CBSE Test Paper-05

Class - 12 Chemistry (Chemistry in Everyday Life)

1. Anti – histamines stop allergic reactions by
   a. inhibiting histamine production
   b. competing with histamine for binding sites of histamine receptor
   c. reacting with the allergens like pollen
   d. reacting with allergy reactions orally
2. A drug which is antipyretic as well as analgesic is:
   a. Aspirin
   b. Codeine
   c. Morphine
   d. Heroin
3. Which is not true for a detergent molecule?
   a. It is a sodium salt of fatty acid
   b. It is a surface active agent
   c. It is not easily biodegraded
   d. It has a non polar organic part and a polar group
4. The antibacterial properties of Penicillium fungus were discovered by
   a. Robert G Edwards
   b. Alexander Fleming
   c. Watson and Crick
   d. Mendel
5. Aspirin is a / an:
   a. Antipyretic
   b. Antiseptic
   c. Antihistamine
   d. Antibiotic
6. What are antihistamines? Give two examples.
7. Hair shampoos belong to which class of synthetic detergents?
8. What are food preservatives?

9. Why is use of aspartame limited to cold foods and drinks?
10. How are synthetic detergents better than soaps?
11. What problem arises in using alitame as artificial sweetner?
12. Describe the following with suitable examples: (i) Preservatives (ii) Artificial sweetening agents.
13. How do antiseptics differ from disinfectants? Give one example of each type.
14. Low level of noradrenaline is the cause of depression. What type of drugs are needed to cure this problem? Name two drugs.
15. Why do soaps not work in hard water? Explain.

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Solutions

1. (b) competing with histamine for binding sites of histamine receptor
   Explanation: Synthetic drugs, brompheniramine (Dimetapp) and terfenadine (Seldane), act as antihistamines. They interfere with the natural action of histamine by competing with histamine for binding sites of receptor where histamine exerts its effect.
2. (a) Aspirin
   Explanation: Aspirin is a non-narcotic analgesic which inhibits the synthesis of chemicals known as prostaglandins which stimulate inflammation in the tissue and cause pain. These drugs are effective in relieving skeletal pain such as that due to arthritis. These drugs have many other effects such as reducing fever (antipyretic).
3. (a) It is a sodium salt of fatty acid
   Explanation: Anionic detergents are sodium salts of sulphonated long chain alcohols or hydrocarbons. Cationic detergents are quarternary ammonium salts of amines with acetates, chlorides or bromides as anions. Cationic part possesses a long hydrocarbon chain and a positive charge on the nitrogen atom. Non-ionic detergents do not contain any ion in their constitution. One such detergent is formed when the stearic acid reacts with polyethylene glycol. Thus detergents are not a sodium salt of a fatty acid.
4. (b) Alexander Fleming
   Explanation: The real revolution in antibacterial therapy began with the discovery of Alexander Fleming in 1929, of the antibacterial properties of a Penicillium fungus.
5. (a) Antipyretic
   Explanation: Aspirin is a non narcotic analgesic which also reduces fever so it is antipyretic.
6. Antihistamines prevent the interaction of histamine with the receptors present in the stomach wall e.g. Rantidine, Soldane etc.
7. Cationic detergents
8. Food preservatives are chemicals that prevent food from spoilage due to microbial growth. Table salt, sugar, vegetable oil, sodium benzoate and salts of propanoic acid are some examples of food preservatives.

9. Aspartame is non-saccharide sweetener which is used as sugar substitute. Its use is limited to cold drinks and food to keep its consumption on the lower side and within range to avoid its harmful effect. Aspartame breaks down to give one of its products as phenylalanine which is harmful. Aspartame becomes unstable at cooking temperature. This is the reason why its use is limited to cold foods and drinks.
10. Synthetic detergents can be used in hard water as well as in acidic solution. Because sulphuric acids and their calcium and magnesium salts are soluble n water but the fatty acids and their calcium and magnesium salts are insoluble.
11. Alitame is a high potency artificial sweetner. Therefore, it is difficult to control the sweetness of the food to which it is added.
12. i. **Preservative:** Preservatives are the substances used to prevent spoilage of food due to microbial growth. Examples - Sodium benzoate, common salt
    ii. **Artificial sweetening agents:** These are the chemical substances which are used to create sweet taste in food items in place of sugar. Example - Saccharin, Aspartame.
13. Antiseptics are chemical substances which prevent the growth of micro-organism and may even kill them but are not harmful to human and animal tissues. For example dettol. Disinfectants are chemical substances which kill micro organism but are not safe to be applied to the living tissues. For example - phenol.
14. If the level of noradrenaline is low for some reason, the signal sending activity becomes low, and the person suffers from depression. In such situations and depressant drugs are required.
    'Iproniazid and phenelzine' are two such drugs, these drugs inhibit the enzymes which catalyse the degradation of noradrenaline.
15. Soaps are sodium or potassium salts of long-chain fatty acids. Hard water contains calcium and magnesium ions. When soaps are dissolved in hard water, these ions displace sodium or potassium from their salts and form insoluble calcium or magnesium salts of fatty acids. These insoluble salts separate as scum.
    $$\underset{Soap}{2C_{17}H_{35}COONa} + CaCl_2 \rightarrow 2NaCl + \underset{Isooperatornameluble\ calcium\ stearate(soap)}{(C_{17}H_{35}COO)_2Ca}$$
    This is the reason why soaps do not work in hard water.