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Karpagam Academy of Higher Education (Deemed University Established Under Section 3 of UGC Act 1956)

Coimbatore-21

Department of Chemistry B.Sc Chemistry

15CHU511

CHEMISTRY PRACTICAL- V (GRAVIMETRIC ANALYSIS)

Semester - V 5H- 3C

Instruction Hours/week:L: 0 T:0 P:5 Marks: Internal:40 External: 60 Total:100

Scope

This course presents the basic principles of Gravimetric analysis. So it enable the students to learn about the different aspects of precipitation and organic qualitative analysis in Chemistry. This will be useful to work well in drug, food and electronic industries.

Objective

- 1. To understand and develop the skill to perform organic qualitative analysis.
- 2. To understand the factors which affect the crystallinity/size of precipitate.
- 3. To understand the steps to be taken to ensure that the precipitates formed are large and easily filtered and avoid peptization.

Methodology

Black board teaching and Demonstration.

LIST OF PRACTICALS

- 1. Estimation of Barium as Barium chromate.
- 2. Estimation of Barium as Barium Sulphate.
- 3. Estimation of Lead as Lead Chromate.
- 4. Estimation of Lead as Lead Sulphate.
- 5. Estimation of Calcium as Calcium Oxalate
- 6. Estimation of Nickel as Nickel Dimethylglyoxime complex.
- 7. Estimation of Mg as Oxinate.

TEXT BOOKS:

- 1. Thomas, A.O., 2013. Practical Chemistry, Scientific Book Center, Cannanore.
- 2. Venkateswaran, V., R.Veeraswamy and A.R.Kulandaivelu, 2014. Basic Principles of Practical Chemistry, 2nd Edition, S.Chand Publications, New Delhi.

REFERENCES:

1. Furniss, B.S., A.J.Hannaford, P.W.G.Smith and A.R.Tatchell, 2014. Vogel's Textbook of Practical Organic Chemistry, 5th Edition, Pearson Education Ltd., Singapore .

- Mendham, J., R.C.Denney, J.D.Barnes and M.Thomas 2012. Vogel's textbook of quantitative Chemical Analysis, 6th Edition, Pearson Education Ltd., Singapore.
 Pandey, O.P., D.N.Bajpai and S.Giri, 2011. Practical Chemistry, 8th Edition, S.Chand
- Publications, New Delhi.
- 4. Santi Rajan palit and Sadhan Kumar, 2011. Practical Physical Chemistry, Ist Edition, Joy Publishers, Calcutta.



KARPAGAM ACADEMY OF HIGHER EDUCATION COIMBATORE-641 021

DEPARTMENT OF CHEMISTRY

Name of the faculty	: K. Sundaram	Subject Code: 15CHU511
Semester /Year	: V/III	Class: III B.Sc., Chemistry
Subject	: Chemistry Practical (V) - Gravimetric	Analysis

List of Practical's

S. No.	Week/ Duration	Name of the Experiment	Support Materials
1.	1/5	Procedure Writing, Apparatus Given, Demonstration	
2.	2/5	Estimation of Barium as Barium chromate	T2:178
3.	3/5	Estimation of Barium as Barium sulphate	T1: 277
4.	4/5	Estimation of Lead as Lead chromate	T1: 290
5.	5/5	Estimation of Lead as Lead sulphate	T2: 174
6.	6/5	Estimation of Calcium as Calcium Oxalate	T1: 292
7.	7/5	Estimation of Nickel as Nickel-DMG	T2: 182
8.	8/5	Estimation of Mg as Magnesium oxinate	T1: 289
9.	9/5	Viva-Voce	
10.	10/5	Model practical examinations	

Text Books:

T1: A.O. Thomas, 2013, "Practical Chemistry", Scientific Book Centre.

T2: V. Venkateshwaran, R. Veeraswamy and A.R. Kulandaivelu, 2014, "Basic Principles of Practical Chemistry", IInd Edition.

DEPARTMENT OF CHEMISTRY

PRACTICAL MANUAL

CHEMISTRY PRACTICAL-V

(Gravimetric Analysis)



Karpagam Academy of Higher Education (KAHE) (Deemed to be University Established Under Section 3 of UGC Act, 1956) Pollachi Main Road, Eachanari Post, Coimbatore – 641 021, Tamil Nadu, India.

LIST OF PRACTICALS

S. No.	Title of Experiments	Page No.	Signature
1.	Estimation of Lead as Lead Sulphate.	3	
2.	Estimation of Lead as Lead Chromate.	5	
3.	Estimation of Barium as Barium Sulphate.	7	
4.	Estimation of Barium as Barium chromate.	10	
5.	Estimation of Calcium as Calcium Oxalate.	12	
6.	Estimation of Nickel as Nickel Dimethylglyoxime complex.	14	
7.	Estimation of Mg as Oxinate.	16	

1. Estimation of Lead as Lead Sulphate

Aim:

To estimate gravimetrically the amount of lead present in the whole of the given solution by precipitating it as lead sulphate.

Principle:

The lead present in a soluble salt solution is precipitated as lead sulphate by the addition of dilute sulphuric acid. The precipitate is filtered, washed and weighed after it has been dried and ignited along with the filter paper in a weighed silica crucible and weighed as lead sulphate.

$$(CH_3COO)_2Pb + H_2SO_4 \rightarrow PbSO_4 \downarrow + 2CH_3COOH$$

Procedure:

The whole of the given lead salt solution is made up to 100ml in a standard flask. Exactly 20ml of this made up solution is pipetted out to a clean 400ml beaker, provided with a cover glass and a glass rod for stirring. The solution is diluted to 100ml and boiled. To the hot solution 20ml of dilute sulphuric acid is added in drops with stirring. The precipitate is heated on a low flame for about 30minutes and allowed to settle

The clear supernatant liquid is then tested for completion of precipitation by adding dilute sulphuric acid along the sides of the beaker. The clear liquid is then filtered through a whatmann No.40 filter paper. The precipitate is repeatedly washed with hot distilled water, filtered, till the washings are free from chloride and sulphate. Then the precipitate is transferred into the filter paper. Any particles sticking to the sides are removed using a policeman. After the filtration is over, the precipitate is dried with the funnel in the air oven.

Meanwhile a silica crucible is heated, cooled in a desiccators and weighed. The filter paper is removed from the funnel and it is folded into small packet taking care that all open ends are closed. The packet is then placed in the crucible upside down and partly covered with the lid. The crucible is then heated slowly till no more black particles are left in the crucible. Any carbon particles on the lid are removed by directly showing it into the flame. Heating is continued for further 20 minutes. The crucible is cooled in a desiccator and weighed. The process of heating, cooling and weighing is repeated to constant weight. A duplicate experiment is conducted simultaneously. From the weight of the lead sulphate obtained, the amount of lead present in the whole of the given solution can be calculated.

Calculations

Weight of empty crucible (w ₁)	=	g
Weight of sintered crucible + PbSO4 precipitate (w_2)	=	g
Weight of lead precipitate (w ₂ -w ₁)	=	g
303.25 g of lead sulphate contains 207.19 g of lead.		
Weight of lead in (w ₂ -w ₁) g PbSO4	=	
	207.19 303.25	× (W2 - W1)
Lead present in the whole of the given solution	=	
	207.19 303.25	\times (W2 - W1) $\times5$
	=	g

Result:

The amount of lead present in the whole of given solution =-----g

2. Estimation of Lead as Lead Chromate

Aim:

To estimate gravimetrically, the amount of lead present in the whole of the given solution of lead acetate by precipitating it as lead chromate.

Priniciple:

Lead is precipitated as lead chromate in dilute acetic acid medium by the addition of potassium chromate solution. The precipitated lead chromate is filtered in a sintered crucible, washed, dried at 120°c and weighed.

 $Pb(CH_{3}COO)_{2} + K_{2}CrO_{4} \rightarrow PbCrO_{4} \downarrow + 2CH_{3}COOK$ $Pb(NO_{3})_{2} + K_{2}CrO_{4} \rightarrow PbCrO_{4} + 2KNO_{3}$

Procedure:

The given lead salt solution is made upto 100ml in a standard flask. Exactly 20ml of this solution is pipetted out into a clean 400ml beaker. About 5ml of dilute acetic acid is added and the solution is diluted to 100ml with distilled water. The solution is heated to boiling and to the hot solution 15-20 ml of 4% potassium chromate is added slowly with vigorously stirring. The lead chromate precipitated is heated on a water bath for another 15 minutes and the precipitate is allowed to settle the clear supernatant liquid must be yellow in potassium chromate down the sides of the beaker. When the precipitation is complete, the supernatant liquid is filtered in a previously weighed sintered by crucibic. The precipitate is washed with hot water and the washings also filtered by decantation. When the washings are free from chromate ions (tested with silver nitrate),the whole pf the precipitate adhering to the sides of the beaker and glass rod is removed using a policeman. When the filteration is complete the sintered crucible with precipitate is dried at 120*c and weighed after cooling. The process of heating cooling and weighing is repeated to constant weight. Knowing the weight of lead chromate obtained, the weight of lead in the whole of the given solution can be calculated.

Calculations

Weight of empty crucible (w ₁)	=	g
Weight of sintered crucible + $PbCrO_4$ precipitate (w ₂)	=	g

Weight of lead chromate precipitate (w ₂ -w ₁)	=	g
323.19g of lead chromate contains 207.19 g of lead.		
Weight of lead in (w_2-w_1) g PbCrO4	=	
	207.19 323.19	× (W2 - W1) g
Lead present in the whole of the given solution	= 	× (W2 - W1) × 5
	=	g

Result:

The amount of lead present in the whole of given solution = ------ g

3. Estimation of Barium as Barium Sulphate

Aim:

To estimate gravimetrically, the amont of barium present in the whole of the given barium chloride solution by precipitating it as barium sulphate.

Principle:

Barium is precipitate as barium sulphate in hydrochloric acid medium using sulphric acid as the precipitant. The precipitated barium sulphate is filtered, washed and weighed after it has been dried and ignited along with the filter paper in a weighed crucible as barium sulphate.

 $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 \downarrow +2HCL$

Procedure:

The whole of the given barium choloride solution is made up to 100ml in a standard flask.exactly 20ml of this solution is pipette out into a clen 400ml beaker. A glass rod is placed. About 5 ml of concentrated hydrochloric acid is added and the solution is diluted to 100ml with distilled water. The solution is heated to boiling. About 20ml of dilute sulphuric acid is taken separately in a small beaker and heated. The hot dilute sulphuric acid is added to the hot barium chloride solution drop by drop with constant stirring. The precipitate obtained is boiled over a low flame for about 30 minutes and kept aside to allow the precipitate to settle.

The supernatant clear liquid is then tested for completion of precipitation by adding few drops of dilute sulphuric acid along the sides of the beaker. If turbidity appears, 5ml more of dilute sulphuric acid is added ans the test is repeated.

A quantitative filter paper is placed in a clean funnel taking care that there is no air space. The clear supernatant liquid is first transferred into the funnel using the glass rod. At no time the filter paper should be completely filled. The precipitate is washed with small portions of hot water repeatedly until the filtrate when tested does not give reactions of chloride and sulphate ions.

The precipitate is then transferred completely in to the filter paper. Any trace of precipitate sticking to the sides of the beaker and glass rod is removed using policeman. The precipitate in the filter paper is washed again. After the water has been completely drained off, the funnel is kept in an air oven for drying.

Meanwhile a clean, dry silica crucible is heated for about 15 minutes. It is then cooled in a desiccators and its weight is determined. The filter paper when dry is removed from the funnel

with a dry hand. It is then folded into a small packet taking care that all open ends are closed and the precipitate is enclosed well in the packet. The packet is then placed pointing downwards in the weighed silica crucible.

The crucible is placed on a clay-pipe triangle, partially covered with its lid heated first with a low flame till the filter paper chars. The paper should not be allowed to catch fire, as this will result in the loss of fine particles. When the charring is complete, heating is continued until all the carbon is oxidized. When the mass in the crucible is white the crucible is heated strongly for about half and hour. The crucible is allowed to cool. Then a drop of concentrated sulphuric acid is added and again heated. If there is any deposite of carbon on the lid, it should be heated separately by holding it in the flame with a pair of tongs. The crucible is then transferred in to the desiccator and cooled. When cold, the crucible is weighed. The heating, cooling and weighing are repeated till constant weight is obtained. A duplicate experiment is conducted simultaneously. From the weight of the precipitated barium sulphate, the weight of barium in the whole of the given solution is calculated.

Calculations

Weight of empty crucible (w ₁)	=	g
Weight of sintered crucible + $BaSO_4$ precipitate (w ₂)	=	g
Weight of BaSO ₄ precipitate (w ₂ -w ₁)	=	g
233.4 g of BaSO ₄ contains 137.4 g of Barium		
Weight of Barium in (w ₂ - w ₁) g BaSO ₄	=	
	<u>137.34</u> 233.34	× (W2 - W1) g
Barium present in the whole of the given solution	=	
	137.34	× (W2 - W1) × 5
	233.34	(, -

=

g

8

Result:

The amount of Barium present in the whole of given solution =-----g

4. Estimation of Barium as Barium Chromate

Aim:

To estimate gravimetrically, the amount of barium present in the whole of the given barium chloride solution by precipitating it as barium chromate.

Principle:

Barium is precipitated as barium chromate in acetic acid medium by the addition of potassium chromate. The precipitated barium chromate is filtered in a sintered crucible, washed, dried at 120°c and weighed as barium chromate.

 $BaCl_2 \ + \ K_2CrO_4 \rightarrow BaCrO_4 \downarrow + 2KCl$

Procedure:

The given barium chloride solution is made up to 100 ml in a standard flask. Exactly 20 ml of this made up solution is pipetted out into a clean 400 ammonium acetate are then added and the solution is diluted to 100 ml with distilled water. The solution is heated to boiling in a water bath and to the hot solution15-20 ml of 4% potassium chromate solution is added slowly with constant stirring. The heating is continued for further 15 minutes and the precipitate is allowed to settle. The clear supernatant liquid must be yellow in colour. A little more 4% potassium chromate solution is added down the sides of the beaker into the supernatant liquid to test for completion of precipitation. Where there is no turbidity, the precipitate is complete.

The clear solution is filtered in a previously washed crucible dried out 120°c. The precipitate is washed with hot water and the washings also are filtered by decantation. Washing and filtration is continued till the filtrate is free from chloride and chromate ions. The precipitation is then completely transferred into the sintered crucible. Any precipitate adhering to the sides of the beaker is removed using a policeman. When filteration is complete 4 drops of ethanol are added to the precipitate and allowed to drain off. The crucible is then dried at 120°c for an hour in an air oven. It is then cooled in desiccators and when quite cold it is weighed. The heating, cooling and weighing are repeated to constant weight. A duplicate experiment is conducted simultaneously. From the weight of the barium chromate precipitate, the amount of barium present in the whole of the given solution can be calculated.

Calculations

Weight of empty crucible (w ₁)	=	g
Weight of sintered crucible + $BaCrO_4$ precipitate (w ₂)	=	g
Weight of BaCrO ₄ precipitate (w ₂ -w ₁)	=	g
253.34 g of BaCrO ₄ contains 137.4 g of Barium		
Weight of Barium in (w ₂ - w ₁) g BaCrO ₄	=	
	<u>137.34</u> 253.34	× (W2 - W1) g
Barium present in the whole of the given solution	=	
	<u>137.34</u> 253.34	× (W2 - W1) × 5
	=	g

Result:

The amount of Barium	present in the whole of given solution	=	g

5. Estimation of Calcium as Calcium Oxalate Monohydrate

Aim:

To estimate gravimetrically, the amount of calcium present in the whole of the given solution by precipitating it as calcium oxalate monohydrate.

Principle:

Calcium is precipitated as calcium oxalate by treating the hot hydrochloric acid solution of calcium with ammonium oxalate solution and slowly neutralizing with ammonia till ammoniacal. Calcium oxalate is filtered, washed and dried at 105°C to constant weight and weighed as calcium oxalate monohydrate.

 $CaCl_2 + (NH_4)_2C_2O_4 \rightarrow CaC_2O_4 \downarrow + 2NH_4Cl$

Procedure:

The given calcium salt solution is made up to 100 ml in a standard flask. Exactly 20ml of this solution is pipetted out into a clean beaker. A drop of methyl orange indicator is added. Then ammonium hydroxide is added in drops till the pink colour just turns yellow. About 5 ml of dilute HCl is added. The solution is diluted to 100ml with distilled water, and then heated to boiling. To the hot solution about 20ml of saturated ammonium oxalate is added slowly in drops with stirring. Then ammonium hydroxide solution is added until the solution is distinctly alkaline. The heating is then continued for another half an hour over a low flame for the digestion of the precipitate. The precipitate is allowed to settle and the supernatant liquid is tested for completeness of precipitation by adding a little ammonium oxalate along the sides of the beaker.

A sintered crucible is washed, dried at 105°C and weighed. The clear supernatant liquid is first transferred in to the sintered crucible under suction. The precipitate is washed repeatedly with dilute ammonium oxalate solution and the washing is also removed by decantation. Washing is continued till the filtrate does not show the presence of chloride when tested with silver nitrate containing a little HNO₃. Then whole of the precipitate is then dried in an air oven at 105°C- 110°. It is then cooles in a desiccators and weighed. Heating, cooling and weighing are continued till constant weight is obtained. From the weight of the calcium oxalate monohydrate precipitated the weight of calcium can be calculated. A duplicate experiment is conducted simultaneously.

Calculations

Weight of empty crucible $(w_1) =$	g
------------------------------------	---

Weight of sintered crucible + Calcium oxalate monohydrate precipitate (w₂)

	=	g
Weight of Calcium oxalate monohydrate precipitate (w ₂ -w ₁)	=	g

146.1 g of Calcium oxalate monohydrate contains 40.08 g of Calcium

Weight of Calcium in (W2 - W1) g Calcium oxalate monohydrate =

	$\frac{40.08}{146.08}$ × (W2 - W1) g
Calcium present in the whole of the given solution	=
	$\frac{40.08}{146.08} \times (W2 - W1) \times 5$

=

g

Result:

The amount of Calcium present in the whole of given solution =------g

6. Estimation of Nickel

Aim:

To estimate gravimetrically the amount of nickel present in the whole of the given solution of a nickel salt.

Principle:

Nickel in a solution is precipitated as dimethyl glyoxime complex by the addition of alcoholic solution of dimethyl glyoxime ta a hot, strong acid solution of the nickel compound and then adding slight excess of ammonium hydroxide. The precipitated nickel complex is filtered, washed and dried at 110°C.

NiSO₄ + 2
$$H_3C-C=N-OH$$

 $H_3C-C=N-OH$
 H_3C-OH
 H_3C-OH

Procedure:

The given nickel salt solution is made upto 100 ml in a standard flask. Exactly 20 ml of this solution is pipetted out into a clean 400 ml beaker. About 5ml of 1:1 HCl is added and the solution is diluted to 100ml with distilled water. The solution is then heated to about 80°C. to the hot solution about 20 ml of 1% alcoholic solution of dimethyl glyoxime reagent is added in drops with stirring. Immediately dilute ammonium hydroxide solution is slightly alkaline. A rosy red precipitate of nickel dimethyl glyoxime complex will be obtained. The solution is heated on a water bath for about an hour and the precipitate is allowed to settle. The supernatant liquid is then tested for completion of precipitation by adding a little more of the dimethyl glyoxime reagent into it.

When the precipitation is complete, it is filtered through a previously cleaned, dried and weighed crucible by decantation. The precipitate is washed with hot water until the washing give no reaction for chloride when tested with silver nitrate solution containing little HNO₃. The entire precipitate is then transferred to the crucible, and the particles sticking to the sides of the beaker and glass rod are removed using the policeman. When filteration is complete, the

precipitate is dried in an air oven at 110°C for an hour. It is allowed to cool in a desiccators and weighed. Heating, cooling and weighing are repeated till the weight becomes constant. A duplicate experiment is conducted simultaneously. From the weight of the dimethyl glyoxime complex, the weight of nickel present in the whole of the given solution is calculated.

Calculations

Weight of empty crucible (w ₁)		=	g
Weight of sintered crucible + Nickel complex (w ₂)		=	g
Weight of the nickel dimethyl glyoxime complex (w_2-w_1)		=	g
288 g of nickel dimethyl glyoxime complex contains 58 g of Nickel			
Weight of Nickel in $(w_2 - w_1)$ g of nickel dimethyl glyoxime comple	ex	=	
	58 288	_ × (W2 - W1) (g

Nickel present in the whole of the given solution

58	× (W2 - W1) × 5
288	

=

= g

Result:

The amount of Nickel present in the whole of given solution =-----g

7. Estimation of magnesium as oxinate

Aim:

To estimate gravimetrically, the amount of magnesium present in the whole of the given solution by precipitating it as magnesium oxinate.

Principle:

Magnesium in a given volume of the solution is precipitated as oxino complex by the addition of a dilute solution of oxino to the ammoniacal solution of the magnesium salt containing ammonium chloride. The precipitate is filtered, washed and dried atm105°C and weighed as magnesium oxinate $Mg(OC_9H_6N)_2.2H_2O$

 $MgSO_4 + 2C_9H_7ON + 2H_2O \rightarrow Mg(OC_9H_6N)_2. 2H_2O \downarrow$

Procedure:

The whole of the given magnesium solution is made up to 100ml in a standard flask. Exactly 20 ml of this solution is pipetted out into a clean beaker provided with a cover glass and a glass rod. The solution is diluted to 100 ml into which 2g of ammonium chloride is added followed by ammonium hydroxide solution till it is just alkaline. The solution is heated tom about 80°C. To the hot solution about 20ml of 2% solution of oxine in 2N acetic acid is added very slowly with stirring until small excess is present. The supernatant liquid must be yellow in colour. A large excess of reagent is to be avoided. The mixture is boiled until the yellow precipitate becomes crystalline. The precipitate is then digested over a hot water bath for half and hour. The supernatant liquid is then tested for completion of precipitation.

The precipitate is then filtered by decantation through clean, dried and weighed sintered crucible. The precipitate is washed with hot water containing little ammonium hydroxide several times. The precipitate is then transferred to the crucible and the particles sticking to the sides of the beaker and glass rod are removed by using policeman. After the filteration is over, the precipitate is dried in an oven at 100-105°C, cooled in a desiccators and finally weighed. The process of heating, cooling and weighing is repeated to constant weight. A duplicate experiment is conducted simultaneously. From the weight of the magnesium oxinate, the weight of magnesium in the whole of the given solution is calculated.

Calculations

Weight of empty crucible (w ₁)	=	g
Weight of sintered crucible + Oxinate (w ₂)	=	g
Weight of Oxinate (w ₂ -w ₁)	=	g

348.312 g of hydrated magnesium oxinate contains 24.312 g of Mg $\,$

Weight of Mg l in $(w_2 - w_1)$ g of oxinate

= _____24.321 ____348.321 × (W2 - W1) g

Nickel present in the whole of the given solution

24.321 _×	(W2 -	W1)	×	5
348.321	`	,		

= g

=

Result:

The amount of Nickel present in the whole of given solution =------g



KARPAGAM ACADEMY OF HIGHER EDUCATION (Deemed University Established Under Section 3 of UGC Act 1956) COIMBATORE-21

DEPARTMENT OF CHEMISTRY

Chemistry Practical (V) - Gravimetric Analysis

Name of the Faculty:K. SundaramSubject Code:15CHU511Semester /Year:V/IIIClass:III B.Sc., ChemistrySubject:Chemistry Practical (V) - Gravimetric Analysis

Viva-Voce Questions

- 1. What is Gravimetric analysis?
- 2. Define Molarity?
- 3. What is Normality?
- 4. What is Molality?
- 5. How will you Calculates the molecular weight of salts?
- 6. Consider a 1.0000 g sample containing 75% potassium sulfate (FW 174.25) and 25% MSO₄. The sample is dissolved and the sulfate is precipated as BaSO4 (FW 233.39). If the BaSO4 ppt weights 1.4900, what is the atomic weight of M²⁺ in MSO4?
- 7. A mixture of mercurous chloride (FW 472.09) and mercurous bromide (FW 560.99) weighs 2.00 g. The mixture is quantitatively reduced to mercury metal (At wt 200.59) which weighs 1.50 g. Calculate the % mercurous chloride and mercurous bromide in the original mixture.
- 8. Why is it necessary to add an excess of calcium chloride to the unknown carbonate solution?
- 9. Calcium carbonate may form a hydrate by absorbing water from the atmosphere. How might the calculations have differed if the precipitate was allowed to dry overnight as opposed to the heating in the oven?
- 10. Calculate the following: (a) The mass of the unknown carbonate that was in the crucible.(b) The mass of the calcium carbonate solid after it was thoroughly dried. (c) The number of moles of calcium carbonates that precipitated. (d) The molar mass of the unknown carbonate.

- 11. Compare your answer from (d) to the molar masses you calculated in Question 1 of the PreLab questions. Identify the unknown carbonate.
- 12. Why is your calculated molar mass different than the actual molar mass? What are some sources of error?
- 13. How will you calculate the Molecular mass of BaSO₄ and PbSO₄?
- 14. What is the actual mass of the followings:
 - i) Ba²⁺
 - ii) Mg²⁺
 - iii) Pb²⁺
 - iv) Ca²⁺
- 15. Why is the solution acidified with HCl before adding the precipitant?
- 16. What is the role of indicator in the Estimation?
- 17. What is Buffer solution?
- 18. How will you make the Buffer Solution?
- 19. How would you prepare 0.1 N solutions?
- 20. How do you prepare molarity solutions of Inorganic salts?
- 21. What is the molecular formula of the followings
 - i) Calcium oxalate. monohydrate
 - ii) Potassium chromate
 - iii) Lead acetate
 - iv) Barium chromate
 - v) DMG
 - vi) Magnesium oxalate
- 22. What is precipitation reaction?
- 23. What are the factors that affect the precipitation?
- 24. Why we do the Inorganic salt estimations?
- 25. What is the digestion of the precipitation?
- 26. Why you need desiccators in gravimetric analysis?
- 27. What are the basic steps involved in gravimetric analysis?
- 28. Define Equivalent Mass?
- 29. How will you calculate the Gravimetric Factor?
- 30. How many moles of Ba^{2+} present in the $BaSO_4$?
- 31. What is common ion effect?
- 32. Explain the term "completion of precipitation"?
- 33. What is sampling?
- 34. What is occlusion?
- 35. If DMG is soluble in water?
- 36. What is the IUPAC name of oxine?
- 37. What is Avagadro number?
- 38. What are the advantages of Gravimetric analysis?
- 39. What are the Disadvantages of Gravimetric Analysis?
- 40. How will you prepare % solutions in gravimetric Analysis?