SUBJECT - PHARMACEUTICAL CHEMISTRY-I

Branch/Discipline – Pharmacy

Minimum Number of class tests to be conducted - 3

Theory (75 hours)

Course Contents –

1. General discussion on the following inorganic compounds including important physical & chemical properties: medicinal & Pharmaceutical uses, storage conditions & chemical in compatibility.
    (A) Acids, bases & buffers-Boric acid*, Hydrochloric acid, storage ammonium hydroxide, Calcium hydroxide, Sodium hydroxide & official buffers.
    (B) Antioxidants-Hypo phosphorous acid, Sulpher dioxide, Sodium bisulphate, Sodium meta-bisulphate, Sodium thiosulphate, Nitrogen & Sodium Nitrite.
    (C) Gastrointestinal agents-
        i. Acidifying agents-Dilute hydrochloric acid
        ii. Antacids-Sodium bicarbonate, Aluminium hydroxide gel, Aluminium Phosphate, Calcium carbonate, Mangnesium carbonate, Magnesium trisilicate, Magnesium oxide, combinations of antacid preparations.
        iii. Protectives and Adsorbents-Bismuth sub-carbonate and Kaolin.
        iv. Saline cathartics-Sodium Potassium tar-trate and Magnesium sulphate.
    (D) Topical Agents-
    (E) Dental Products-Sodium fluoride, stannous fluoride, Calcium carbonate, Sodium Mata phosphate, Dicalcium phosphate, Strontium caloride, Zink chloride.
    (F) Inhalants-Oxygen, Carbon dioxide, Nitrous oxide.
    (G) Respiratory stimulants-Ammonium chloride.
    (H) Expectorants & Emetics-Ammonium chloride*, Potassium iodide, Antimony Potassium tartrate.
    (I) Antidotes-Sodium nitrite.

2. Major Intra & Extra cellular electrolytes
    (A) Electrolytes used for replacement therapy-Sodium Chloride & its preparations, Potassium chloride & its preparations.

(B) Physiological acid-base balance & electrolytes used-Sodium acetate, Potassium acetate, Sodium bicarbonate injection, Sodium citrate, Potassium citrate, Sodium lactate injections, Ammonium chloride and its injection.

(C) Combination of oral electrolyte powders & solutions.

3. Inorganic Official compounds of Iron, Iodine, & Calcium Ferrous Sulphate & Calcium gluconate.
4. Radio pharmaceuticals & Contrast media-Radio activity-Alpha, Beta & Gamma Radiations, Biological effects of radiations, Measurement of radioactivity G.M. Counter-Radio isotopes-their uses, storage & precautions with special reference to the official preparations Radio opaque Contrast Media-Barium sulphats.
5. Quality control of Drugs & Pharmaceuticals-Importance of quality control, significant errors, methods used for quality control, sources of impurities in Pharmaceuticals. Limit tests for Arsenic chloride, sulphate, iron & Heavy metals.
6. Identification tests for cations & anions as per Indian Pharmacopoeia.

PRACTICAL (75 Hours)

1. Identification tests for inorganic compounds particularly drugs & pharmaceuticals.
2. Limit test for chloride, sulphate, Arsenic, Iron & Heavy metals.
3. Assay of inorganic Pharmaceuticals involving each of the following methods of compounds marked with (*) under theory.
    a. Acid-base titrations (at least 3)
    b. Redox titrations (One each of Permanganometry and iodimetry).
    c. Precipitation titration (at least 2)
    d. Complexometric titrations (Calcium and Magnesium).

Book recommended (Latest editions)

1. Indian Pharmacopoeia.