

## BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

45 Hours

### Course Content:

#### Unit-I

10 Hours

**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.

#### Unit-II

10 Hours

**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: 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.

#### Unit-III

10 Hours

##### Gastrointestinal agents

**Acidifiers:** Ammonium chloride\* and Dil. HCl.

**Antacid:** Ideal properties of antacids, combinations of antacids, Sodium 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.

#### Unit-IV

08 Hours

##### Miscellaneous compounds

**Expectorants:** Potassium iodide, Ammonium chloride\*.

**Emetics:** Copper sulphate\*, Sodium potassium tartrate.

**Hematinics:** Ferrous sulphate\*, Ferrous gluconate.

**Poison and Antidote:** Sodium thiosulphate\*, Activated charcoal, Sodium nitrite<sup>333</sup>.

**Astringents:** Zinc Sulphate, Potash Alum.

**Unit-V****07 Hours**

**Radiopharmaceuticals:** 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.

## **BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)**

**4 Hours / Week**

### **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)**

- Pharmacopoeia of India, the Controller of Publications, Delhi.
- British Pharmacopoeia, Her Majesty's Stationary Office, University Press, Cambridge.
- United States Pharmacopoeia (National Formulary).
- Inorganic, Medicinal & Pharmaceutical Chemistry by Block J.H., Roche E., Soine, T. and Wilson, C., Lea & Febiger, Philadelphia.
- Bentley and Driver's Textbook of Pharmaceutical Chemistry by Atherden L.M., Oxford University Press, London.
- Inorganic Chemistry by Miessler, G.L. and Tarr, D.A., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), New Delhi.
- Vogel's Qualitative Inorganic Analysis by Svehla, G. and Sivasankar, B. Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), New Delhi.

- Pharmaceutical Inorganic Chemistry by Rao K.S. and Suresh C.V., PharmaMed Press, Hyderabad.
- Pharmaceutical Inorganic Chemistry: Theory and Practice by Chenchu Lakshmi, N.V., Dorling Kindersley (India) Pvt. Ltd. (Pearson Education), New Delhi.
- Bentley and Driver's Textbook of Pharmaceutical Chemistry, Oxford University Press, New Delhi.
- Inorganic Pharmaceutical Chemistry by M.L. Schroff, National Book Centre, Kolkata.