

**SHORT ANSWERS TO THE GIVEN QUESTIONS****Q1. How water rises in plants?****Answer:*****Rising of water in plants:***

Plants have small vessels called xylems which act as capillaries. Water rises in these small tubes due to capillary action. This process is vital for the survival of the land plants.

**Q2. Which forces are responsible for dissolving polar substances in water?****Answer:**

Dipole – Dipole forces are responsible for dissolving polar substances in water. Because the positive end of the substance is attracted by the negative end of ( $O^{\delta-}$ ) of the water and negative end of the substance attracted by the positive end ( $H^{\delta+}$ ) of the water.

**Q3. Why non – polar compounds are insoluble in water?****Answer:**

Non – polar substance has no positive and negative ends. Therefore, water does not develop attractive forces with non – polar substances and these remain undissolved.

***For example:***

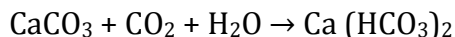
Benzene, ether, carbon tetrachloride are non – polar and not soluble in water.

**Q4. How water dissolves sugar & alcohol?****Answer:**

Sugar and alcohols have -OH group which can form hydrogen bonding with water and become soluble. Thus sugar and alcohols dissolve in water due to strong hydrogen bonding among water and particles of these substances (sugar & alcohol).

**Q5. How lime stone dissolved in water?****Answer:**

Lime stone is not soluble in pure water. It is soluble in acidic rain water, because acidic water reacts with the lime stone to form soluble salts in the presence of carbon dioxide.

**Reaction:****Q6. Differentiate between soft and hard water?****Answer:****Soft Water:**

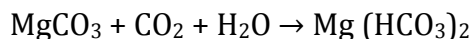
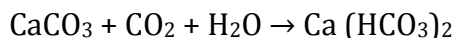
Soft water is that which produces good lather with soap.

**Hard Water:**

Hard water is that which does not produce lather with soap. The hardness in the hard water is due to presence of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  ions.

**Q7. What are the causes of hardness of water?****Answer:**

The rain water absorbs carbon dioxide in atmosphere. When this water passes through beds of the soil, convert insoluble carbonates of calcium and magnesium into their respective soluble bicarbonates



**Q8. What are the effects of temporary hardness in water?****Answer:***Effect of temporary hardness in water:*

It is due to presence of soluble calcium bicarbonate  $\text{Ca}(\text{HCO}_3)_2$  and magnesium bicarbonate  $\text{Mg}(\text{HCO}_3)_2$  in water.

**Q9. Mention the disadvantages of detergents?****Answer:***Disadvantages of detergents:*

- The major disadvantage of detergents over soap is that some detergents are non – biodegradable (cannot be decomposed by micro-organisms like bacteria).
- The detergents remain in water for a long time and make the water unfit for aquatic life by causing depletion of oxygen gas which results in death of aquatic life.

**Q10. What is the difference between biodegradable & non – biodegradable substance?****Answer:**

| <b>Serial No.</b> | <b>Biodegradable substances</b>                                                                      | <b>Non – biodegradable substances</b>                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1.                | Those substances which can be broken down by micro-organisms like bacteria are called biodegradable. | Those substances which cannot be decomposed by micro-organisms like bacteria are called non-biodegradable. |
| 2.                | For example: Food, vegetable waste                                                                   | For example: Plastics, detergents                                                                          |

**Q11. How detergents make the water unfit for drinking?****Answer:**

The detergents remain in water for a long time and make the water unfit for aquatic life. The phosphate salts present in detergents cause the rapid growth of algae in water bodies which floats over the surface of water. These plants ultimately die and decay. Decaying plants being bio – degradable consume oxygen gas present in water, thus depletion of oxygen gas result water unfit for drinking.

**Q12. Why are pesticides used?****Answer:**

Pesticides are used to kill or control the growth of pests. Pest may be weeds, herbs, insects, fungi, viruses etc.

**Q13. What are reasons of waterborne diseases?****Answer:****Reasons of water borne diseases:**

- i. The use of polluted water cause water borne diseases.
- ii. Lack of proper sanitation facilities is the main cause or rapidly spreading waterborne diseases.

**Q14. How waterborne diseases can be prevented?****Answer:**

- i. **Provision of safe water:**  
The drinking water must be pure having no germs and chemicals.
- ii. **Disposal of sewage:**  
Sewage water must be disposed properly. It must not be thrown or discharged directly in water supplies or reservoirs.
- iii. **Control of Toxic Chemicals:**  
Most of the chemicals are toxic. These are slow poisons and carcinogens (cancer producing). These must be a strict control over the use of pesticides and other chemicals.

**Some Exceptional Questions**

1. Write occurrence of water?
2. Write any four properties of water?
3. What is capillary action?
4. Point out two properties of water that make it an excellent solvent?
5. What are the types of hardness of water?
6. Define Water softening?
7. How temporary hardness is removed by boiling?
8. What is the Clark's method for the removal of hardness of water?
9. What is sodium Zeolite?
10. How permanent hardness is removed by using sodium Zeolite?
11. Define water pollution?
12. Define industrial effluents?
13. What is leaching process?
14. How Jaundice is caused?
15. What is the chemistry behind of cleaning action of swimming pool?