6. Melting points and boiling points. Organic compounds are usually volatile having low melting and low boiling points. This is because various atoms in the molecule are held together by covalent bonds.

7. Solubility. These compounds have generally *low solubility in water and high solubility in organic solvents.* Some of the organic compounds such as lower alcohols, sugar, etc., dissolve freely in water.

8. Conductance. Aqueous solutions of organic compounds have *lower conductances*, which is explained in terms of the bonding.

9. Rates of reactions. Reactions involving organic compounds are generally *slower* than those involving inorganic compounds. This is because of the formation of intermediate compounds.

10. Combustibility. Organic compounds are combustible and they generally leave no residue on burning.

11. Isomerism. Organic compounds exhibit the phenomenon of *isomerism i.e.*, compounds with the same molecular formula possess widely different physical and chemical properties. This is due to the difference in the arrangement of their atoms.

Q. 3. What is meant by homologous series?

Ans. A homologous series *is a group of related compounds in which the formula of each member differs from that of its preceding or succeeding member by one CH_2 group.* The individual members of a homologous series are called homologues. The phenomenon is known as homology. Consider, simple hydrocarbons of *alkane series* viz. CH_4 (methane), C_2H_6 (ethane), C_3H_8 (propane), C_4H_{10} (butane), C_5H_{12} (pentane). Each member differs from the preceding or following member in composition by $-CH_2$. It is also evident that all members of the same series have the same general formula. Thus, the general formula of the alkane series is C_nH_{2n+2} where n is the number of carbon atoms.

Similarly, there are other homologous series such as alcohols, aldehydes, ketones, fatty acids, amines, etc. Study of exceedingly large number of compounds becomes easier by grouping them into homologous series.

Q. 4. List some characteristics of homologous series.

Ans. (*i*) Various members of the series conform to the same general formula.

(*ii*) Different members of the series contain the same functional group and, therefore, show similar chemical reactions.

(*iii*) Physical properties such as melting point, boiling point, density, etc., change gradually as we move from lower to higher members or vice-versa.

(*iv*) The members of a series can be prepared by common methods.

Consider the homologous series of alcohols:

CH_3OH	*Methyl alcohol*
C_2H_5OH	*Ethyl alcohol*
C_3H_7OH	*Propyl alcohol*
C_4H_9OH	*Butyl alcohol*

Any two adjacent members of the series differ by — CH_2.

The members can be represented by the general formula $C_nH_{2n+1}OH_3$ have the same functional group, *i.e.*, hydroxy group (OH), and can be prepared by similar methods of preparation.

Q. 5. Describe the occurrence of organic compounds.

Ans. Principal natural sources of organic compounds are listed below:

1. Plants. These form the richest sources of organic compounds. Substances like starch, sugar, cellulose, oils, etc., are isolated from various plants, their leaves, fruits and bark. Distillation of wood also yields organic compounds like methanol, acetic acid and acetone.

2. Animals. Many organic compounds like milk, fats, proteins, urea, uric acid, etc. are obtained from animals.