

NCERT SOLUTIONS

CLASS-XII CHEMISTRY

CHAPTER-16

CHEMISTRY IN EVERYDAY LIFE

Question 1:

Why should we distinguish drugs in different ways?

Answer :

The reason for classification of drugs are as follows:

(i) On the basis of pharmacological effect:

This classification is useful for doctors. It provides a whole range of drugs for the classification of drugs for various diseases

(ii) On the basis of drug action:

This is based on the action of a drug on a particular biochemical process

Thus this classification is important.

(iii) On the basis of chemical structure:

The range of drugs sharing common structural features and having similar pharmacological activity.

(iv) On the basis of molecular targets:

Some drugs have the same mechanism of action on targets. This classification is useful in such cases.

Question 2:

Explain drug targets or target molecules used in medicinal chemistry.

Answer

Drug targets are the key molecule that is responsible for certain metabolic pathways that can cause particular diseases. Proteins, nucleic acids, carbohydrates, and lipids are drug targets.

Chemical agents that are used to block these target molecules by fusing with the active sites of key molecules are called drugs.

Question 3:

Give some macromolecules that are chosen as drug targets.

Answer

Carbohydrates, lipids, proteins, and nucleic acids are the macromolecules that are chosen as drug targets

Question 4:

Medicine should not be taken without consulting a doctor. Why is it like that?

Answer

Medicines should not be taken without consulting a doctor because it can bind to more than one receptor site. Thus it can be harmful to some receptor sites. Medicines, when taken in higher doses, can cause harmful effects. So medicines can be poisonous.

Question 5:

What is chemotherapy?

Answer

Chemotherapy is the use of chemicals for therapeutic effects. Using chemicals for prevention, diagnosis and treatment of diseases are examples

Question 6:

Name the forces which are involved in holding the drugs to the active site of enzymes?

Answer

The forces responsible are

(1) Ionic bonding

(2) Hydrogen bonding

(3) Dipole – dipole interaction

(4) van der Waals force

Question 7:

Antacids and antiallergic drugs intervene with the function of the histamines, and why do they not intervene with each other?

Answer

Certain drugs affect particular receptors only. Antacids and antiallergic drugs do not intervene with each other because they work on different receptors. This is the reason why antacids and antiallergic drugs intervene with the function of histamines but not with each other.

Question 8:

Level of noradrenaline if low can cause depression. Name the kind of drugs used to solve this problem? Give the names of two drugs.

Answer

Anti-depressant drugs are used to reduce the effect of depression. These drugs contain enzymes which catalyze the degradation of the noradrenaline, neurotransmitter. Therefore the neurotransmitter is metabolized slowly and can activate the receptor for a larger period of time.

Two anti-depressant drugs are:

1. Iproniazid
2. Phenelzine

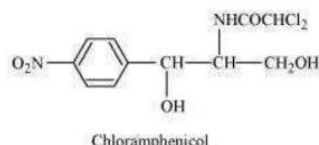
Question 9:

Explain the term 'broad spectrum antibiotics'?

Answer

Antibiotics which are effective against a large range of gram-negative and gram-positive bacteria are known as broad-spectrum antibiotics. Eg: Chloramphenicol

This is used for the treatment of acute fever, typhoid, meningitis, dysentery, pneumonia and some forms of urinary infections. Vancomycin and ofloxacin are the other two broad spectrum antibiotics. Amoxicillin and ampicillin –synthetically modified from penicillin– are also broad spectrum antibiotics.



Question 10:

How are antiseptics different from disinfectants? Give one example of each.

Answer

Antiseptics and disinfectants are really effective against micro-organisms. Antiseptics are used for living tissues like cuts, wounds, diseased skin surfaces and ulcers, while disinfectants used for objects such as floors, drainage system, instruments, etc. Disinfectants are harmful to the living tissues.

Iodine is a strong antiseptic. Tincture of iodine is applied to wounds. 1 percent solution of phenol is used as a disinfectant.

Question 11:

Ranitidine and cimetidine better antacids than sodium hydrogen carbonate or aluminum hydroxide or magnesium. Explain

Answer

Magnesium hydroxide, sodium hydrogen carbonate, and aluminum hydroxide are antacids which neutralize excess hydrochloric acid in the stomach. The reason for the release of excess acid, however, remains untreated.

Cimetidine and ranitidine are good antacids as they control the cause of acidity. These drugs avoid the interaction of histamine with the receptors present in the stomach walls and hence can decrease the amount of acid released by the stomach.

Question 12:

Which substance can be used as an antiseptic as well as a disinfectant?

Answer

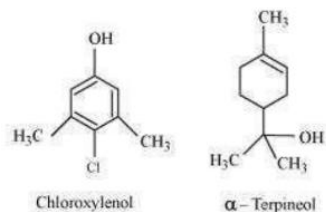
The substance which can be used as an antiseptic, as well as a disinfectant, is phenol. 0.2 percent solution of phenol can be used as an antiseptic and for disinfectant 1 percent of the solution should be used.

Question 13:

What are the main constituents of dettol?

Answer

The main constituents of dettol are chloroxylenol and α – *terpineol*.



Question 14:

What meant by tincture of iodine? Mention its use?

Answer

2-3 percent of iodine in alcohol-water mixture is referred as tincture of iodine and it is mainly applied to wounds.

Question 15:

What are Food preservatives?

Answer

Chemicals which prevent microbial growth is referred to as Food preservatives. They reduce spoilage. Sugar, table salt, vegetable oil, salts of propanoic acid and sodium benzoate (C_6H_5COONa), are some food preservatives.

Question 16:

Why is aspartame used for cold foods and drinks only?

Answer

Aspartame is unstable at cooking temperature and hence their use is only limited to cold foods and drinks.

Question 17:

What are artificial sweetening agents? Give two examples.

Answer

Those chemicals that sweeten food are referred to as artificial sweetening agents. They do not add calories to our body and also do not harm the human body. Some artificial sweeteners are sucrose, aspartame, alitame and saccharin.

Question 18:

Give the sweetening agent which is used in the preparation of sweets for diabetic patients.

Answer

Saccharin, aspartame and alitame are sweetening agents used in preparing sweets for diabetic patients.

Question 19:

What is the disadvantage in using alitame as an artificial sweetener?

Answer

Alitame is a high potency sweetener. It is difficult to control the sweetness of food while using alitame as an artificial sweetener.

Question 20:

Why is synthetic detergents better than soap?

Answer

Answer

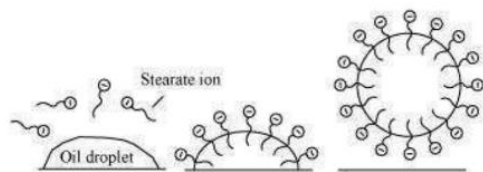
Soaps will precipitate in hard water but it won't get precipitated in soft water and hence it can be used for finding the hardness of water. Synthetic detergents, on the other hand, will not get precipitated both in hard water and soft water and cannot be used for finding the hardness of water.

Question 25:

Explain the cleansing action of soaps?

Answer

Soap molecules form micelles around an oil droplet (dirt) in such a way that the hydrophobic parts of the stearate ions attach themselves to the oil droplet and the hydrophilic parts project outside the oil droplet. Due to the polar nature of the hydrophilic parts, the stearate ions (along with the dirt) are pulled into water, thereby removing the dirt from the cloth.



Question 26:

You have water with dissolved calcium hydrogen carbonate. Will you use soap or synthetic detergents for cleaning clothes in this water? Explain

Answer

Usually, synthetic detergents are used for washing clothes. Soaps when dissolved in water containing calcium ions, these ions form insoluble salts which is of no use. Synthetic detergents are dissolved in water containing calcium ions, these ions form soluble salts that act as cleansing agents.

Question 27:

Label the hydrophilic and hydrophobic parts in the following compounds.

- (i) $\text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{OSO}_3^-\text{Na}^+$
- (ii) $\text{CH}_3(\text{CH}_2)_{15}\text{N}^+(\text{CH}_3)_3\text{Br}^-$
- (iii) $\text{CH}_3(\text{CH}_2)_{16}\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_2\text{CH}_2\text{OH}$

Answer

- (i) $\text{CH}_3(\text{CH}_2)_{10}\text{CH}_2\text{OSO}_3^-\text{Na}^+$
 hydrophobic part hydrophilic part
- (ii) $\text{CH}_3(\text{CH}_2)_{15}\text{N}^+(\text{CH}_3)_3\text{Br}^-$
 hydrophobic part hydrophilic part
- (iii) $\text{CH}_3(\text{CH}_2)_{16}\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_2\text{CH}_2\text{OH}$
 hydrophobic part hydrophilic part