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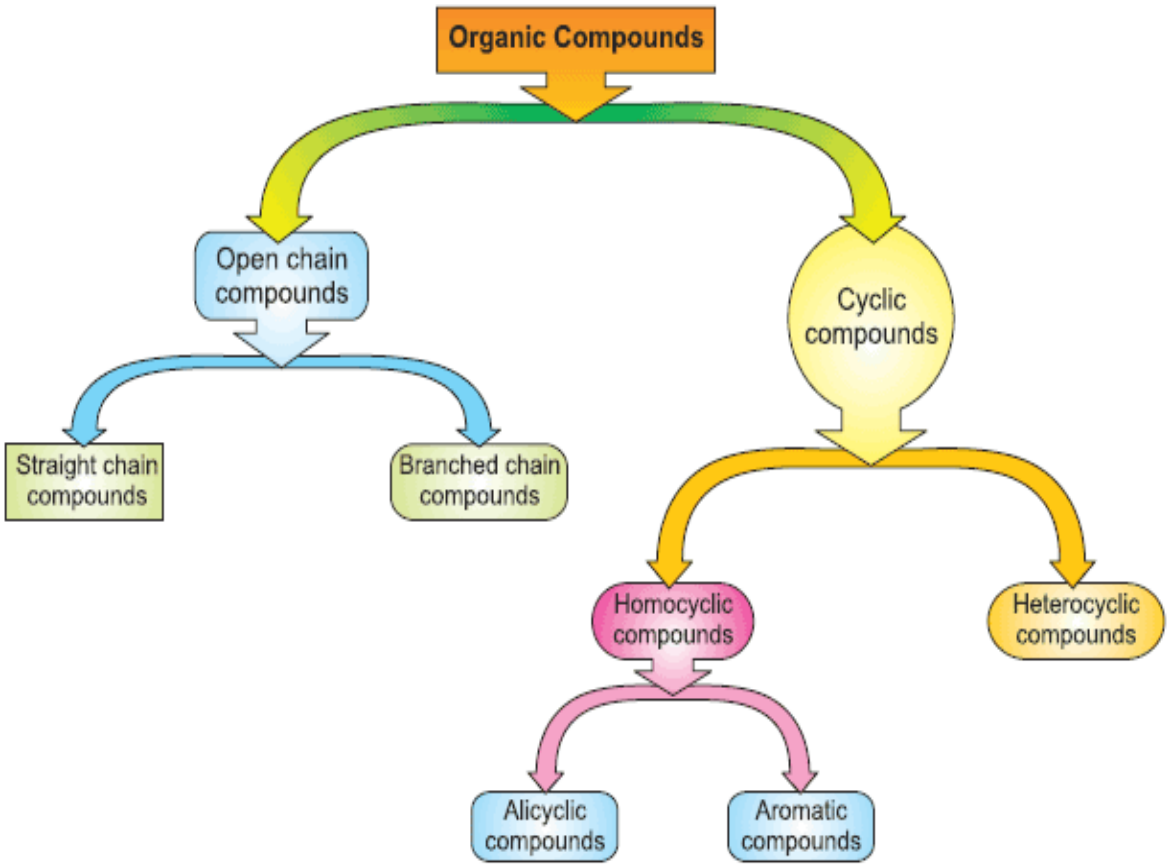
ORGANIC COMPOUNDS

Organic compound, any of a large class of chemical compounds in which one or more atoms of carbon are covalently linked to atoms of other elements, most commonly hydrogen, oxygen, or nitrogen. The few carbon-containing compounds not classified as organic include carbides, carbonates, and cyanides.

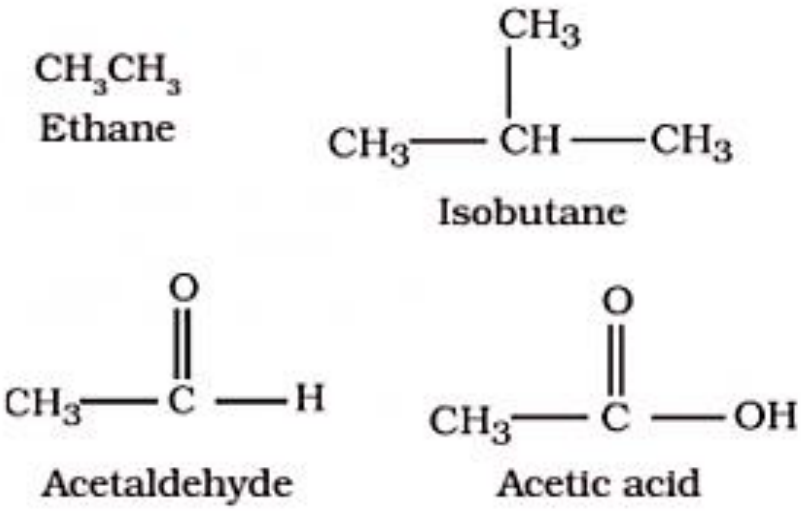
CLASSIFICATION OF ORGANIC COMPOUNDS

I.BASED ON THE STRUCTURE



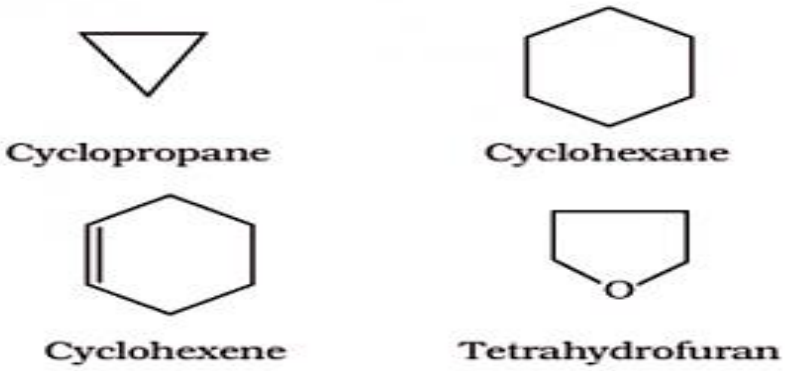
1. Acyclic or Open Chain Compounds:

These compounds are also known as aliphatic compounds, they have branched or straight chains. Following are the examples in this category.



2. Alicyclic or Closed Chain or Ring Compounds:

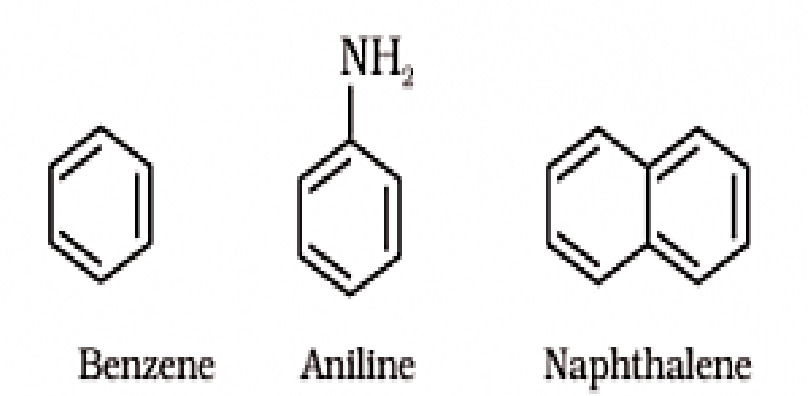
These are cyclic compounds which contain carbon atoms connected to each other in a ring (homocyclic). When atoms other than carbon are also present then it is called as heterocyclic.They exhibit some properties similar to aliphatic compounds. Examples of this type are as follows:



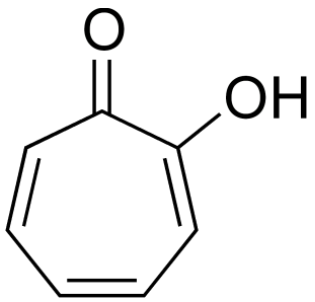
3. Aromatic Compounds

They are a special type of compounds which contain benzene and other ring related compounds. Similar to alicyclic, they can also have heteroatoms in the ring. Such compounds are called heterocyclic aromatic compounds. Some of the examples are as follows:

(a) Benzenoid aromatic compounds



(b) Non-benzenoid aromatic compounds



4. Heterocyclic Aromatic Compounds

II. BASED ON FUNCTIONAL GROUP

Organic compounds can also be classified on the basis of functional groups into 2 types. They are,

- Families
- Homologous series.

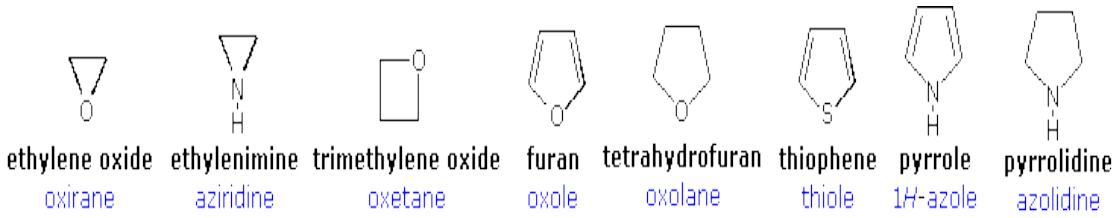
1. Functional group

The functional group can be defined as an atom or a group of atoms that are joined together in a specific manner which is responsible for the characteristic chemical properties of organic compounds. Examples, in this case, are the hydroxyl group **-OH**, aldehyde group **-CHO** and carboxylic acid group **-COOH**.

2. Homologous series

A group or a series of organic compounds in which each member contains the same characteristic functional group and differs from each other by a fixed unit form a homologous series and therefore its members are known as homologous. The members of the homologous series can be represented by a general formula and the successive members differ from each other in the molecular formula by a **CH_2** unit. There are a number of homologous series in organic chemistry such as alkanes, alkenes, alkynes, haloalkanes, alkanols, amines, etc.

SOME OF THE BASIC HETEROCYCLIC COMPOUNDS



ethylene oxide oxirane

ethylenimine aziridine

trimethylene oxide oxetane

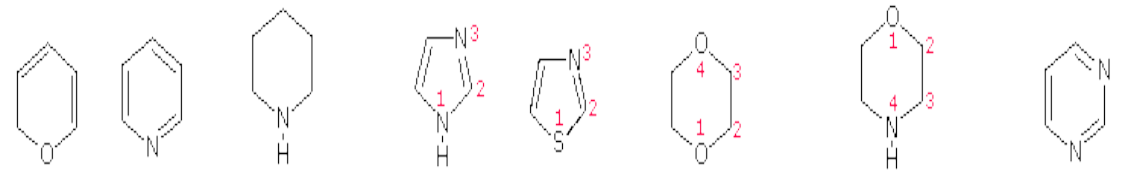
furan oxole

tetrahydrofuran oxolane

thiophene thiole

pyrrole 1*H*-azole

pyrrolidine azolidine



pyran 2*H*-pyran

pyridine

piperidine perhydropyridine

imidazole 1,3-diazole

thiazole 1,3-thiazole

dioxane 1,4-dioxane

morpholine tetrahydro-1,4-oxazine

pyrimidine 1,3-diazine

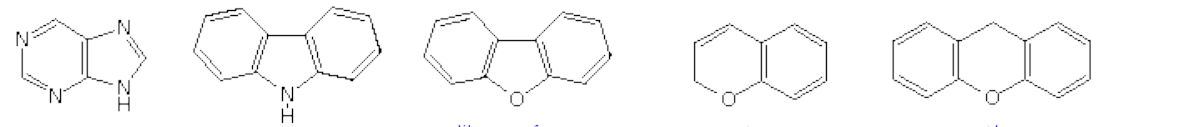
indole 2,3-benzopyrrole

isoindole

indolizine

quinoline 1-azanaphthalene benzo[b]pyridine

isoquinoline 2-azanaphthalene benzo[c]pyridine



purine

carbazole dibenzopyrrole

dibenzofuran

2*H*-chromene

xanthene