

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.Pharm SEMESTER: I

**Subject Name: PHARMACEUTICAL INORGANIC CHEMISTRY**

**Subject Code: BP104TP**

**Scope:** This subject deals with the monographs of inorganic drugs and pharmaceuticals

**Objectives:** 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

Sr No	Course Contents	Total Hrs
1	<b>Impurities in pharmaceutical substances:</b> 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 <b>General methods of preparation</b> , assay for the compounds superscripted with <b>asterisk (*)</b> , properties and medicinal uses of inorganic compounds belonging to the following classes	10
2	<b>Acids, Bases and Buffers:</b> 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. <b>Major extra and intracellular electrolytes:</b> 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. <b>Dental products:</b> Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.	10
3	<b>Gastrointestinal agents</b> <b>Acidifiers:</b> Ammonium chloride* and Dil. HCl <b>Antacid:</b> Ideal properties of antacids, combinations of antacids, Sodium Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture <b>Cathartics:</b> Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite <b>Antimicrobials:</b> Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations	10
4	<b>Miscellaneous compounds</b> <b>Expectorants:</b> Potassium iodide, Ammonium chloride*. <b>Emetics:</b> Copper sulphate*, Sodium potassium tartarate <b>Haematinics:</b> Ferrous sulphate*, Ferrous gluconate <b>Poison and Antidote:</b> Sodium thiosulphate*, Activated charcoal, Sodium nitrite <b>Astringents:</b> Zinc Sulphate, Potash Alum	8
5	<b>Radiopharmaceuticals:</b> Radio activity, Measurement of radioactivity, Properties of $\alpha$ , $\beta$ , $\gamma$ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I131, Storage conditions, precautions & pharmaceutical application of radioactive substances.	7

## Practical

### **I 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

**II Identification test** Magnesium hydroxide Ferrous sulphate Sodium bicarbonate Calcium gluconate  
Copper sulphate

### **III Test for purity**

Swelling power of Bentonite

Neutralizing capacity of aluminum hydroxide gel

Determination of potassium iodate and iodine in potassium Iodide

### **IV Preparation of inorganic pharmaceuticals**

Boric acid Potash alum Ferrous sulphate

### **Recommended Books (Latest Editions)**

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