

Water Chemistry Questions with Solutions

Q1. What is the alternate name of water?

- (a) Azide
- (b) Hydroxide
- (c) Oxidane
- (d) Dihydrogen oxide

Answer: © Oxidane is the alternate name for water.

Q2. Which one is the purest form of water?

- (a) River Water
- (b) Ground Water
- (c) Rain Water
- (d) Tap Water

Answer: © Rainwater is the purest form of water.

Q3. The zeolite softening process is used in removing both the temporary and permanent hardness of the water. In this process, the calcium and magnesium present in water are precipitated as

- (a) Insoluble carbonates
- (b) Insoluble zeolites
- (c) Insoluble chlorides
- (d) Insoluble sulfates

Answer: The zeolite softening process is used in removing both the temporary and permanent hardness of the water. The calcium and magnesium present in water are precipitated as insoluble zeolites.

Q4. What is acid rain?

Answer: The sulphur dioxide, nitrogen dioxide present in the air, reacts with the water vapour in the atmosphere to form sulphuric acid and nitric acid. These acids flow down along with rain, which is known as acid rain.

Acid rain can be toxic to both living and non-living things.

- It can cause rashes and itching.
- It can damage plant leaves.
- It makes seawater and river water unsuitable for marine animals
- It also causes the yellowing of monuments. Example: Taj Mahal.

Q5. What are the differences between pure water and contaminated water?

Answer:

S. No.	Pure Water	Contaminated Water
1.	It is free from harmful chemicals.	It contains toxic chemicals.
2.	It is apt for drinking.	It is not apt for drinking.
3.	It is visibly apparent.	Usually, it is unclear, dark and has a foul odour.
4.	It has a high level of oxygen.	It has a low level of oxygen.

Q6. What is precipitation?

Answer: The sun's heat vapourises water into vapour. This vapour cools down and condenses to become clouds. It may then fall on the surface of Earth in the form of rain, snow or sleet. This phenomenon of water falling back onto the earth's surface in the form of rain, snow or sleet is known as precipitation.

Q7. Name any two water conservation techniques adopted in India.

Answer: Rainwater harvesting and Watershed management.

Q8. What are the sources of water pollution?

Answer: The primary source of water pollution are mentioned below.

- Disposal of industrial effluents into water.
- Improper Sewage Disposal.
- Oil Spills
- Fertilizer Run-Off.

Q9. We can remove hardness in temporary water by boiling, but the hardness in permanent hard water cannot be removed by boiling. Give reason.

Answer: The temporary hardness in water is due to bicarbonate of calcium or magnesium, which decomposes on boiling into CO_2 , which does not dissolve in water and can be separated. Permanent hard water contains SO_4^{2-} or Cl^- which cannot be removed by boiling.

Q10. Match the following.

Column 1	Column 2
(a) Green vitriol	(1) Permanent hardness in water
(b) Paint	(2) Hygroscopic
© Magnesium Chloride	(3) Temporary hardness in water

(d) Magnesium bicarbonate	(4) Heptahydrate
(e) Calcium Oxide	(5) Colloidal

Answer:

Column 1	Column 2
(a) Green vitriol	(4) Heptahydrate
(b) Paint	(5) Colloidal
© Magnesium Chloride	(1) Permanent hardness in water
(d) Magnesium bicarbonate	(3) Temporary hardness in water
(e) Calcium Oxide	(2) Hygroscopic

Q11. What is DO?

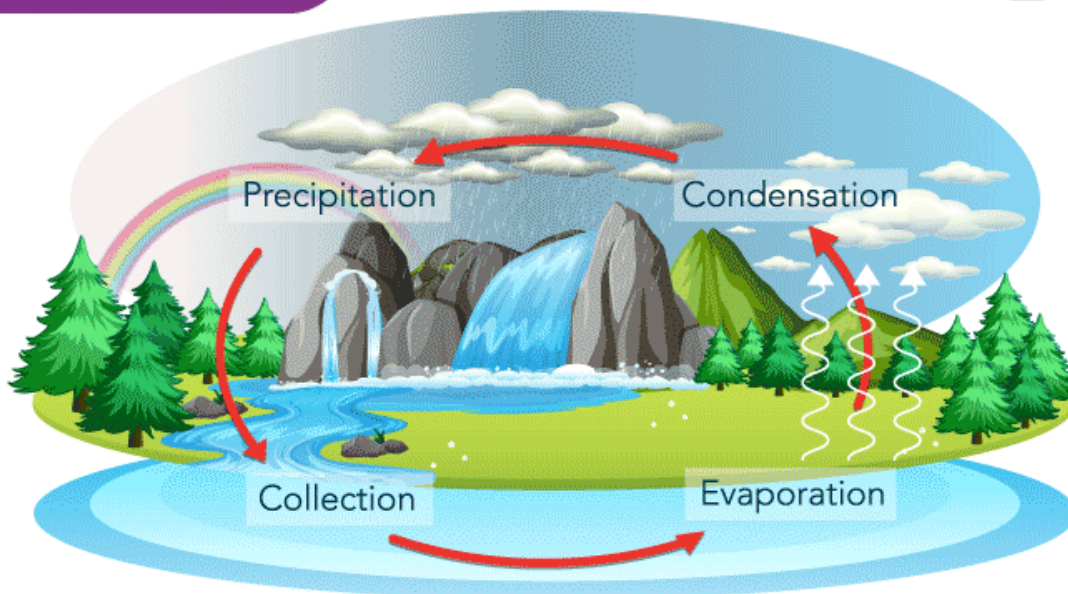
Answer: DO is the abbreviation of Dissolved Oxygen. It is the level of free, non-compound oxygen present in water. It is defined as the amount of oxygen dissolved in a unit volume of water. DO is primarily used as an indicator of a healthy water body.

- It is measured in mg/l or ppm

Q12. What is the water cycle?

Answer: The water cycle shows the continuous flow of water within the earth and the atmosphere. Water molecules are transferred from the oceans and land surface into the atmosphere by evaporation, dropped on the land as precipitation and moved back to the sea by rivers and groundwater. This endless circulation of water is known as the water cycle.

WATER CYCLE



Q13. What is BOD?

Answer: BOD is the abbreviation of Biological Oxygen Demand. It is the amount of dissolved oxygen required by aerobic biological organisms to break down organic material present in a given water sample at a certain temperature over a specific time.

- It is the principal test to measure the amount of pollution in a particular water body.

BOD of drinking water is less than one mg/L, and if BOD is more than 1mg/L, then the purity of water is cynical. Hence, BOD is essential for assessing groundwater and surface water pollution.

Q14. What is COD?

Answer: COD is the abbreviation of Chemical Oxygen Demand. It measures the oxygen required to oxidise soluble and particulate organic matter in water. Chemical Oxygen Demand is an important water quality parameter. It provides an index to assess discharged wastewater's effect on the environment. Higher COD levels mean a more significant amount of oxidisable organic material is present in the sample, which will reduce dissolved oxygen (DO) levels. Reducing DO can lead to anaerobic conditions, harmful to aquatic life.

- The COD test is used as an alternative to BOD due to the shorter length of testing time.

Q15. Match the following.

Column 1	Column 2
(a) Caspian Sea	(6) Stream of water moving along a concrete path

(b) Tide	(7) Strong seismic waves
© Tsunami	(8) Periodic rise and fall of water
(d) Ocean Current	(9) Largest Lake

Answer:

Column 1	Column 2
(a) Caspian Sea	(4) Largest Lake
(b) Tide	(3) Periodic rise and fall of water
© Tsunami	(2) Strong seismic waves
(d) Ocean Current	(1) Stream of water moving along a concrete path

Practise Questions on Water

Q1. Write a short note on Ganga Action Plan.

Answer: Ganga Action Plan is an ambitious plan to save the river Ganga. It was launched in 1985. It aimed to reduce the pollution levels in the river. However, the increasing population and industrialisation have already damaged the river beyond repair. Now, the Government of India has launched a new initiative known as National Mission for Clean Ganga (NMCG) in 2016.

Q2. Why does an increased level of chemicals in the water influence the survival of marine animals?

Answer: The discharge from factories mixes with various water bodies. The chemical discharges add unwanted and harmful substances into the water. It causes water pollution. Some of the chemicals mixed in water are lead, fluorides, carbon monoxide etc. These chemicals are harmful to aquatic plants and animals. Sometimes, the chemicals released also help in algae blooming which takes up a lot of oxygen from water. Lack of oxygen can kill aquatic organisms as well. Therefore, increased levels of chemicals in water are unhealthy for marine life.

Q3. Estimation of hardness of water by EDTA method is used to determine the

- (a) Alkaline hardness only
- (b) Temporary hardness only
- (c) Permanent hardness only
- (d) All of the above

Answer: (d) Estimation of hardness of water by EDTA method is used to determine the alkaline, temporary and permanent hardness of water.

Q4. Hard water is unfit for use in boilers for generating steam because

- (a) Its boiling point is high
- (b) Hard water does not produce lather inside the boiler
- (c) Water decomposes into oxygen and hydrogen
- (d) It produces scales inside the boiler

Answer: (d) Hard water is unfit for use in boilers for generating steam because it produces scales inside the boiler.

Q5. Evaporation of water takes place faster in

- (a) Temperate Conditions
- (b) Humid Conditions
- (c) Hot Conditions
- (d) Cold Conditions

Answer: © Evaporation of water takes place faster in hot conditions.

