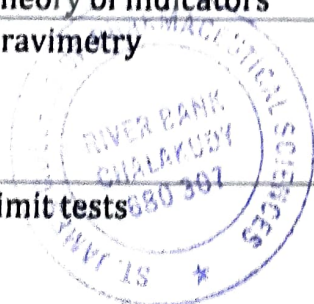


**St. James' College of Pharmaceutical Sciences**  
**St. James' medical Academy**  
**River Bank, Chalakudy**

<b>Programme:</b>	PharmD	<b>Sem/Year:</b>	1 <sup>st</sup> Year
<b>Name of Course: (Subject)</b>	Pharmaceutical Inorganic Chemistry	<b>Course Code:</b>	1.5 PIC
<b>Teaching faculty of the course</b>	Dr. David Paul		

**Summary of the Lecture Plan**

Topic	Lectures	Hours
Errors	Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures.	5
Volumetric analysis	Pharmaceutical analysis- Definition and scope, Different techniques of analysis, Methods of expressing concentration, Primary and secondary standards, Preparation and standardization of various molar and normal solutions	5
Acid base titration	Theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves	5
Non aqueous titration	Solvents, acidimetry/alkalimetry titrations and estimation	3
Redox titrations	Concepts of oxidation and reduction Types of redox titrations (Principles and applications) Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate.	5
Precipitation titrations	Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodium chloride	3
Complexometric titrations	Classification, metal ion indicators, masking and demasking reagents, Standardization of EDTA, estimation of Magnesium sulphate, calcium gluconate	5
Theory of indicators	Ostwalds & Quinonoid theory	1
Gravimetry	Gravimetry: Principle and steps involved in gravimetric analysis. Purity of the precipitate, coprecipitation and post precipitation, Estimation of barium sulphate	5
Limit tests	Impurities in pharmaceutical substances: History of Pharmacopoeia, Sources and types of impurities, Limit test for Chlorides and Sulphates Modified limit test for Chlorides and Sulphates Limit test for Iron Limit test for Heavy metals Limit test for Lead Limit test for Arsenic	8
Medicinal Gases	Oxygen, Nitrogen, Helium, Carbon dioxide	2
Acidifiers	Acids and Bases: Buffers, Water, Ammonium	2



D.R. KRISHNAROMAR B.Sc. M.Pharm., Ph.D  
 Principal  
 St. James' College of Pharmaceutical Sciences  
 St. James' Medical Academy, GH Road  
 River Bank, Chalakudy - 680 307

	chloride and Dil. HCl	
Antacids	Ideal properties of antacids, combinations of antacids, Sodium Bicarbonate, Aluminum hydroxide gel, Magnesium hydroxide mixture	2
Cathartics	Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite	2
Electrolyte replenishers	Major extra and intracellular electrolytes: Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride, Potassium chloride, Calcium gluconate and Oral Rehydration Salt (ORS), Physiological acid base balance.	3
Essential Trace elements	Transition elements and their compounds of pharmaceutical importance : Iron and haematinics, mineral supplements	3
Antimicrobials	Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide, Chlorinated lime, Iodine and its preparations	3
Pharmaceutical Aids	Anti-oxidants, preservatives, filter aids, adsorbents, diluents, excipients, suspending agents, colorants etc.	3
Dental Products	Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.	3
Miscellaneous compounds	Expectorants: Potassium iodide, Ammonium chloride Emetics: Copper sulphate, Sodium potassium tartarate Haematinics: Ferrous sulphate, Ferrous gluconate Poison and Antidote: Sodium thiosulphate, Activated charcoal, Sodium nitrite Astringents: Zinc Sulphate, Potash Alum	5
Radio Pharmaceuticals	Radio activity, Measurement of radioactivity, Properties of $\alpha$ , $\beta$ , $\gamma$ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide $I^{131}$ , Storage conditions, precautions & pharmaceutical application of radioactive substances.	3

**Major issues or Core aspects addressed/ covered:**

1.5 Pharmaceutical Inorganic Chemistry

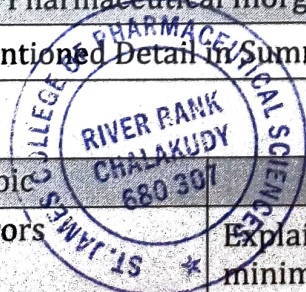
Mentioned Detail in Summary

Dr.K. KRISHNAKUMAR Bsc., M.Pharm., Ph.D

Topic

Errors

Explain in detail : Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures.



Sample Questions from Lectures

Principal  
St. James College of Pharmaceutical Sciences  
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River Bank, Chalakudy - 680 307

Volumetric analysis	Write a note on : Pharmaceutical analysis- Definition and scope, Different techniques of analysis, Methods of expressing concentration, Primary and secondary standards, Preparation and standardization of various molar and normal solutions.
Acid base titration	Give the theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves.
Non aqueous titration	Briefly explain: Solvents, Non Aqueous acidimetry/alkalimetry titrations and estimation.
Redox titrations	Write briefly on the Concepts of oxidation and reduction Types of redox titrations (Principles and applications) Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate.
Precipitation titrations	Explain: Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodium chloride
Complexometric titrations	Write in detail Classification, metal ion indicators, masking and demasking reagents, Standardization of EDTA, estimation of Magnesium sulphate, calcium gluconate
Theory of indicators	Give Ostwalds & Quinonoid theory
Gravimetry	Explain in detail Gravimetry: Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of barium sulphate
Limit tests	Write a note on /Principle/ Procedure behind Impurities in pharmaceutical substances: History of Pharmacopoeia, Sources and types of impurities, Limit test for Chlorides and Sulphates Modified limit test for Chlorides and Sulphates Limit test for Iron Limit test for Heavy metals Limit test for Lead Limit test for Arsenic
Medicinal Gases	Principle/ Procedure of Preparation and Assay /Uses of Oxygen, Nitrogen, Helium, Carbon dioxide
Acidifiers	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Acids and Bases: Buffers, Water. Ammonium chloride and Dil. HCl
Antacids	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Ideal properties of antacids, combinations of antacids, Sodium Bicarbonate, Aluminum hydroxide gel, Magnesium hydroxide mixture
Cathartics	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite
Electrolyte replenishers	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Major extra and intracellular electrolytes: Functions of major physiological ions. Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance.
Essential Trace elements	Explain in detail Transition elements and their compounds of pharmaceutical importance : Iron and haematinics, mineral supplements
Antimicrobials	Principle/ Procedure of Preparation and Assay/Identification tests/

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DR. K. KRISHNAKUMAR Bsc., M.Pharm., Ph.D.  
Principal  
St. James College of Pharmaceutical Sciences  
Riverside, Chalaky, Gh Road

	Test for purity/Uses of Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide, Chlorinated lime, Iodine and its preparations
Pharmaceutical Aids	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Anti-oxidants, preservatives, filter aids, adsorbents, diluents, excipients, suspending agents, colorants etc.
Dental Products	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.
Miscellaneous compounds	Principle/ Procedure of Preparation and Assay/Identification tests/ Test for purity/Uses of Expectorants: Potassium iodide, Ammonium chloride Emetics: Copper sulphate, Sodium potassium tartarate Haematinics: Ferrous sulphate, Ferrous gluconate Poison and Antidote: Sodium thiosulphate, Activated charcoal, Sodium nitrite Astringents: Zinc Sulphate, Potash Alum
Radio Pharmaceuticals	Explain briefly on Radio activity, Measurement of radioactivity, Properties of $\alpha$ , $\beta$ , $\gamma$ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide $I^{131}$ , Storage conditions, precautions & pharmaceutical application of radioactive substances.



*K. S.*  
Dr.K. KRISHNAKUMAR Bsc., M.Pharm., Ph.D

Principal  
St. James College of Pharmaceutical Sciences  
St. James Medical Academy, GH Road  
River Bank, Chalakudy - 680 307