

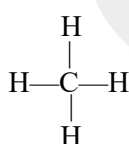
CHEMISTRY

CLASS NOTES FOR CBSE

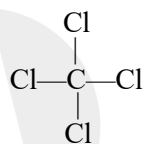
Chapter 12. Organic Chemistry-Some Principle and Techniques

01. Tetravalency of Carbon

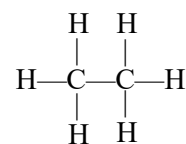
Since all the organic compounds contain carbon as the essential element, therefore, the nature of chemical bonding in organic compounds is always covalent. Thus, carbon is always **tetravalent**.



Methane

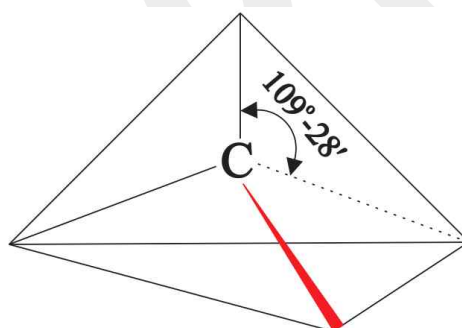


Carbon tetrachloride



Ethane

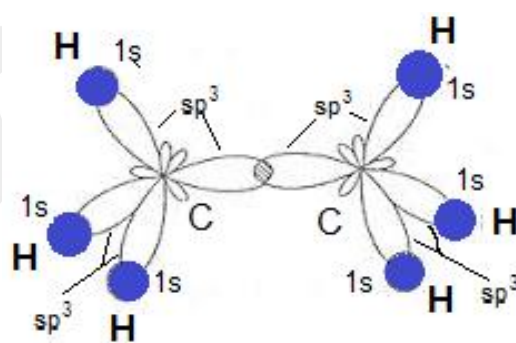
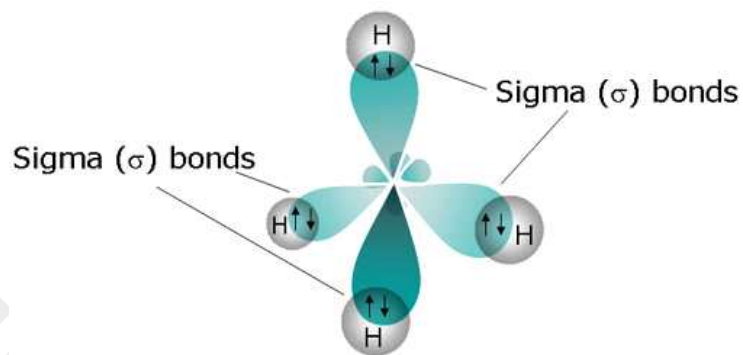
The four bonds of a carbon atom are directed towards the four corners of a regular tetrahedron, i.e., the angle between any two adjacent bonds is $109^{\circ}-28'$ (*tetrahedral angle*) as shown in Fig. below.



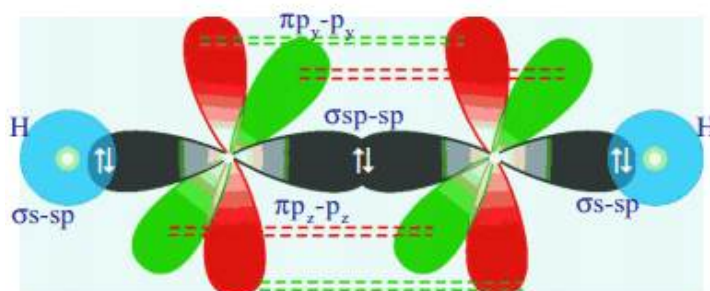
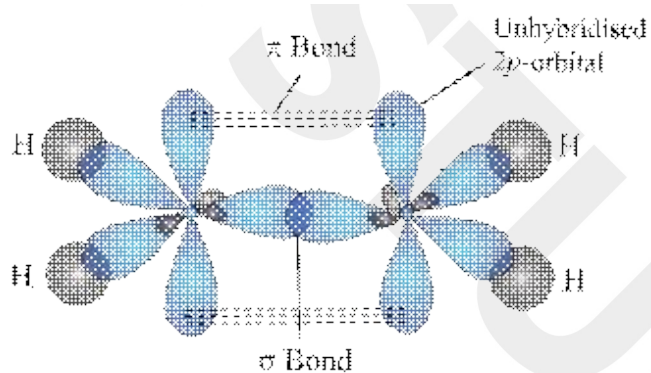
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02. Shapes of Simple Organic Molecules



Ethane

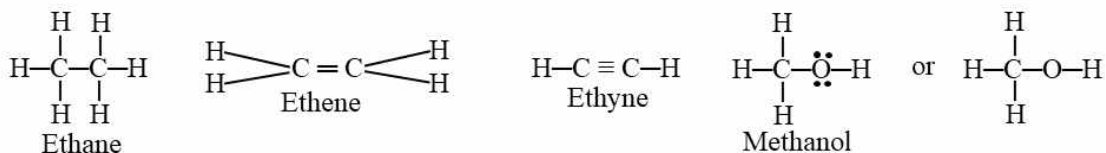


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03. Structural Representation of Organic Compounds

(i) Complete and Condensed Formulae

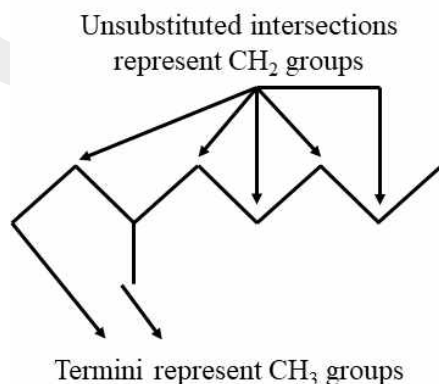


Such structural representations are called **complete structural formulae** or **graphic** or **displayed formulae**.

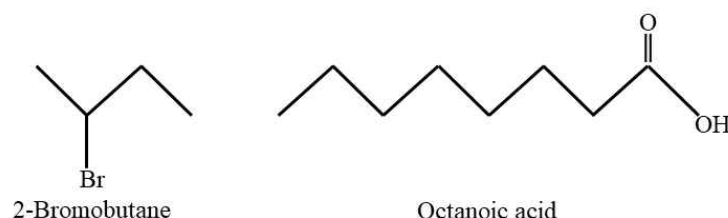


Such structural representations are called **condensed structural formulae**.

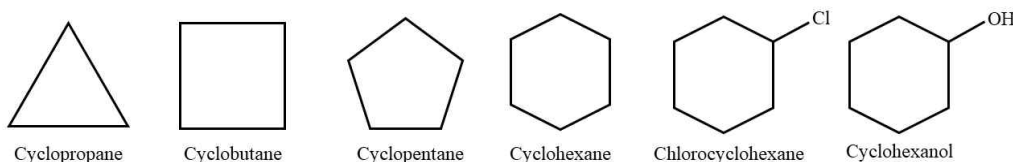
(ii) Bond-line Structural Formulae



Likewise 3-bromobutane and octanoic acid may be respectively represented by the following bond line structural formula.

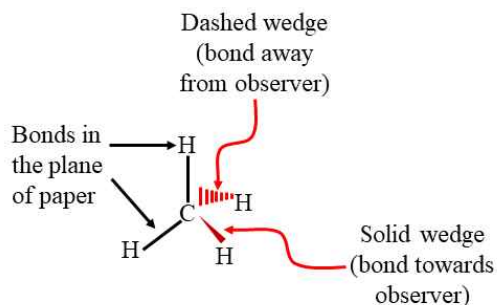
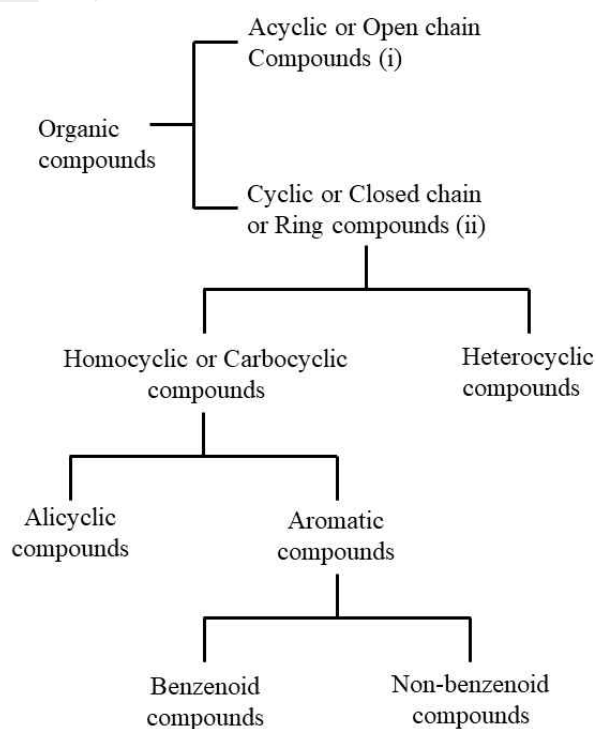


(iii) Polygon Formulae



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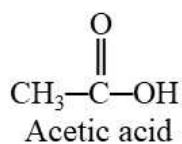
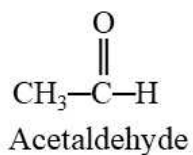
(iv) **Three-Dimensional (3-D) Representation of Organic Molecules****Wedge-and-dash representation of CH₄****04. Classification of Organic Compounds**(i) **Acyclic or open chain compounds**

These compounds are also called as **aliphatic**

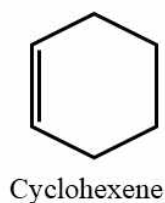
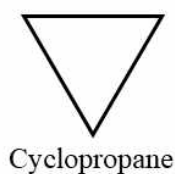
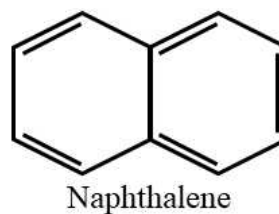
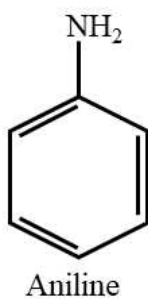
These compounds are also called as **aliphatic** compounds and consist of straight or branched chain compounds, for example :

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**(ii) Alicyclic or closed chain or ring compounds**

Alicyclic (aliphatic cyclic) compounds contain carbon atoms joined in the form of a ring (homocyclic). Sometimes atoms other than carbon are also present in the ring (heterocyclic). Some examples of this type of compounds are :

**Aromatic compounds****Benzenoid aromatic compounds****Non-benzenoid compound**