1. What is meant by the term catenation? Give an example of a compound that displays catenation.

The ability of carbon atoms to link with other carbon atoms to form long chains and large rings is called catenation.

Example:

n-pentane

Benzene

2. How is coal formed?

Coal was formed by the decomposition of dead plants buried under the Earth's crust millions of years ago. Conversion of wood into coal is called carbonization. It is a very slow biochemical process. It takes place in the absence of air under high pressure and high temperature over a long period of time (about 500 millions of years)

3. What is the importance of natural gas?

i. Natural gas is used as fuel in homes as well as in industries.
ii. It is used as fuel in automobiles as compressed natural gas (CNG).
iii. Natural gas is also used to make carbon black and fertilizer

4. Justify that organic compounds are used as food.

The food we eat daily such as milk, eggs, meat, vegetables, etc., contain carbohydrates, proteins, fats, vitamins, etc., are all organic stuff.

5. How are alkyl radicals formed? Explain with examples.

Alkyl radicals are derivatives of alkanes. They are formed by the removal of one of the hydrogen atoms of an alkane and are represented by a letter 'R'. Their name is written by replacing "ane" of alkane with 'yl'

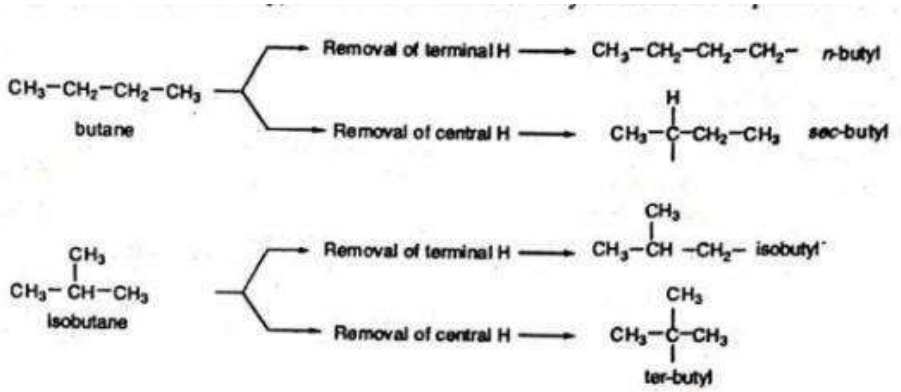
Example

Alkane	Molecular Formula	Alkyl radical	Name
Methane	CH_4	CH_3-	Methyl

6. What is the difference between n-propyl and isopropyl radicals ? Explain with structure.

n-propyl	Isopropyl
It is formed, when terminal hydrogen is removed from the structure of propane. n-propyl is the radical of propane. **Example:** $CH_3-CH_2-CH_3 \rightarrow$ Removal of terminal "H" $\downarrow$ $CH_3-CH_2-CH_2$ n-propyl	It is formed, when central cabon is removal. It is called isopropyl. Isopropyl is also the radical of propane. **Example:** $CH_3-CH_2-CH_3 \rightarrow$ Removal of terminal "H" $\downarrow$ $CH_3-\underset{\text{Iso-butyl}}{\overset{\overset{H}{|}}{CH}}-CH_3$

7. Explain different radicals of butane.

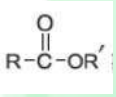


8. Define functional group with an example.

An atom or group of atoms or presence of double or triple bond which determines the characteristic properties of an organic compound is known as the functional group. For example, -OH group is the functional group of alcohols

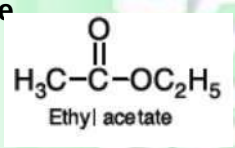
9. What is an ester group? Write down the formula of ethyl acetate.

Organic compounds consisting of RCOOR' functional group are called esters.

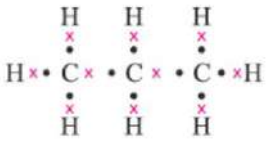
Their general formula is 

where R and R'are alkyl groups. They may be same or different.

Formula of ethyl acetate



10. Write down the dot and cross formulae of propane and n-butane?

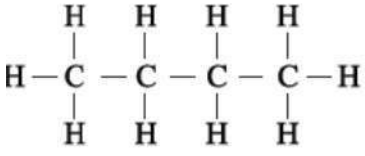


Propane

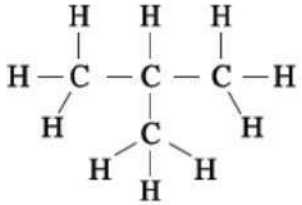
n-butane

11. Define structural formula. Draw the structural formulae of n-butane and isobutane.

Structural formula of a compound represents the exact arrangement of the different atoms of various elements present in a molecule of a substance



n-Butane



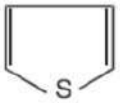
isobutane

12. Write classification of coal.

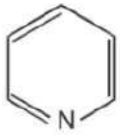
Type of Coal	Carbon Contents	Uses
Peat	60%	It is inferior quality coal used in kiln.
Lignite	70%	It is soft coal used in thermal power stations.
Bituminous	80%	It is common variety of coal used as house-hold coal.
Anthracite	90%	It is superior quality hard coal that is used in industry.

13. What are heterocyclic compounds? Give two examples.

Heterocyclic compounds Cyclic compounds that contain one or more atoms other than that of carbon atoms in their rings are called heterocyclic compounds.



Thiophene



Pyridine

14. Why are benzene and other homologous compounds of benzene called aromatic compounds?

These organic compounds contain at least one benzene ring in their molecule. They are called aromatic because of aroma or smell they have. For example:

Benzene