

Model Answers (AS-2500)
Guru Ghasidas Vishwavidyalaya, Bilaspur
B.Pharm. Ist Semester Examination
Subject: Pharmaceutical Chemistry-I (Inorganic Chemistry)

SECTION A:

- 1(i). Anti-caries agents are the agents which prevents tooth decay and consequently caries. e.g.: Stannous fluoride
- 1(ii). The term purgative is used for the strong cathartics which causes the complete evacuation of bowel. e.g.: Magnesium Sulphate
- 1(iii). Gastric acidifiers are the agents which are used for the treatment of hypochlorhydria or achlorhydria (absence or insufficient secretion of gastric HCl). e.g.: Hydrochloric acid
- 1(iv). Barium Sulphate is used as a radiopaque contrast media for the X-ray examination of the gastrointestinal tract. It is administered in the form of suspension.
- 1(v). Kaolin is chemically purified native hydrated aluminum silicate with chemical formula $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$
- 1(vi). Emetics are the agents which induces vomiting. These act either directly by stimulation of chemoreceptor trigger zone or reflexly by irritant action on GIT. e.g.: Copper Sulphate
- 1(vii). Bismuth subcarboboate is used as mild antacid, astringent, dusting powder and antiseptic.
- 1(viii). Poisons may be defined as any substance administered by any route produces ill health, disease or death. e.g.: Cyanide poisoning
- 1(ix). The chemical formula of Chlorinated lime is $\text{Ca}(\text{OCl})\text{Cl}$.
- 1(x). Units for the measurement of radioactivity are Curie (Ci) and Becquerel (Bq).
- 1(xi). Antiseptics are the agents which prevents sepsis by destroying or inhibiting the growth of microorganism on living tissues. e.g.: H_2O_2
- 1(xii). Sodium fluoride is used as an anti-caries agent for the prophylaxis of dental caries. It makes teeth more resistant to decay and bacteria that cause cavities. It is also a constituent of some insecticide and rodenticide.

SECTION B:

- 2.** Arrhenius concept: According to this concept, acids are substances which are capable of producing hydrogen ions while bases are substances capable of producing hydroxide ions when dissolved in water. Examples: HCl as Arrhenius acid and NaOH as Arrhenius base. Definition of Strong acid/ Strong base and weak acid/ weak base as per Arrhenius concept.

Limitation of Arrhenius concept: Unable to explain basic nature of NH_3 and acidic nature of CO_2 or SO_2 .

Lewis Acid- Base concept: According to this concept, acid is an electro-deficient or electrophilic species while the bases are those species which have unshared electron pair. Therefore, a base is an electron pair donor while an acid is an electron pair acceptor. e.g.: NH_3 as Lewis base and BF_3 as Lewis acid

- 3.** Limit test of chloride is based upon interaction of chloride with silver nitrate in the presence of nitric acid. It should cover the chemical reaction of chloride with silver nitrate along with the general procedure used for the limit test as per IP and the importance of nitric acid in limit test for chloride.
- 4.** Systemic antacids are also known as absorbable antacids. These antacids are soluble, readily absorbable and capable of producing systemic electrolyte alterations and alkalosis. e.g.: Sodium Bicarbonate. The method of preparation, properties, storage condition and pharmaceutical uses of Sodium Bicarbonate should be discussed under separate heads.
- 5.** The methods of preparation, properties, storage condition and pharmaceutical uses of should be discussed under separate heads for Carbon dioxide and Hydrogen Peroxide.
- 6.** Cathartics are the agents which are used to relieve constipation. The term cathartic is used for mild cathartic and whereas purgative is used for strong cathartic.

The cathartics should be discussed under the following heads with suitable examples:

a) Mild Purgative or laxatives

b) Strong Purgatives

Method of preparation, properties and uses of Magnesium sulphate should cover following key points:

Chemical formula: $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ and Molecular weight 246.5.

Preparation and Properties: It occurs as small odourless, colourless crystals or white crystalline powder with a cooling saline bitter taste.

It crystallizes from cold water in form of rhombic prisms or needles of heptahydrate shape. An aqueous solution is acidic to litmus paper.

Use: It is widely used as oral saline cathartic. It is also used as an antidote for barium, barbiturate and other types of poisoning. Wet dressings of MgSO_4 are sometimes used for the treatment of boils.

7. Short notes:

- a) Iron salts as haematinics should cover the composition of ferrous sulphate, ferrous gluconate and ferrous fumarate along with formulations in which they will be useful for the treatment of Anemia.
- b) Expectorants: Expectorants are the agents which promote secretions from the trachea, bronchi or lungs, and hence used in the treatment of cough. It should also cover the mechanism of expectorant action along with a suitable example like ammonium chloride.
- c) Electrolytes used for acid-base balance should include common conditions leading to electrolyte imbalance and their management by administration of suitable electrolytes and fluids.