THE HNSB.LTD. SCIENCE COLLEGE, HIMATNAGAR

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B.Sc., Semester -3

CHEMISTRY PRACTICAL
RECORD BOOK

Name of Student:_____

Group:_____ **Roll Number:**_____

Practical Batch:_____

Exam Number: _____

Mobile Number:_____

Lab safety rules for students

- Report all accidents, injuries, and breakage of glass or equipment to instructor immediately.
- Keep pathways clear by placing extra items (books, bags, etc.) on the shelves or under the work tables. If under the tables, make sure that these items can not be stepped on.
- Long hair (chin-length or longer) must be tied back to avoid catching fire.
- Wear sensible clothing including footwear. Loose clothing should be secured so they do not get caught in a flame or chemicals.
- Work quietly — know what you are doing by **reading** the assigned experiment **before** you start to work. Pay close attention to any **cautions** described in the laboratory exercises
- Do not taste or smell chemicals.
- Wear **safety goggles** to protect your eyes when heating substances, dissecting, etc.
- Do not attempt to change the position of glass tubing in a stopper.
- **Never** point a test tube being heated at another student or yourself. Never look into a test tube while you are heating it.
- Unauthorized experiments or procedures **must not** be attempted.
- Keep solids out of the sink.
- Leave your work station clean and in good order before leaving the laboratory.
- Do not lean, hang over or sit on the laboratory tables.
- Do not leave your assigned laboratory station without permission of the teacher.
- Learn the location of the fire extinguisher, eye wash station, first aid kit and safety shower.
- Fooling around or "horse play" in the laboratory is absolutely forbidden. Students found in violation of this safety rule will be barred from particpating in future labs and could result in suspension.
- Anyone wearing acrylic nails will not be allowed to work with matches, lighted splints, bunsen burners, etc.
- Do not lift any solutions, glassware or other types of apparatus above eye level.
- Follow all instructions given by your teacher.
- Learn how to transport all materials and equipment safely.
- **No eating or drinking in the lab at any time!**

Certificate

Name of Students: _____

Class : B.Sc. Semester -3 **Batch**_____

Roll Number | **Exam Number**

Institution: ***The HNSB. Ltd. Science College, Himatnagar***

This is certified to be the bonafide work of the this student in the Chemistry Laboratory during the academic year _____ .

Number of practical certified _____ *out of* ***12*** *in the subject of Chemistry.*

Teacher in-Charge
Date _____

HOD,
Chemistry Department

Examiner's Signature_____

Date_____

Hemchandracharya North Gujarat University, Patan

B.Sc. Semester - III

Laboratory Course – I & II (Chemistry)

Lab Course: I Inorganic Chemistry :

Inorganic qualitative analysis of mixture containing 4 radicals **(Any Six)**
(Except PO_4^{-3}, BO_3^{-3}, ASO_4^{-3}, ASO_3^{-3}, O^{-2})

Lab Course: II Analytical Chemistry :

Volumetric Analysis of Cu, Zn, Ni and Water (Any Three)

1. To determine the amount of Zn by EDTA method.
2. To determine the amount of Cu by iodometry method.
3. To determine the hardness of water by EDTA method.
4. To determine the amount of Ni^{+2} by back titration method.

Estimations of Glucose, Aniline, and Carboxylic acid: (Any Two)

1. To determine the amount of Aniline by brominating method.
2. To determine the no. of –COOH groups present in a given unknown organic acid.
3. To determine the amount of Glucose by oxidation method.

Chromatography: (Any Two groups)

To determine the Rf values of 1^{st}, 2^{nd} and 3^{rd} groups ions by paper chromatography.

University Exam Pattern for B.Sc. Sem - III : (Two Days per Batch)

Name of Practical	Day	Marks
Lab. Course – I **Inorganic Qualitative**	First day (5 hours)	40 + 5 (viva) = 45
Lab. Course – II **Analytical Chemistry**	Second day (5 hours)	40 + 5 (viva) = 45
	Journal	10
	Total	100

Practical Index

No.	Practical	Practical date	Teacher's Sign. /Date
Lab course – 1 ; Inorganic Qualitative analysis			
1	Inorganic Qualitative Mixture		
2	Inorganic Qualitative Mixture		
3	Inorganic Qualitative Mixture		
4	Inorganic Qualitative Mixture		
5	Inorganic Qualitative Mixture		
6	Inorganic Qualitative Mixture		
Lab course – 2 ; Analytical Chemistry			
1	To determine the amount of Zn^{+2} in given solution by Complexometric titration.		
2	To determine the amount of Cu^{+2} in given solution by Iodometric titration.		
3	To determine the Hardness of water from given sample by Complexometric titration.		
4	To determine the amount of Aniline from given solution by bromination method.		
5	To determine the amount of Glucose by Oxidation (Iodine) method from given solution.		
6	Paper Chromatographic separation of 1^{st} group metal (Ag^{+1} and Pb^{+2}).		

Practical No. - 1 **Date**:……

[A] Preliminary Test

No	Test	Observation	Inferences
1	State	Crystalline \ Amorphous	
2	Colour of Mixture		
3	Odour		

[B] Dry Test

(a) Dry Test for Positive Radical.

No	Test	Observation	Inferences
1	Heating in dry Test Tube		
2	**Flame test**		
3	Borex Bead Test		
4	**Sub + NaOH** **Heat**		
5	**Acid extract test for** **(Fe^{+2} and Fe^{+3})**		

(b) Dry Test for Negative Radical.

No	Test	Observation	Inferences
1	**Mix +dil. HCl**		
2	Mix + Con.H_2SO_4		
3	**Mix + MnO2+ Con. H_2SO_4**		
4	Mix + Cu foil + Con. H_2SO_4		

[C] Water Extract Test.

No	Test	Observation	Inferences
1	W.E. + Nessler's reagent		
2	W.E.+ Zinc Urenylacetate.		
3	**W.E.+ Picric Acid**		
4	W.E.+ $FeSO_4$ (frees solution) + Con. H_2SO_4		
5	W.E. + $AgNO_3$		
6	**W.E.+ $BaCl_2$**		
7	**W.E.(Yellow)+HCl +H_2S**		
8	**W.E.(Orange)+H_2S**		

Result from the Dry Test and W.E. test.	
Positive Radical :	Negative Radical:

[D] Wet Test

(a) Wet Test for Positive Radical

(i) Preparation of Original Solution:

(ii) Group Separation for Positive Radical

No	Test	Observation	Inferences
1	O.S.+ dil HCl		
2	O.S.+ dil HCl + H_2S (g)		
3	O.S.+ NH_4Cl + NH_4OH		
4	O.S.+ NH_4Cl + NH_4OH + H_2S(g)		
5	O.S.+ NH_4Cl + NH_4OH + $(NH_4)_2CO_3$		
6	O.S.+ NH_4Cl + NH_4OH + $NH_4H_2PO_4$		

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iv) Confirmative Test for Positive Radical.

No	Test	Observation	Inferences

(v) Confirmative Test for Negative Radical

No	Test	Observation	Inferences

[E] Result Table

Positive Radical	
Negative Radical	

Teacher's Sign. and Date

Practical No. - 2 **Date**:……

[A] Preliminary Test

No	Test	Observation	Inferences
1	State	Crystalline \ Amorphous	
2	Colour of Mixture		
3	Odour		

[B] Dry Test

(a) Dry Test for Positive Radical.

No	Test	Observation	Inferences
1	Heating in dry Test Tube		
2	**Flame test**		
3	Borex Bead Test		
4	**Sub + NaOH** **Heat**		
5	**Acid extract test for** **(Fe^{+2} and Fe^{+3})**		

(b) Dry Test for Negative Radical.

No	Test	Observation	Inferences
1	**Mix +dil. HCl**		
2	Mix + Con.H_2SO_4		
3	**Mix + MnO2+ Con. H_2SO_4**		
4	Mix + Cu foil + Con. H_2SO_4		

[C] Water Extract Test.

No	Test	Observation	Inferences
1	W.E. + Nessler's reagent		
2	W.E.+ Zinc Urenylacetate.		
3	**W.E.+ Picric Acid**		
4	W.E.+ $FeSO_4$ (frees solution) + Con. H_2SO_4		
5	W.E. + $AgNO_3$		
6	**W.E.+ $BaCl_2$**		
7	**W.E.(Yellow)+HCl +H_2S**		
8	**W.E.(Orange)+H_2S**		

Result from the Dry Test and W.E. test.	
Positive Radical :	Negative Radical:

[D] Wet Test

(a) Wet Test for Positive Radical

(i) Preparation of Original Solution:

(ii) Group Separation for Positive Radical

No	Test	Observation	Inferences
1	O.S.+ dil HCl		
2	O.S.+ dil HCl + H_2S (g)		
3	O.S.+ NH_4Cl + NH_4OH		
4	O.S.+ NH_4Cl + NH_4OH + H_2S(g)		
5	O.S.+ NH_4Cl + NH_4OH + $(NH_4)_2CO_3$		
6	O.S.+ NH_4Cl + NH_4OH + $NH_4H_2PO_4$		

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iv) Confirmative Test for Positive Radical.

No	Test	Observation	Inferences

(v) Confirmative Test for Negative Radical

No	Test	Observation	Inferences

[E] Result Table

Positive Radical	
Negative Radical	

Teacher's Sign. and Date

Practical No. - 3 **Date**:……

[A] Preliminary Test

No	Test	Observation	Inferences
1	State	Crystalline \ Amorphous	
2	Colour of Mixture		
3	Odour		

[B] Dry Test

(a) Dry Test for Positive Radical.

No	Test	Observation	Inferences
1	Heating in dry Test Tube		
2	**Flame test**		
3	Borex Bead Test		
4	**Sub + NaOH** **Heat**		
5	**Acid extract test for** **(Fe^{+2} and Fe^{+3})**		

(b) Dry Test for Negative Radical.

No	Test	Observation	Inferences
1	**Mix +dil. HCl**		
2	Mix + Con.H_2SO_4		
3	**Mix + MnO2+ Con. H_2SO_4**		
4	Mix + Cu foil + Con. H_2SO_4		

[C] Water Extract Test.

No	Test	Observation	Inferences
1	W.E. + Nessler's reagent		
2	W.E.+ Zinc Urenylacetate.		
3	**W.E.+ Picric Acid**		
4	W.E.+ $FeSO_4$ (frees solution) + Con. H_2SO_4		
5	W.E. + $AgNO_3$		
6	**W.E.+ $BaCl_2$**		
7	**W.E.(Yellow)+HCl +H_2S**		
8	**W.E.(Orange)+H_2S**		

Result from the Dry Test and W.E. test.	
Positive Radical :	Negative Radical:

[D] Wet Test

(a) Wet Test for Positive Radical

(i) Preparation of Original Solution:

(ii) Group Separation for Positive Radical

No	Test	Observation	Inferences
1	O.S.+ dil HCl		
2	O.S.+ dil HCl + H_2S (g)		
3	O.S.+ NH_4Cl + NH_4OH		
4	O.S.+ NH_4Cl + NH_4OH + H_2S(g)		
5	O.S.+ NH_4Cl + NH_4OH + $(NH_4)_2CO_3$		
6	O.S.+ NH_4Cl + NH_4OH + $NH_4H_2PO_4$		

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iv) Confirmative Test for Positive Radical.

No	Test	Observation	Inferences

(v) Confirmative Test for Negative Radical

No	Test	Observation	Inferences

[E] Result Table

Positive Radical	
Negative Radical	

Teacher's Sign. and Date

Practical No. – 4 **Date**:……

[A] Preliminary Test

No	Test	Observation	Inferences
1	State	Crystalline \ Amorphous	
2	Colour of Mixture		
3	Odour		

[B] Dry Test

(a) Dry Test for Positive Radical.

No	Test	Observation	Inferences
1	Heating in dry Test Tube		
2	**Flame test**		
3	Borex Bead Test		
4	**Sub + NaOH** **Heat**		
5	**Acid extract test for** **(Fe^{+2} and Fe^{+3})**		

(b) Dry Test for Negative Radical.

No	Test	Observation	Inferences
1	**Mix +dil. HCl**		
2	Mix + Con.H_2SO_4		
3	**Mix + MnO2+ Con. H_2SO_4**		
4	Mix + Cu foil + Con. H_2SO_4		

[C] Water Extract Test.

No	Test	Observation	Inferences
1	W.E. + Nessler's reagent		
2	W.E.+ Zinc Urenylacetate.		
3	**W.E.+ Picric Acid**		
4	W.E.+ $FeSO_4$ (frees solution) + Con. H_2SO_4		
5	W.E. + $AgNO_3$		
6	**W.E.+ $BaCl_2$**		
7	**W.E.(Yellow)+HCl +H_2S**		
8	**W.E.(Orange)+H_2S**		

Result from the Dry Test and W.E. test.	
Positive Radical :	Negative Radical:

[D] Wet Test

(a) Wet Test for Positive Radical

(i) Preparation of Original Solution:

(ii) Group Separation for Positive Radical

No	Test	Observation	Inferences
1	O.S.+ dil HCl		
2	O.S.+ dil HCl + H_2S (g)		
3	O.S.+ NH_4Cl + NH_4OH		
4	O.S.+ NH_4Cl + NH_4OH + H_2S(g)		
5	O.S.+ NH_4Cl + NH_4OH + $(NH_4)_2CO_3$		
6	O.S.+ NH_4Cl + NH_4OH + $NH_4H_2PO_4$		

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iv) Confirmative Test for Positive Radical.

No	Test	Observation	Inferences

(v) Confirmative Test for Negative Radical

No	Test	Observation	Inferences

[E] Result Table

Positive Radical	
Negative Radical	

Teacher's Sign. and Date

Practical No. – 5 **Date**:……

[A] Preliminary Test

No	Test	Observation	Inferences
1	State	Crystalline \ Amorphous	
2	Colour of Mixture		
3	Odour		

[B] Dry Test

(a) Dry Test for Positive Radical.

No	Test	Observation	Inferences
1	Heating in dry Test Tube		
2	**Flame test**		
3	Borex Bead Test		
4	**Sub + NaOH** **Heat**		
5	**Acid extract test for** **(Fe^{+2} and Fe^{+3})**		

(b) Dry Test for Negative Radical.

No	Test	Observation	Inferences
1	**Mix +dil. HCl**		
2	Mix + Con.H_2SO_4		
3	**Mix + MnO2+ Con. H_2SO_4**		
4	Mix + Cu foil + Con. H_2SO_4		

[C] Water Extract Test.

No	Test	Observation	Inferences
1	W.E. + Nessler's reagent		
2	W.E.+ Zinc Urenylacetate.		
3	**W.E.+ Picric Acid**		
4	W.E.+ $FeSO_4$ (frees solution) + Con. H_2SO_4		
5	W.E. + $AgNO_3$		
6	**W.E.+ $BaCl_2$**		
7	**W.E.(Yellow)+HCl +H_2S**		
8	**W.E.(Orange)+H_2S**		

Result from the Dry Test and W.E. test.	
Positive Radical :	Negative Radical:

[D] Wet Test

(a) Wet Test for Positive Radical

(i) Preparation of Original Solution:

(ii) Group Separation for Positive Radical

No	Test	Observation	Inferences
1	O.S.+ dil HCl		
2	O.S.+ dil HCl + H_2S (g)		
3	O.S.+ NH_4Cl + NH_4OH		
4	O.S.+ NH_4Cl + NH_4OH + H_2S(g)		
5	O.S.+ NH_4Cl + NH_4OH + $(NH_4)_2CO_3$		
6	O.S.+ NH_4Cl + NH_4OH + $NH_4H_2PO_4$		

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iv) Confirmative Test for Positive Radical.

No	Test	Observation	Inferences

(v) Confirmative Test for Negative Radical

No	Test	Observation	Inferences

[E] Result Table

Positive Radical	
Negative Radical	

Teacher's Sign. and Date

Practical No. - 6 **Date**:……

[A] Preliminary Test

No	Test	Observation	Inferences
1	State	Crystalline \ Amorphous	
2	Colour of Mixture		
3	Odour		

[B] Dry Test

(a) Dry Test for Positive Radical.

No	Test	Observation	Inferences
1	Heating in dry Test Tube		
2	**Flame test**		
3	Borex Bead Test		
4	**Sub + NaOH** **Heat**		
5	**Acid extract test for** **(Fe^{+2} and Fe^{+3})**		

(b) Dry Test for Negative Radical.

No	Test	Observation	Inferences
1	**Mix +dil. HCl**		
2	Mix + Con.H_2SO_4		
3	**Mix + MnO2+ Con. H_2SO_4**		
4	Mix + Cu foil + Con. H_2SO_4		

[C] Water Extract Test.

No	Test	Observation	Inferences
1	W.E. + Nessler's reagent		
2	W.E.+ Zinc Urenylacetate.		
3	**W.E.+ Picric Acid**		
4	W.E.+ $FeSO_4$ (frees solution) + Con. H_2SO_4		
5	W.E. + $AgNO_3$		
6	**W.E.+ $BaCl_2$**		
7	**W.E.(Yellow)+HCl +H_2S**		
8	**W.E.(Orange)+H_2S**		

Result from the Dry Test and W.E. test.	
Positive Radical :	Negative Radical:

[D] Wet Test

(a) Wet Test for Positive Radical

(i) Preparation of Original Solution:

(ii) Group Separation for Positive Radical

No	Test	Observation	Inferences
1	O.S.+ dil HCl		
2	O.S.+ dil HCl + H_2S (g)		
3	O.S.+ NH_4Cl + NH_4OH		
4	O.S.+ NH_4Cl + NH_4OH + H_2S(g)		
5	O.S.+ NH_4Cl + NH_4OH + $(NH_4)_2CO_3$		
6	O.S.+ NH_4Cl + NH_4OH + $NH_4H_2PO_4$		

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iii) _____ Group Classification.

No	Test	Observation	Inferences

(iv) Confirmative Test for Positive Radical.

No	Test	Observation	Inferences

(v) Confirmative Test for Negative Radical

No	Test	Observation	Inferences

[E] Result Table

Positive Radical	
Negative Radical	

Teacher's Sign. and Date

Preparation of standard 0.01M EDTA 250 ml Solution = _____ gm EDTA

Equation:

Observation:

Burette: 0.01 M EDTA

Conical Flask: 25ml dil. Zn^{+2} solu.+ 4ml 10 pH buffer + 3 drops of Indicator

Indicator : Eriochrome black-T

Colour Change: Wine red to Blue

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

1000 ml 1 M EDTA = 63.37 gm Zn

Practical No- 1 **Date:…….**

Aim: To determine the amount of Zn^{+2} in given solution by Complexometric titration.

Requirement:

Procedure:

Result:

1. Required volu. of 0.01 M EDTA for 25 ml of Zn^{+2} Solu.= _____ ml
2. The amount of Zn in given solution = _____ gm

_____

Signature of Teacher

Preparation of standard 0.1N $Na_2S_2O_3.5H_2O$, 250 ml Solution = _____ gm

Equation:

Observation:

Burette: 0.1 N $Na_2S_2O_3$

Conical Flask: 25ml dil. Cu^{+2} solu.+ 1 T.T. 10% KI + 3 ml Starch solution.

Indicator : Starch solution

Colour Change: Blue to Colourless.

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

1000 ml 1 N $Na_2S_2O_3$ = 63.54 gm Cu

Practical No- 2 **Date:…….**

Aim: To determine the amount of Cu^{+2} in given solution by Iodometric titration.

Requirement:

Procedure:

Result:

1. Required volu. of 0.1 N $Na_2S_2O_3$ for 25 ml of Cu^{+2} Solu.= _____ ml
2. The amount of Cu in given solution = _____ g

Signature of Teacher

Preparation of standard 0.01M EDTA 250 ml Solution = _____ gm EDTA

Equation:

Observation:

Burette: 0.01 M EDTA

Conical Flask: 25ml water sample.+ 4 ml 10 pH buffer + 3 drops of Indicator

Indicator : Eriochrome black-T

Colour Change: Wine red to Blue

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

1000 ml 1 M EDTA = 40 gm Ca (gm Hardness of water sample)

Practical No- 3 **Date:…….**

Aim: To determine the Hardness of water from given sample by Complexometric titration.

Requirement:

Procedure:

Result:

1. Required volu. of 0.01 M EDTA for 25 ml of water sample.= _____ ml
2. The Hardness of water = _____ ppm (mg/L)

_____

Signature of Teacher

Equation:

Section : 1 Normality of Brominating solution

Observation:

Burette: 0.1 N $Na_2S_2O_3$

Conical Flask: 25ml brominating solu. + 10ml of 10% KI + 5ml Conc. HCl+ Indicator

Indicator : Starch solution

Colour Change: Blue to colourless.

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

25 ml brominating solu. Required _____ ml of 0.1 N $Na_2S_2O_3$

Practical No- 4 **Date:…….**

Aim: To determine the amount of Aniline from given solution by bromination method.

Requirement:

Procedure:

Section : 2 Bromination of Aniline

Observation:

Burette: 0.1 N $Na_2S_2O_3$

Conical Flask: 25ml Aniline solu.+ 25 ml DW + 5 ml of Conc.HCl + ____ ml of brominating solu. After 15 min. 20 ml of 10% KI + Indicator

Indicator : Starch solution

Colour Change: Blue to colourless.

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

Result:

1. Normality of Brominating solution =_____ N
2. Volume of 0.1 N brominating solu. Required for bromination of 25 ml Aniline solu.= _____ ml.
3. The amount of Aniline in given solu. =_____ gm

_____

Signature of Teacher

Equation:

Section : 1 Normality of Iodine solution

Observation:

Burette: 0.1 N $Na_2S_2O_3$

Conical Flask: 25ml Iodine solu. + Indicator

Indicator : Starch solution

Colour Change: Blue to colourless.

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

25 ml Iodine solu. Required _____ ml of 0.1 N $Na_2S_2O_3$

Practical No- 5 **Date:…….**

Aim: To determine the amount of Glucose by Oxidation (Iodine) method from given solution.

Requirement:

Procedure:

Section : 2 Oxidation of Glucose

Observation:

Burette: 0.1 N $Na_2S_2O_3$

Conical Flask: 25ml Aniline solu.+ 5 ml 15% Na2CO3 + 25 ml of 0.1 N I2 solu. After 30 min. 20 ml of 1 N HCl + Indicator

Indicator : Starch solution

Colour Change: Blue to colourless.

Observation Table

B.R.	P.R	1st reading	2nd reading	3rd reading	Constant Reading
Final Reading					
Initial Reading					
Difference					

Calculation :

Result:

1. Normality of Iodine solution =_____ N
2. Volume of 0.1 N Iodine solu. Required for Oxidation of 25 ml Glucose solu.= _____ ml.
3. The amount of Glucose in given solu. =_____ gm

_____

Signature of Teacher

Observation:

Distance travelled by the solvent from the origin line = _____ cm

Spot	Cations	Colour of Spot	Rf value
A	Ag		
B	Pb		
C (A+B)	Ag + Pb		

Calculation :

$$Rf = \frac{Distance\ travelled\ by\ Cation\ solu.\ from\ origin\ line}{Distance\ travelled\ by\ Solvent\ from\ origin\ line}$$

Practical No- 6 **Date:…….**

Aim: Paper Chromatographic separation of 1st group metal (Ag^{+1} and Pb^{+2}).

Requirement: Chromatography Paper, Jar, DW, Ag^{+1} and Pb^{+2} Salt solution.

Developing Solvent- DW; **Visualising agent-** K_2CrO_4 and Ammonia solu.

Procedure:

Result:

1. Rf value of Ag =_____
2. Rf value of Pb= _____
3. Rf value of Ag =_____ and Pb=_____ in mixture

_____

Signature of Teacher