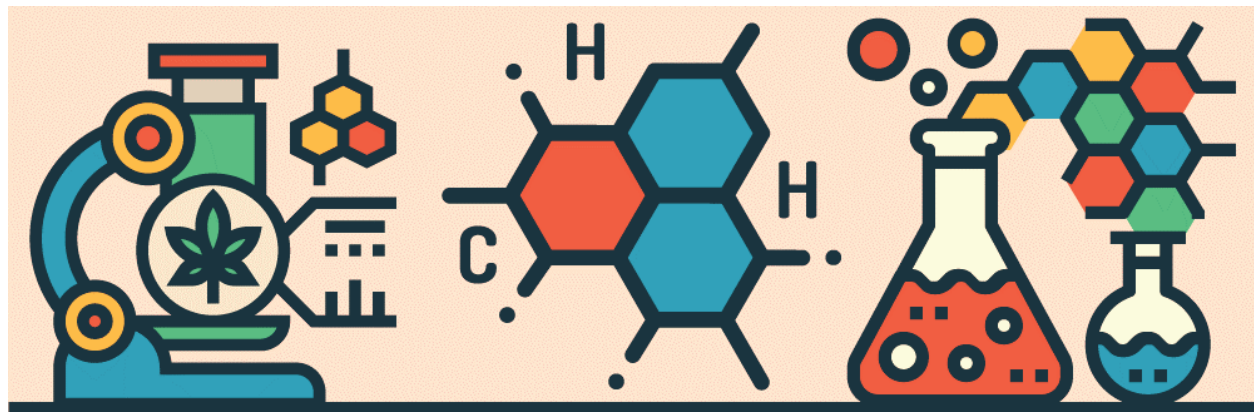


ORGANIC CHEMISTRY SOME BASIC PRINCIPLES AND TECHNIQUES



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ORGANIC CHEMISTRY SOME BASIC PRINCIPLES AND TECHNIQUES

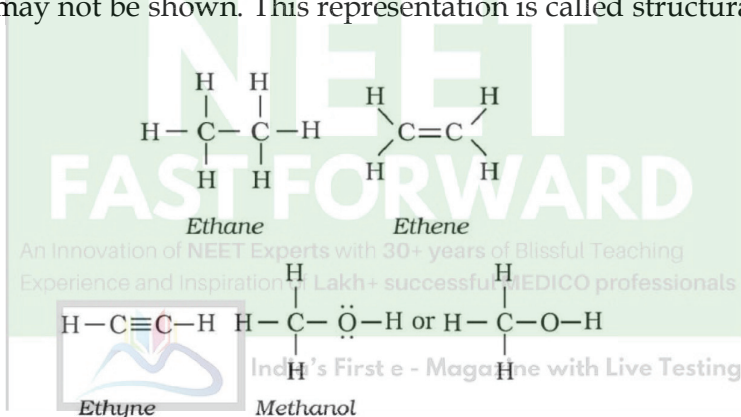
Introduction

In this chapter, we shall discuss some basic principles and techniques of analysis needed for understanding the formation and properties of organic compounds. Organic compounds are essential for existence and maintenance of life on earth. These include complex molecules like (DNA) which carry genetic information and proteins which is building blocks of life. Organic compounds also play an important role in material used in daily life such as cloths, fuel, dyes, and medicines etc.

Structural Representations of Organic Compounds

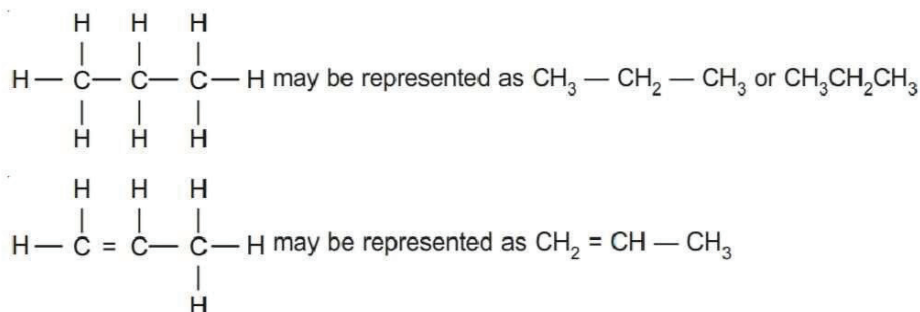
Structural Formulas

The Lewis structures can be simplified by representing the two electron covalent bonds by a dash (-). In this representation, a single bond is represented by a single dash (-), a double bond by a double dash (=) and a triple bond by a triple dash (\equiv). The lone pair on an atom may or may not be shown. This representation is called structural formula.



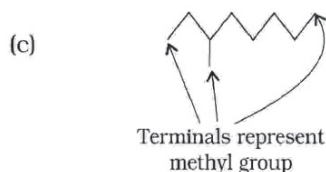
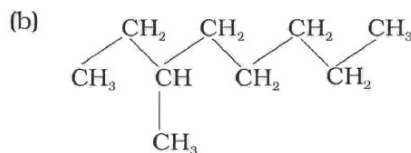
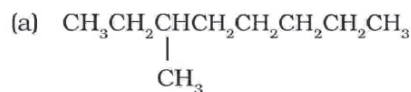
Condensed Formulas

In this formula, the arrangement of atoms are shown but the bonds between may be omitted and the number of identical groups attached to an atom are indicated by a subscript.

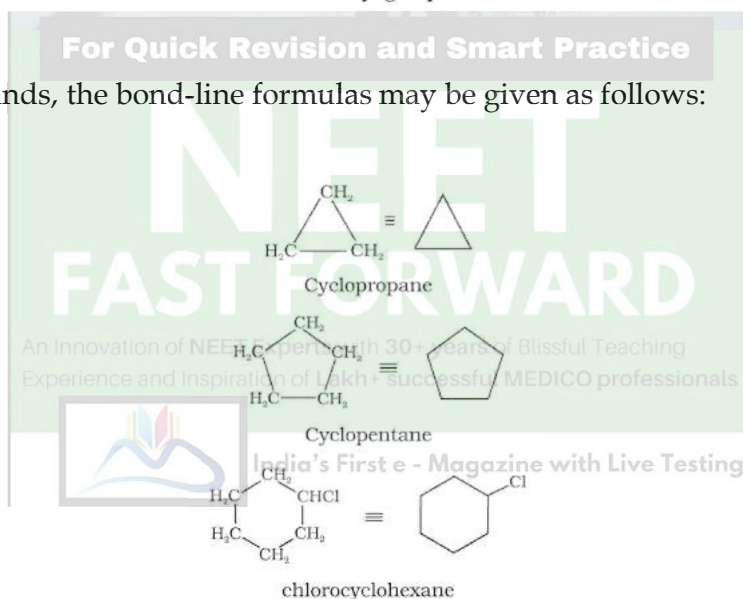


Condensed Formulas

In this representation, the carbon and hydrogen atoms are not shown and the lines between carbon-carbon bonds are shown in a zig-zag manner.

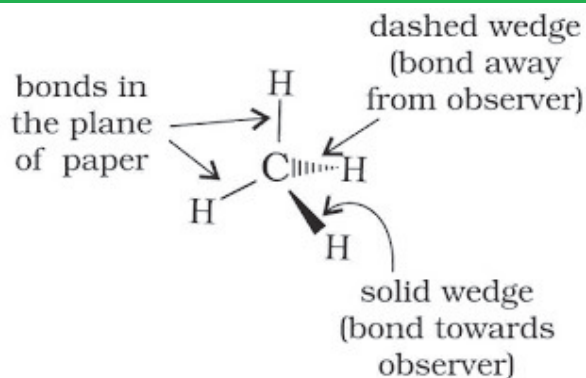


In cyclic compounds, the bond-line formulas may be given as follows:



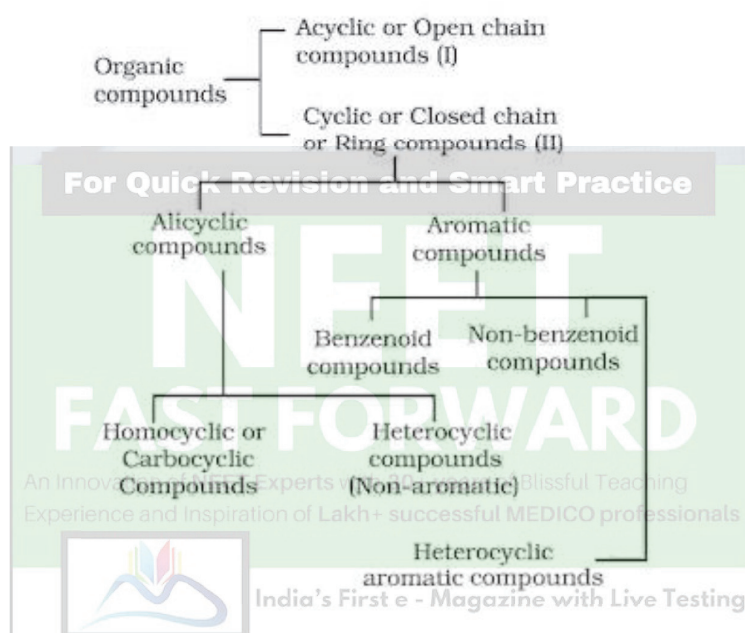
Three-dimensional representation of organic molecules

The three-dimensional (3-D) structure of organic molecules can be represented on paper by using certain conventions. In these formulae, the thick solid (or heavy) line or the solid wedge indicates a bond lying above the plane of the paper and projecting towards the observer while a dashed wedge is used to represent a bond lying below the plane of the paper and projecting away from the observer.



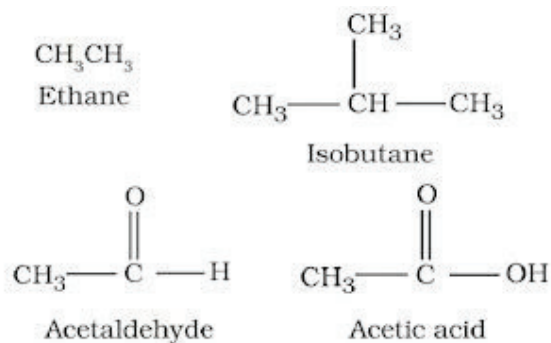
Classification of Organic Compounds

On the basis of their structures, organic compounds are broadly classified as follows:



Open Chain Compounds

These compounds contain open chains of carbon atoms in their molecules. The carbon chains may be either straight chains or branched chains. They are also called aliphatic compounds.

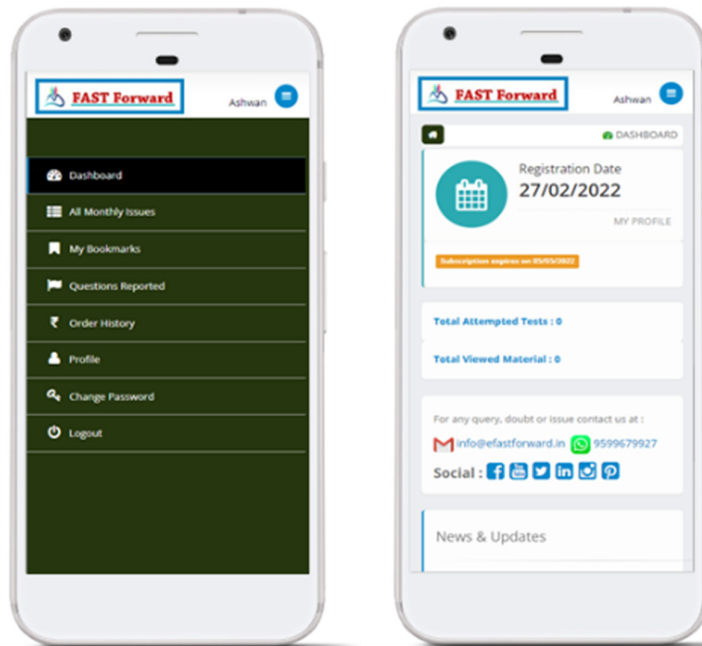


Closed Chain or Ring Compounds

These compounds contain chains or rings of atoms in their molecules.



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