CBSE Test Paper-04

Class - 12 Chemistry (Chemistry in Everyday Life)

1. The difficulty in using Alitame as artificial sweetener is
   a. It adds calories
   b. It is a high potency sweetener
   c. It is metabolized in the body
   d. It is not stable at high temperature
2. In seasonal rhinitis and conjunctivitis, the drugs administered are
   a. Anti – histamine
   b. Sulpha drugs
   c. Hypnotics
   d. Anti – microbials
3. The element in soap which makes it soft on skin is
   a. Magnesium
   b. Potassium
   c. Sodium
   d. Calcium
4. Sulphonamides act as:
   a. Hypnotics
   b. Antidepressants
   c. Antimicrobials
   d. Antiseptics
5. A soap helps to reduce body odour due to bacterial decomposition because it contains
   1. Antibiotic
   2. Antioxidants
   3. Perfume
   4. Antiseptic
6. Define chemotherapy.
7. Write the name of an antacid which is often used as medicine.
8. Name two narcotics which are used as analgesics.

9. What are antibiotics?

10. Name the sweetening agent used in the preparation of sweets for a diabetic patient.

11. a. Give two example of macromolecules.
    b. List two major class of antibiotics with an example of each class
12. Explain the following terms with suitable examples:
    i. anionic detergents
    ii. cationic detergents
    iii. non-ionic detergents

13. Why are cimetidine and ranitidine better antacids than sodium hydrogen carbonate or magnesium or aluminium hydroxide?

14. Which forces are involved in holding the drugs to the active site of enzymes?

15. Explain the cleansing action of soaps.

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Solutions

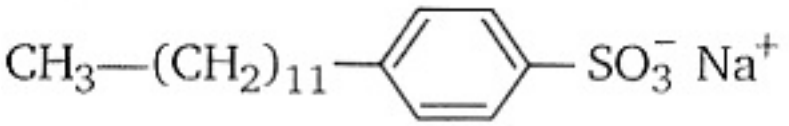
1. (b) It is a high potency sweetener
   Explanation: Alitame is high potency sweetener, although it is more stable than aspartame, the control of sweetness of food is difficult while using it.
2. (a) Anti – histamine
   Explanation: Histamine is a potent vasodilator. It has various functions. It contracts the smooth muscles in the bronchi and gut and relaxes other muscles, such as those in the walls of fine blood vessels. Histamine is also responsible for the nasal congestion associated with common cold and allergic response to pollen. So anti-histamine is given to treat seasonal rhinitis and conjunctivitis. They interfere with the natural action of histamine by competing with histamine for binding sites of receptor where histamine exerts its effect and thus relieve the symptoms.
3. (b) Potassium
   Explanation: Generally potassium soaps are soft to the skin than sodium soaps. These can be prepared by using potassium hydroxide solution in place of sodium hydroxide. So it is presence of potassium which makes the soap soft on skin.
4. (c) Antimicrobials
   Explanation: Antimicrobials
5. (d) Antiseptic
   Explanation: An antiseptic bithionol (also called bithional) is added to soaps to impart antiseptic properties.
6. The use of chemicals for therapeutic use is called chemotherapy.
7. Ranitidine (Zantac)
8. Morphine, Codeine.
9. Antibiotics are the drugs used to treat infections because of their low toxicity for humans & animals. They are the substances produced wholly or partly by chemical synthesis, which in low concentration inhibit the growth or destroys the

microorganisms by intervening in their metabolic processes.

10. For a diabetic patient the sweetening agents used are saccharin,aspartame etc.Saccharin is 500 times as sweet as sucrose while aspartame which is an peptide is 160 times sweeter than sucrose.

11. a. Carbohydrates, lipids, protein, enzyme etc.
    b. Two major classes of antibiotics are Bactericidal and Bacteriostatic. Examples are:
        1. Bactericidal: (i) Penicillin, (ii) Aminoglycosides, (iii) Ofloxacin
        2. Bacteriostatic: (i) Erythromycin, (ii) Tetracycline, (iii) Chloramphenicol.
           The full range of microorganisms attacked by an antibiotic is called its spectrum.
           Based on spectrum antibiotics can be divided into two classes:
            a. Broad spectrum antibiotics, e.g., Chloramphenicol
            b. Narrow spectrum antibiotics, e.g., PenicillinG.

12. i. Anionic detergents: These are so-called because a large part of their molecules are anions. These are of two types:
        a. Sodium alkyl sulphates. For example, sodium lauryl sulphate, $C_{11}H_{23}CH_2OSO_3Na$
        b. Sodium alkyl benzene sulphonates. The most widely used domestic detergent in sodium in 4 - (1-dodecyl) benzenesulphonate (SDS).



Sodium 4-(1-dodecyl)benzenesulphonate

    ii. Cationic detergents. These are quaternary ammonium salts. For example, cetyltrimethylammonium chloride.

$$[CH_3(CH_2)_{15}\overset{+}{N}(CH_3)_3]Cl^-$$

Cetyltrimethylamoonium chloride

    iii. Neutral or non-ionic detergents. These are esters of high molecular mass alcohols with fatty acids. For example, polyethylene glycol stearate.

$CH_3(CH_2)_{16}COO(CH_2CH_2O)_nCH_2CH_2OH$

Polyethylene glycol stearate

13. Sodium hydrogen carbonate or magnesium or aluminium hydroxide neutralize the excess HCl and raise the pH to an appropriate level in stomach. Therefore, these antacids controls only the symptoms and not the cause. In contrast, cimetidine and ranitidine are better antacids because they prevent the interaction of histamine with the receptors present in the stomach wall and thus release lesser amount of HCl.

14. Either of the following forces can be involved in holding drugs to the active sites of enzymes.
    (i) Ionic bonding
    (ii) Hydrogen bonding
    (iii) Dipole - dipole interaction
    (iv) van der Waals force

15. Soaps contain chemical substances which concentrate at the surface of the solution or interfaces, from surface films, reduce surface tension of the solution and help in removing dirty and dust by emulsifying grease are called surface active agents or surfactants. The molecule of surfactants contains two characteristic group one which is water soluble (hydrophilic part) and other which is oil soluble called (hydrophobic part).