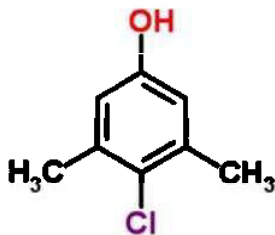


**CHEMISTRY IN EVERYDAY LIFE****1. Which chemical is responsible for the antiseptic properties of dettol.**

The two main constituents of dettol composition for its antiseptic property are Chloroxylenol & Terpineol. But among these two Chloroxylenol plays more important role. It is also known as para-chloro-meta-xyleneol, is an antiseptic and disinfectant which is used for skin disinfection and cleaning surgical instruments.

**2. What are antibiotics?**

Antibiotics are medicines used to treat infections that are caused by bacteria (germs). Antibiotics cannot treat infections caused by viruses (such as colds and the flu).

Taking antibiotics when you don't need them, like for a cold or flu, is a waste and will not help you get better.

**Penicillins** - for example, phenoxymethylpenicillin, flucloxacillin and amoxicillin.

**Cephalosporins** - for example, cefaclor, cefadroxil and cefalexin.

**Tetracyclines** - for example, tetracycline, doxycycline and lymecycline

**3. Name one substance which can act as both analgesic and antipyretic**

Aspirin (Acetyl salicylic acid) is a chemical substance which lowers body temperature and reduces pain as well. Therefore it acts both as analgesic and antipyretic

**4. Write a note on synthetic detergents**

Synthetic detergents are formulated products containing either sodium salts of alkyl hydrogen sulphates or sodium salts of long chain alkyl benzene sulphonic acids. There are three types of detergents.

**Anionic detergent** - Sodium Lauryl sulphate (SDS)

**Cationic detergent** - n-hexadecyltrimethyl ammonium chloride

**Non-ionic detergent** - (Pentaerythrityl stearate) 3-hydroxy-2,2-bis(hydroxymethyl)propyl heptanoate

**5. How do antiseptics differ from disinfectants?****Antiseptics**

Stop or slow down the growth of microorganisms. Applied to living tissue such as wounds, cuts, blurs and diseased surfaces

**Examples:** povidone-iodine, benzalkonium chloride, Dettol

**Disinfectants**

Stop or slow down the growth of microorganisms. Generally used on inanimate objects

**Examples:** Chlorine compounds, alcohol

Chloride in the concentration of 0.2 to 0.4 ppm in aqueous solution and SO<sub>2</sub> in very low concentration are disinfectants. Hydrogen peroxide.

**6. What are food preservatives?**

Preservatives are capable of inhibiting, retarding or arresting the process of fermentation, acidification or other decomposition of food by growth of microorganisms.

**Examples**

**Acetic acid** is used mainly as a preservative for the preparation of pickles and for preserved vegetables.

**Sodium metabisulphite** is used as preservatives for fresh vegetables and fruits.

## 7. Who do soaps not work in hard water?

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. This is the reason why soaps do not work in hard water.

## 8. What are drugs? How are they classified

Drug is any substance (with the exception of food and water) which, when taken into the body, alters the body's function either physically and/or psychologically. Drugs may be legal (e.g. alcohol, caffeine and tobacco) or illegal (e.g. cannabis, ecstasy, cocaine and heroin).

**Psychoactive drugs** affect the central nervous system and alter a person's mood, thinking and behaviour. Psychoactive drugs may be divided into four categories: depressants, stimulants, hallucinogens and 'other'.

### Classification of drugs:

#### i) Classification based on the chemical structure:

In this classification, drugs with a common chemical skeleton are classified into a single group.

**For example**, ampicillin, amoxicillin, methicillin etc..

#### ii) Classification based on Pharmacological effect:

In this classification, the drugs are grouped based on their biological effect that they produce on the recipient.

**For example**, the medicines that have the ability to kill the pathogenic bacteria are grouped as antibiotics.

**Examples:** Antibiotic drugs: amoxicillin, ampicillin, cefixime, cefpodoxime, erythromycin, tetracycline etc..

Antihypertensive drugs: propranolol, atenolol, metoprolol succinate, amlodipine etc

#### iii) Classification based on the target system (drug action):

In this classification, the drugs are grouped based on the biological system/process, that they target in the recipient

**For example**, the antibiotics streptomycin and erythromycin inhibit the protein synthesis (target process) in bacteria and are classified in a same group. However, their mode of action is different.

#### iv) Classification based on the site of action (molecular target):

The drug molecule interacts with biomolecules such as enzymes, receptors etc., which are referred as drug targets. We can classify the drug based on the drug target with which it binds. This classification is highly specific compared to the others. These compounds often have a common mechanism of action, as the target is the same

## 9. How the tranquilizers work in body.

Acts on the central nervous system by blocking the neurotransmitter dopamine in the brain.

Tranquilizers

They are neurologically active drugs.

**Major tranquilizers:** Haloperidol, clozapine

**Minor tranquilizers:** Diazepam (Valium), alprazolam

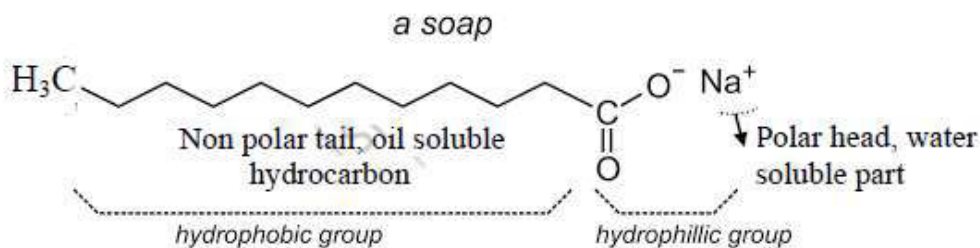
## 10. Write the structural formula of aspirin.



## 11. Explain the mechanism of cleansing action of soaps and detergents

### The cleansing action of soap:

To understand how a soap works as a cleansing agent, let us consider sodium palmitate an example of a soap. The cleansing action of soap is directly related to the structure of carboxylate ions (palmitate ion) present in soap. The structure of palmitate exhibit dual polarity. The hydrocarbon portion is non polar and the carboxyl portion is polar.

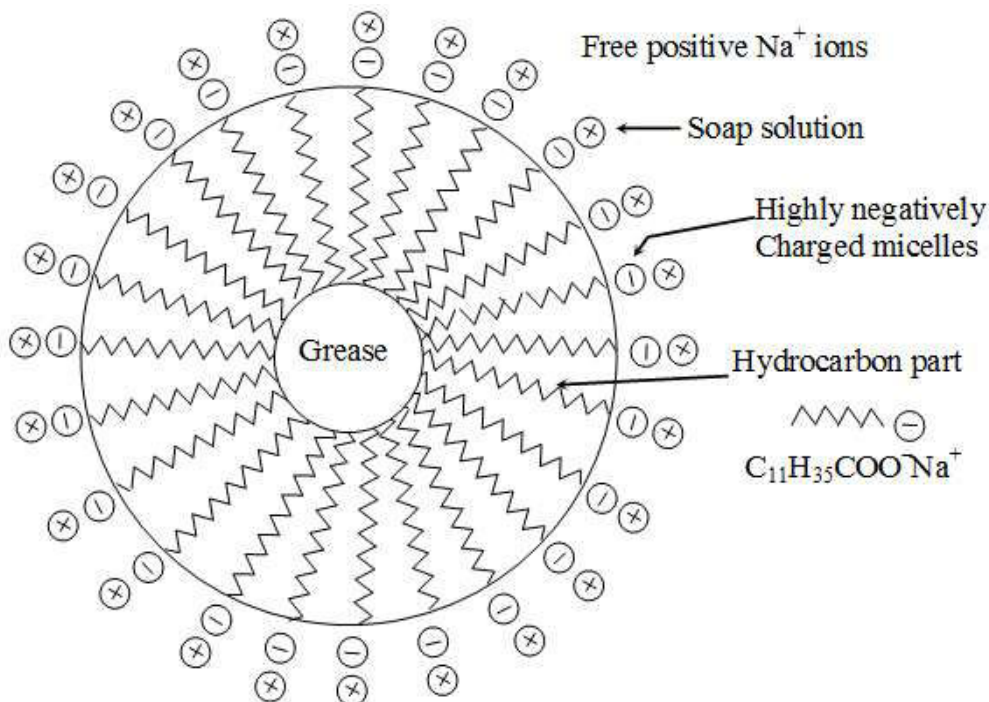


The nonpolar portion is hydrophobic while the polar end is hydrophilic. The hydrophobic hydro carbon portion is soluble in oils and greases, but not in water. The hydrophilic carboxylate group is soluble in water.

When the soap is added to an oily or greasy part of the cloth, the hydrocarbon part of the soap dissolves in the grease, leaving the negatively charged carboxylate end exposed on the grease surface.

### Formation of micelles

At the same time the negatively charged carboxylate groups are strongly attracted by water, thus leading to the formation of small droplets called micelles and grease is floated away from the solid object. When the water is rinsed away, the grease goes with it.



### Cleansing action of soap. Soap micelle entraps the oily dirt particle

The micelles do not combine into large drops because their surfaces are all negatively charged and repel each other. The cleansing ability of a soap depends upon its tendency to act as an emulsifying agent between water and water insoluble greases.

**Detergents:** Detergents are superior to soaps as they can be used even in hard water and in acidic conditions. The cleansing action of detergents are similar to the cleansing action of soaps.

**12. Which sweetening agent are used to prepare sweets for a diabetic patient?**

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

Artificial sweetening agents such as

saccharin, alitame, and aspartame

can be used in preparing sweets for diabetic patients.

**13. What are narcotic and non-narcotic drugs. Give examples**

**Analgesics are two types**

1) **Narcotic** : are drugs that are naturally derived from opium (or) produce effects like opium that are highly addictive.

**Mode of action:** They alleviate pain by reducing local inflammatory responses

**Examples:** Morphine, codeine

**Non-narcotic** analgesics are medications used to control pain and inflammation. They are available at drugstores without a prescription or by prescription when given at higher doses

**Mode of action:** Relieve pain and produce sleep. These drugs are addictive. In poisonous dose, these produce coma and ultimately death.

**Examples** Tylenol (chemical name: acetaminophen);

non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin, Motrin, or Advil

(chemical name: ibuprofen); and Aleve or Naprosyn (chemical name: naproxen sodium)

**14. What are anti fertility drugs? Give examples.**

Antifertility drugs are chemical substances which suppress the action of hormones that promote pregnancy. Antifertility drugs are made up of derivatives of synthetic progesterone or a combination of derivatives of estrogen and progesterone.

Example : Acetaminophen or paracetamol, Ibuprofen, Aspirin, Norethindrone .

**15. Write a note on co-polymer.**

**Co-polymers:**

A polymer containing two or more different kinds of monomer units is called a copolymer.

**For example,** SBR rubber (Buna-S) contains styrene and butadiene monomer units. Co-polymers have properties quite different from the homopolymers.

**16. What are bio degradable polymers? Give examples.**

The materials that are readily decomposed by microorganisms in the environment are called biodegradable

**examples.** examples of aliphatic biodegradable polymers are polyglycolic acid (PGA),

Polyhydroxy butyrate (PHB),

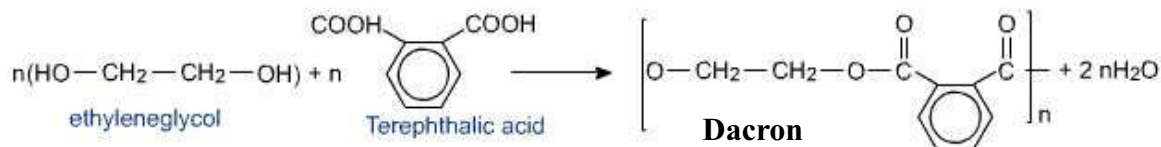
Polyhydroxy butyrate-co-beta hydroxyl valerate (PHBV),

Polycaprolactone (PCL),

Nylon-2-nylon-6

**17. How is terylene prepared?**

The monomers are ethylene glycol and terephthalic acid (or) dimethylterephthalate. When these monomers are mixed and heated at 500K in the presence of zinc acetate and antimony trioxide catalyst



**18. Write a note on vulcanization of rubber**

Natural rubber is mixed with 3-5% sulphur and heated at 100-150°C causes cross linking of the cis-1,4-polyisoprene chains through disulphide (-S-S-) bonds.

**The physical properties:**

The rubber can be altered by controlling the amount of sulphur that is used for vulcanization. In sulphur rubber, made with about 1 to 3% sulphur is soft and stretchy. When 3 to 10% sulphur is used the resultant rubber is somewhat harder but flexible.

**19. Classify the following as linear, branched or cross linked polymers****a) Bakelite****b) Nylon****c) polythene****Ans****a) Bakelite** - Cross linked or Network polymers**b) Nylon** - Linear polymers**c) polythene** - Linear polymers**20. Differentiate thermoplastic and thermosetting.**

Thermoplastic resins	Thermosetting resins
1) Bonding by covalent bonds.	1) Bonding is done by weak <u>vanderwaal</u> forces.
2) These polymers are softened when they heated and hardened when they cooled.	2) Thermosetting polymers don't soften on heating but rather become hard.
3) Thermoplastics polymers are less brittle and soluble in organic solvents.	3) Thermosetting polymers are brittle and insoluble in organic solvents.
4) Thermoplastic polymers are usually linear structures. e.g Polyethylene, Polystyrene, <u>Teflon</u> , PVC.	4) While thermosetting polymers have three dimensional cross linked structures. e.g <u>Bakelite</u> , Melamine formaldehyde, Resin.

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