

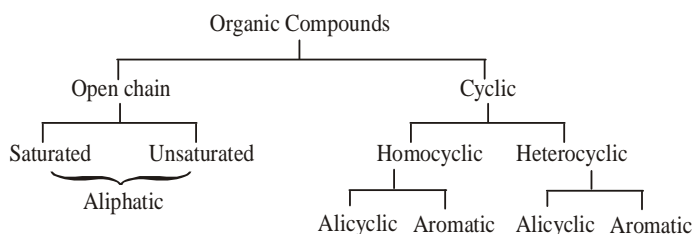
INTRODUCTION TO ORGANIC CHEMISTRY

INTRODUCTION

Organic chemistry is the chemistry of compounds of Carbon. This includes deoxyribose nucleic acid (DNA) the giant molecule that contains the genetic information of all living species. Carbon compounds make up the proteins of the blood, muscle, and skin together with Oxygen. Carbon compounds in our diet furnish the energy that sustain life.

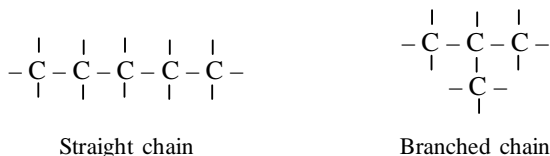
CLASSIFICATION

The Organic compounds are classified as



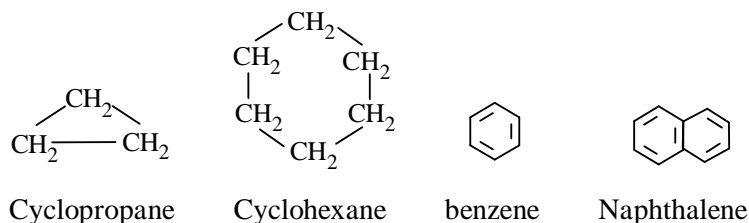
OPEN CHAINS : (Aliphatic Compounds)

1. These compounds contain straight or branched chain of Carbon atoms and are called as open chain or acyclic compounds.

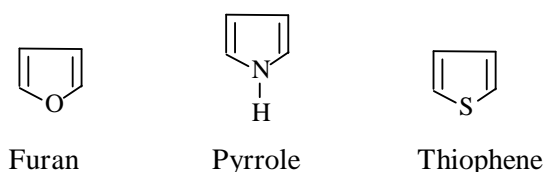


2. **Cyclic** : The compounds in which terminal carbon atoms join with each other to form ring like structures are called as cyclic or closed chain or ring compounds. These are of two types

(i) **Homocyclic compounds** where the atoms are mostly Carbon and Hydrogen only.

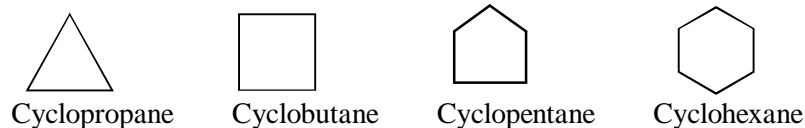


(ii) **Heterocyclic compounds** are the cyclic compounds which contains at least one hetero atom (O, S, N) in the ring e.g.



The cyclic compounds are further divided into two types :

1. Alicyclic compounds : The cyclic compounds which resembles with open chains i.e. aliphatic compounds are called alicyclic compounds e.g.



2. Aromaticity and Huckel's Rule

- (i) Aromaticity is defined as "An aromatic compound having a cyclic planar structure with $(4n + 2)\pi$ electrons and have high resonance energy and stability due to delocalization of π -electrons" Any compound is aromatic when:
 - (ii) It has a cyclic and planar structure (for complete delocalization of π electrons).
 - (iii) Has a high resonance energy.
 - (iv) Has a conjugated system of double bond.
 - (v) Has number of π electrons according to $4n + 2$ or Huckel's rule that is 2, 6, 10, 14, 18. Here $n =$ number of cyclic planar rings.
 - (vi) If number of π electrons are ' n ' or 0, 4, 8, 12, 16, it will be anti-aromatic.
 - (vii) If any of these conditions is not obeyed, it will be non-aromatic.

Structure	Number of π -Electrons	Aromaticity
	2	Aromatic
	2	Aromatic
	4	Anti-aromatic
	4	Anti-aromatic
	4	Anti-aromatic
	6	Aromatic
	6	Aromatic
	8	Anti-aromatic
	8	Non-aromatic+ (non polar)
	10	Aromatic
	10	Aromatic
	14	Aromatic