WATER
SOLVED EXAMPLE

1. State five important uses of water.

Ans. Uses of water:

(i) Water is vital for life. Plants and animals cannot survive without water. About 70% of the human body is made of water.

(ii) Water is essential for the growth of plants.

(iii) Water is used for power production, i.e., for running hydroelectric and thermoelectric power plants.

(iv) Water is used for our daily necessities such as bathing, cooking, washing clothes, etc.

(v) In most of the countries, water is used for bulk transport of goods to other countries, through the sea.

2. Rainwater is considered the purest form of natural water. Explain the statement. Name the gases which dissolve in rain water before it reaches the ground. What harm can be caused by these gases?

Ans. Rainwater is considered the purest form of natural water because it is formed by the distillation of surface water. Although rainwater is the purest form of natural water, it contains some gaseous impurities like oxygen, nitrogen, carbon dioxide and sulphur dioxide. Carbon dioxide and sulphur dioxide react with water and form carbonic acid and sulphuric acid respectively. They damage crops, forests, buildings and the environment.

3. List (i) three dissolved impurities, and (ii) three suspended impurities present in river water.

Ans. Three dissolved impurities in river water are:

(i) Salts of calcium (ii) Hydrogen sulphide (iii) Carbon dioxide.

Three suspended impurities in river water are:

(i) Sand (ii) Clay (iii) Organic matters such as wood and dead animals.

4. Name the main salt present and its percentage in seawater.

Ans. Common salt (sodium chloride) is the main salt present in seawater. The percentage of common salt in seawater is 2.4%.

5. Describe an experiment to prove that plants give out a large amount of water vapor.

Ans. Experiment to show that plants release water vapor through their leaves. Take two beakers and pour 50 cc water and 10 cc of oil 8 in each. Put a freshly cut twig of a plant in one beaker. Place both the beakers in the sun and cover them with dry bell jars. After two hours we notice that the bell jar having freshly cut twig has tiny droplets of water clinging to its sides. It is because the leaves of the twig give out water vapor in air.

6. Write a short note on water cycle.

Ans. The constant flow of water on the earth between the atmosphere, land and ocean is called water cycle. Due to burning of fuels, evaporation of water from water bodies, transpiration and breathing,

enormous amount of water vapor is released into the air. It rises up and condenses to form clouds. Clouds cause rain. Rainwater flows over the surface of the earth. Some of it is collected as underground water and some of it is collected in springs, streams and rivers. Thus a natural balance of water is maintained.

7. State five qualities of drinking water.

Ans. Qualities of potable drinking water

(i) It must be clear and free from suspended impurities.

(ii) It must be odorless.

(iii) It must be colorless.

(iv) It must be free from disease causing microorganisms.

(v) It must contain small amounts of mineral salts of sodium and calcium that give it a special taste.

8. State two ways by which a small amount of clear water can be made safe for drinking.

Ans. The two ways by which a small amount of clear water can be made safe for drinking are by boiling and chemical treatment with chorine.

9. What do you understand by the following terms?

(i) Solute (ii) Solvent (iii) Solution (iv) Saturated solution. (v) Solubility of solute.

Ans. (i) Solute. A substance which dissolves in a liquid is called a solute. For example, common salt, sugar, etc.

(ii) Solvent. A liquid which dissolves other substances in it, is called a solvent. For example, water is a solvent that dissolves sugar in it.

(iii) Solution. When a solute dissolves in a solvent, then the resulting mixture is called a solution. For example, when sugar dissolves in water, then the product so obtained is called a sugar solution.

(iv) Saturated solution. A solution which cannot dissolve any more of a solute at a given temperature is called a saturated solution at that temperature.

(v) Solubility of solute. The maximum amount of solute which can be dissolved in 100 gm of water at a given temperature so as to form a saturated solution is called solubility of the solute at that temperature.

10. How does pollution of water take place?

(i) Due to daily activities of men and animals

(ii) Industries and agricultural operations?

Ans. (i) Water pollution due to daily activities of men and animals. In rural areas, people and animals defecate anywhere and everywhere. When it rains, this excreta is carried to streams and rivers and causes water pollution. In many places, these excreta is directly dumped into the rivers. This pollutes the water to a greater extent.

(ii) Water pollution due to industrial as well as agricultural operations. Water discharged from the industries contains metallic salts of mercury, lead, cadmium, arsenic, etc. These salts are highly poisonous and cause water pollution. If this water is utilized by plants and animals, it causes serious

diseases. During agricultural activities, farmers use artificial fertilizers, pesticides and insectides. These are washed down to the rivers and water bodies and cause pollution of potable water.

11. How can the pollution caused by the activities of men and industrial as well as agricultural operations be minimized?

Ans. Water pollution caused by the daily activities of men and animals can be minimized by the following steps—

(i) In villages, people should be encouraged to use pit latrines.

(ii) Cowdung should be converted into biogas in biogas plants.

(iii) Sewage should be treated properly to remove all the harmful substances before discharging into rivers.

(iv) Waste water of factories should be treated with chemical substances to remove harmful metallic salts.

(v) By using large amount of natural manure and natural pesticides.

(vi) By using drip irrigation so that harmful bacteria do not percolate down.

12. State the sources of water.

Ans. The sources of water are oceans, rivers, lakes, streams, ponds, springs and rainwater. Dams, wells, tube wells and canals are some man-made sources of water.

13. How is interchangeability of water beneficial to us?

Ans. Interchangeability of water is beneficial to us because due to this the phenomenon of water cycle comes into existence which makes life possible on earth.

14. How is drinking water provided in towns and cities?

Ans. Drinking water provided in towns and cities must be free from suspended impurities and harmful microorganisms. This is done in four stages.

(i) Sedimentation. Water is pumped into a series of settling tanks and allowed to stay still for a day. Very heavy particles of sand, clay, etc. settle at the bottom of the settling tank.

(ii) Addition of chemicals and further settling. Now water is mixed with alum and lime when fine particles of sand and clay form a bulky sticky precipitate. They settle down and the clear water is pumped out.

(iii) Filtration through sand and gravel. It completely removes suspended impurities.

(iv) Chlorination of water. Clear water is chlorinated so as to remove harmful bacteria present in it. This clear water is distributed to towns and cities.

15. Name some substances which pollute water.

Ans. Sewage from town and cities, wastes from factories and industries, chemicals such as fertilisers and pesticides are the major causes of water pollution.

16. Why water is called a universal solvent?

17. **Ans.** Water is called a universal solvent because of its ability to dissolve most of the compounds. Water can dissolve in it all kinds of solids, liquids or gases. For example, sugar, common salt, etc., are soluble substances.

18. What are the states in which water is present in nature?

Ans. In nature, water exists in the three states:

Solid state as ice.

Liquid state as liquid water.

Gaseous state as water vapor.

19. Name two biochemical reactions in which water takes part.

Ans. Photosynthesis and germination are the biochemical reactions in which water is used.

20. Which water contains the highest concentration of salt in it?

Ans. Seawater contains the highest concentration of salt in it.

21. Why should drinking water be purified before use?

Ans. Water should be purified before its consumption because polluted water contain many impurities which might be harmful for human beings or animals.

22. What is mineral water?

Ans. Mineral water is colorless and odorless. It contains some minerals that are necessary for our body. It also contains some dissolved gases to add taste.

23. What are the three methods of removing germs from natural water? Explain.

Ans. The three methods of removing germs from natural water are.

(i) By exposure to air and sunlight. It is the oldest method to kill germs in water. Air and sunlight have the effect of burning germs to death.

(ii) By boiling. It is the best method to kill all the germs for small quantities of water.

(iii) By chemical treatment. Chemicals like chlorine and ozone are used to kill bacteria.

24. How is water in a swimming pool kept free from infectious germs?

Ans. Swimming pools are usually chlorinated to keep the water free from infectious germs.

25. What is the purpose of adding bleaching powder to water supplied to the town?

Ans. Bleaching powder releases chlorine when added to water. Chlorine kills harmful microorganisms present in water.