SILVER OAK UNIVERSITY

OAK COLLEGE OF PHARMACY (067)

Programme Name: B.Pharm (18)

Subject Name: Pharmaceutical Inorganic Chemistry

Subject Code: 1180673104

Semester: I

Prerequisite:

This subject deals with the monographs of inorganic drugs and pharmaceuticals.

Objective: Upon completion of course, student shall be able to

1. Know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.
2. Understand the medicinal and pharmaceutical importance of inorganic compounds

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
3	1	4	8	6

Content:

Unit No.	Contents	Teaching Hours	Weightage %
1	**Impurities in pharmaceutical substances**: History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate General methods of preparation, assay for the compounds superscripted with asterisk (*), properties and medicinal uses of inorganic compounds belonging to the following classes	10	22%
2	**Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity. **Major extra and intracellular electrolytes:** Functions of major physiological ions, Electrolytes used in the replacement therapy:	10	22%

	Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance. **Dental products:** Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.		
3	**Gastrointestinal agents** **Acidifiers:** Ammonium chloride* and Dil. HCl **Antacid**: Ideal properties of antacids, combinations of antacids, Sodium 40 Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture **Cathartics:** Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite **Antimicrobials:** Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations	10	22%
4	**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 nitrite333 **Astringents**: Zinc Sulphate, Potash Alum	08	18%
5	**Radiopharmaceuticals**: Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half-life, radio isotopes and study of radio isotopes - Sodium iodide I131 , Storage conditions, precautions & pharmaceutical application of radioactive substances.	07	16%

Course Outcome: After Completion of syllabus students will able to

Sr. No.	CO statement	Unit No
CO-1	To know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals.	1
CO-2	To integrate the different concept of acid, base and buffer, major extra and intracellular fluids and dental products.	2
CO-3	To understand the pharmaceutical importance of inorganic compounds of Gastrointestinal agents.	3
CO-4	To have been introduced to a variety of inorganic drug classes like Expectorant, Emetics, Poison and antidote and astringent.	4
CO-5	Understanding of concepts and principles of radiopharmaceuticals	5

Teaching & Learning Methodology: -

The various methods or tools follows by the faculties to teach the above subject are:

1. Chalk and board method
2. Experiential learning.
3. Power point presentation and slide show method

Experiments:

Students will perform following Experiments

Limit tests for following ions

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

Identification test

Magnesium hydroxide

Ferrous sulphate

Sodium bicarbonate

Calcium gluconate

Copper sulphate

Test for Purity

Swelling power of Bentonite

Neutralizing capacity of aluminum hydroxide gel

Determination of potassium iodate and iodine in potassium Iodide

Preparation of inorganic pharmaceuticals

Boric acid

Potash alum

Ferrous sulphate

Books Recommended:

1. Anand & Chatwal, Inorganic Pharmaceutical Chemistry
2. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London, 4 th edition.
3. A.I. Vogel, Text Book of Quantitative Inorganic analysis
4. Indian Pharmacopoeia
5. P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3 rd Edition
6. Bentley and Driver's Textbook of Pharmaceutical Chemistry
7. M.L Schroff, Inorganic Pharmaceutical Chemistry

CO-PO-PSO Matrix:

Co. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO-1	3	2	2	2	1	2	-	2	1	2	2	2	3
CO-2	3	2	2	2	1	2	-	1	1	2	2	2	3
CO-3	3	2	1	2	1	2	-	2	1	2	2	2	3
CO-4	3	3	2	3	3	1	-	2	2	3	3	3	3
CO-5	3	1	2	2	2	2	-	1	2	2	2	2	2