absent
Test for Amide group: To a little sample 2 half beads of NaOH and 1 mL of water were added and the mixture was heated strongly till evolution.	No smell of NH_3	$-CONH_2$ group absent.

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Test for -COOH group:		
To a Saturated $NaHCO_3$ Sol^n alc. Sol^n of the Sample was added.	Effervescence due to evolution of CO_2	-COOH gr may present
To 0.5 gm of the Sample 1 ml MeOH and few drops of conc. H_2SO_4 was added then the mixture was warmed and Poured into water containing $NaHCO_3$ taken in a beaker.	No Smell of ester	-COOH absent (The effer. due to SO_3H gr)
Test for Phenolic -OH gr:- To alcoholic Sol^n of the Sample neutral $FeCl_3$ Sol^n was added.	No appreciable changed.	Phenolic -OH gr absent.
Test for carbonyl gr:- To an alcoholic Sol^n of the Sample in dry Test tube, excess 2,4 DNP Sol^n was added and the contents of the tube was placed on a water bath for 5 min, cooled and scratched. Test for	No appreciable changed observed.	Carbonyl gr. absent.

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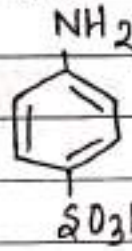
unsaturation.		
① To a sample sol^n of the sample in alc bromine water was added.	No decolouration of bromine colour.	unsaturation absent.
② To an acetone sol^n of the sample dilute aqueous $KMnO_4$ sol^n was added.	No decolouration of $KMnO_4$ colour	unsaturation absent.

Conclusion:

Special element Present	Functional gr. Present
N, S Present	Ar-NH_2 gr and SO_3H gr Present.

☑ From lit survey of M.P studies it can be concluded that unknown compound is sultanilic acid



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Organic qualitative Analysis of unknown organic compound.

Physical characteristics :-

1. Texture - Crystal
2. Colour - Brown
3. Odour - No characteristic odour
4. M.P - 158°-160°C

Solubility :-

Water	Dil HCl	Dil NaOH	Sat $NaHCO_3$	Alc
+	−	−	−	+

Solubility classification :-

As the sample was soluble in water so the compound was Polar in water.

Detection of special element :-

Lassaige's test :- A little of the sample was heated with a Piece of Na-metal in a dry fussion tube at first slowly then strongly until the lower part of the tube become red hot. then the tube is plunged into distilled water taken in morlor. Broken mass was filtered with the Titrate the following Test were Performed.

Experiment	Observation	Inference.
To 1ml of filtrate 2 drops of Sodium nitroprusside Soln added.	No violet Colouration observed.	Sulphur absent.

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Test for N: To 2 ml of the filtrate freshly prepared $FeSO_4$ sol^n was added and then heated to boil then cooled and acidified wil dil H_2SO_4.	No Prussian blue colouration observed.	N - absent.
Test for Halogen: 2 ml of Na - extract was acidified with dil HNO_3 and cooled then $AgNO_3$ sol^n was added.	No white PPt observed.	Cl, Br, I absent.

Primary conclusion: Since the above three tests are -ve for the supplied sample, there is no special element in the supplied sample.

Since nitrogen was absent as special element test for nitrogenous functional gr ($-NH_2$), $-CONH_2$, $-CONHAr$, NO_2 were not performed.

Experiment	Observation	Inference
To a sat $NaHCO_3$ sol^n alcoholic sol^n of the sample was added to 0.5 gm of the sample 1 ml MeOH and few drops of conc. H_2SO_4 was	Effervescence due to evolution of CO_2.	$-COOH$ gr. Present.

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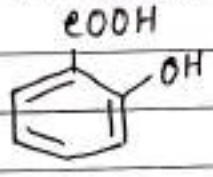
added then the Sol^n mixture was warmed and Poured into water containing $NaHCO_3$ taken in a beaker.	Sweet smell of ester.	-COOH gr definitly Present.
☑ Test for Phenolic -OH gr:-		
① To an alcoholic Sol^n of the sample neutral $FeCl_3$ added dropwise.	green colouration observed.	Phenolic -OH group Present.
② Few drops of aniline was dissolve in dil HCl and cooled then freshly prepared $NaNO_2$ Sol^n was carefully added to it. the resulting mixture was Poured slowly to a cold alkaline Sol^n of the sample.	~~green~~ red dye observed.	definitly -OH gr Present

Teacher's Signature : Sunita

Conclusion :- In the supplied sample.

Special element Present	Functional group Present
No Special element Present.	-COOH gr and Phenolic -OH gr. Present.

☑ From lit survey of M.P studies be concluded the unknown sample is salicylic acid.



Teacher's Signature :

Organic qualitative analysis of unknown organic compound :-

Physical character : 1. Texture - yellowish
2. colour - Powdy
3. odour - Bad odour.

Melting Point - 187 - 189°c

Solubility :-

Water	Dil HCl	Dil NaOH	Sat $NaHCO_3$	Alc
+	−	−	−	+

Solubility classification :-

As the sample was soluble in water it is Polar in nature and they may contains low muss aliphatic acid poly phenols or salts.

Lassaige's test :-

A little of the sample was heated with a Piece of sodium metal in a dry fusion tube at first slowly and then strongly for 2-3 minutes. till the lower part of the tube become red hot. then it was plunged into 5 ml of distilled water taken in a morter and the broken mass was filtered with the filtrate the following tests were performed.

Teacher's Signature :

Experiment	Observation	Inference
Test for S:- To 1 ml of the filtrate 2-drops of Na-Nitro-Prusside soln was added.	No violet colouration observed.	Sulpher absent.
Test for N:- To 2ml of the filtrate 2ml of freshly Prepared $FeSO_4$ soln was added, heated to boil cooled and acidified with dil H_2SO_4	Prussian blue colouration observed.	nitrogen Present.
Test for Halogen:- 2ml of Na-extract was boiled with conc. HNO_3 till the volm come to half then cooled and $AgNO_3$ soln added.	No white or yellow ppt.	Halogen absent.

Conclusion :- As the Sample Polar in nature and nitrogen was Present as an Special element. As nitrogen was Present as special element then the test for both nitrogenous and non-nitrogenous functional group must be Performed.

Teacher's Signature : Sunita

Test for nitrogenous functional groups :-

Experiment	Observation	Inference
Test for Ar-NH_2 gr :- Diazo Test :- To a sample soln in dil HCl freshly prepared $NaNO_2$ soln was added and the mixture was cooled to 0-5°c. then the mixture was poured into a cold alkaline β-naphthol soln. ☒ As the Ar-NH_2 gr. is (+)ve then the following Test for anilide gr must be (-ve)	Immediate scarlet or red ppt.	Ar-NH_2 group present.
Test for Ar-NO_2 gr :- Mulliken Barker's Test :- 0.1 gm of the sample was mixed with a Pinch of Zn-dust, 0.5 gm of NH4Cl 2ml of alcohol and a few drops of water. the mixture was boiled for 2-3 min, and then filtered hot in a freshly Prepared Tollen's reagent.	No appreciable changed observed.	Ar-NO_2 group absent.

Teacher's Signature : Bhanu

Test for amide gr:-

To a little sample 2 half beads of NaOH and 1 ml of water were added and the mixture was heated strongly till evolution of fumes.	No smell of NH_3	$-CONH_2$ group absent.

Test for non-nitrogenous - functional gr:-

Experiment	observation	Interence.
Test for -COOH group:		
(a) To a sat $NaHCO_3$ 5% alcoholic soln of the sample was added.	No evalution of CO_2	-COOH group absent.
(b) To 0.5 gm of the sample 1 ml MeOH and few drops of conc. H_2SO_4 was added then the soln mixture was warmed and Poured into water containing $NaHCO_3$ taken in a beaker.	No sweet smell observed.	-COOH gr absent confirmed.

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Experiment		
Test for Phenolic -OH gr:-		
(a) To an alc. sol^n of the sample neutral $FeCl_3$ sol^n was added dropwise.	red colouration observed	-OH gr may be Present.
(b) Back-dye Test:- few drops of aniline was dissolved in dil HCl and cooled then freshly prepared $NaNO_2$ sol^n was carefully added to it. The resulting mixture was poured slowly to cold alkaline sol^n of the sample.	red dye colouration observed.	Definitely -OH gr Present.
Test for carbonyl gr:- To an alc sol^n of the sample in dry Test tube excess 2,4-DNP sol^n was added and the contents of the tube was placed on a water bath for 5 min. cooled and scratched with a glass rod.	No appreciable changed.	carbonyl group absent.

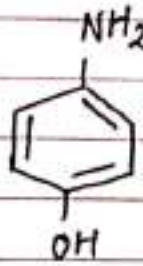
Teacher's Signature : Sanchita

☑ As the carbonyl gr is absent the test for Tollen's reagent for aldehyde gr is not Performed.		
Test for unsaturation:-		
(a) To a sample sol^n in alcohol bromine water was added.	No decolouration of bromine.	unsaturation absent.
(b) To an acetone sol^n of the sample aq. $KMnO_4$ sol^n added.	No decolouration of $KMnO_4$.	unsaturation absent.

Conclusion :-

Special element Present	Functional group Present
N	$-NH_2$, $-OH$ gr

☑ From lit survey of M.P studies it can be concluded the unknown sample is P-amino Phenol.



EXAMINED
B.Sc. Pt. III/IIII
Practical Exam
Signature of External Examiner
13.12.19.

Teacher's Signature :