

Chapter 8 – Water

Question 1

Name the four main sources of water.

Solution:

Oceans, Seas, Rivers and Lakes

Question 2

State the importance of water cycle in nature.

Solution:

- (i) Water cycle helps in regulating weather on the earth.
- (ii) It makes water available in various forms on the earth.

Question 3.

Why is water very precious for all living beings?

Solution:

Water is very important for the existence of life. Since life on the earth began in the oceans, and nothing can live in earth without water, so it is rightly called the source of life. Water forms a large part of the body mass of all living organisms -90% of human blood is water. Water has the ability to dissolve a number of substances. Therefore, it serves as the liquid medium in which all reactions within the living body take place. Fruits and vegetables contain water in them. Even dry-looking substances like wood, peas, beans, grams etc. contain some amount of water.

Question 4.

Name the two gases from which water is formed. What is the chemical composition of these two gases in water?

Give the molecular formula of water?

Solution:

Oxygen and hydrogen are the gases from which water is formed.

The chemical composition of Hydrogen is H_2 and the chemical composition of Oxygen is O_2 and their proportion is 2:1

Molecular formula of water is H_2O .

Question 5.

What is the effect on boiling point of water when

(a) pressure is increased

Solution:

The boiling point of water increases with an increase in pressure.

(b) impurity is added

Solution:

Its freezing point is lowered by impurities and raises its boiling point. For example, salt is added to ice to lower its melting point. Such a mixture is called a freezing-mixture which is about -15°C .

Question 6.

Give reasons:

(a) Water is used as a cooling agent

Solution:

Water is used as a cooling agent because of its high specific heat. Water neither heats up nor cools down quickly. This property makes water as an excellent cooling agent.

(b) Water pipes burst in severe winters.

Solution:

Water pipes bursts in severe winter because the water inside the pipes freezes and increases its volume.

(c) It is difficult to cook in hills compared to plains.

Solution:

It is difficult to cook in hills compared to plains because temperature is lower in the hills where the atmospheric pressure is lower than in the plains. So, cooking takes long time in hills as compared to plains.

(d) Ice floats on water.

Solution:

Ice has low density as compared to water. Water has maximum density at 4°C . That is why ice floats on water.

(e) Sea water does not freeze at 0°C .

Solution:

Sea water does not freeze at 0°C because there are impurities dissolved in sea water which increases the freezing point.

Question 7.

How does anomalous expansion of water help aquatic organisms in cold climates?

Solution:

The survival of water animals in very cold climates is helped by the anomalous expansion. Initially when temperature of water falls, it becomes heavier and sinks down. This process continues till 4°C. Then after this expansion takes place. The surface layer gets frozen. Ice being a bad conductor of heat does not allow loss of heat from the water below and results in survival of water animals.

Exercise – II

Question 1.

Explain the terms:

- (a) Solution
- (b) Solute
- (c) Solvent.

Solution:

- (a) A homogeneous mixture of two or more substances can be varied is called a solution”
- (b) A solute is a substance which dissolves in other substances to form a solution. Solute is smaller quantity in solution.

“Substance which is dissolved in solvent” is called solute.

- (c) Solvent: A solvent is a medium in which a solute dissolves. It is in large quantity in solution.

$\text{Solution} = \text{Solute} + \text{Solvent}$

Question 2

What is meant by

- (a) Unsaturated
- (b) Saturated and
- (c) Supersaturated solutions.

Solution:

- (a) An unsaturated solution is a solution in which more of the solute can be dissolved at a given temperature.
- (b) A saturated solution is a solution that cannot dissolve any more of the solute at a given temperature.
- (c) A supersaturated solution is a solution that contains more solute than it can hold at room temperature.

Question 3.

How do the solubility of a solid and a gas affected by –

- (a) Increase in temperature
- (b) Increase in pressure

Solution:

(a) Solubility of a solid solute generally increases with an increase in temperature. This makes it possible to prepare supersaturated solutions. With an increase in temperature, the solubility of a gas decreases.

(b) In solubility of a solid (solute) in water, the pressure has practically no effect on it. In the case of gases, the amount of a gas dissolved in water increases with an increase in pressure.



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