

BRAIN INTERNATIONAL SCHOOL

Chemistry Assignment

CLASS- X

NOV '24

Sub: Chemistry

Chapter 4: Carbon and Its Compounds

1. MULTIPLE CHOICE QUESTIONS:

- (i) A molecule of ammonia (NH₃) has:
- (a) only single bonds (b) only double bonds
(c) only triple bonds (d) two double bonds and one single bond
- (ii) Carbon exists in the atmosphere in the form of :
- (a) Carbon monoxide only (b) Carbon monoxide in traces and carbon dioxide
(c) Carbon dioxide only (d) Coal
- (iii) The name of the compound CH₃ — CH₂ — CHO is :
- (a) Propanal (b) Propanone (c) Ethanol (d) Ethanal
- (iv) In which of the following compounds, — OH is the functional group?
- (a) Butanone (b) Butanol (c) Butanoic acid (d) Butanal

2. ASSERTION-REASON QUESTIONS:

Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below :

- (i) Both A and R are true and R is correct explanation of the assertion.
(ii) Both A and R are true but R is not the correct explanation of the assertion.
(iii) A is true but R is false.
(iv) A is false but R is true.

- (a) **Assertion :** Diamond and graphite are allotropes of carbon.
Reason : Some elements can have several different structural forms while in the same physical state. These forms are called allotropes.
- (b) **Assertion :** Carbon is the only element that can form large number of compounds.
Reason : Carbon is tetravalent and shows the property of catenation.

3. Read the following paragraph and answer the following questions :

Soaps and detergents are widely used as cleaning agents. Chemically soaps and detergents are quite different from each other. The common feature of soaps and detergents is that when dissolved in water the molecules of soap and detergent tend to concentrate at the surface of the solution or at interface. Therefore, the surface tension of the solution is reduced, it causes foaming of the solution. A sample of water which gives lather with soap with difficulty is known as hard water, while a sample of water which gives lather with soap easily is known as soft water. Hardness of water is due to the presence of bicarbonates, sulphates and chlorides of calcium and magnesium. When hardness of water is due to the presence of bicarbonates of magnesium and calcium, it is called temporary hardness. When hardness of water is due to the presence of sulphates and chlorides of magnesium and calcium, it is called permanent hardness.

1. How soap and detergent molecules differ chemically?
2. Micelle formation takes place when soap is added to water? State reason.

3. Give a reason why soaps do not form lather in hard water?
4. List two problems that arise due to the use of detergents instead of soaps .

4. Answer the following questions :

1. A gas is evolved when ethanol reacts with sodium. Name the gas evolved and also write the balanced chemical equation of the reaction involved.
2. In electron dot structure, the valence shell electrons are represented by crosses or dots.
 - a) The atomic number of chlorine is 17.
 - b) Write its electronic configuration .
 - c) Draw the electron dot structure of chlorine molecule.
3.
 - (a) What are hydrocarbons? Give examples.
 - (b) Give the structural differences between saturated and unsaturated hydrocarbons with two examples each.
 - (c) What is a functional group? Give examples of four different functional groups.
4.
 - (a) Write the formula and draw electron dot structure of carbon tetrachloride.
 - (b) What is saponification? Write the reaction involved in this process.