



মণিপুরৰ শিক্ষা বিভাগ (মণি)

DEPARTMENT OF EDUCATION (S)

Government of Manipur

CHAPTER-16 –

WATER: A PRECIOUS RESOURCE

SOLUTIONS:

EXERCISES

1. Mark 'T' if the statement is true and 'F' if it is false.

- a) The freshwater stored in the ground is much more than that present in the rivers and lakes of the world. (T/F)
- b) Water shortage is a problem faced only by people living in rural areas. (T/F)
- c) Water from rivers is the only source for irrigation in the fields. (T/F)
- d) Rain is the ultimate source of water. (T/F)

Ans:

- a) True
- b) False
- c) False
- d) True

2. Explain how groundwater is recharged?

Ans: The groundwater gets recharged through the process of infiltration. Infiltration means seeping of water from rivers and lakes into the empty spaces and cracks deep below the ground.

3. There are ten tube wells in a lane of fifty houses. What could be the long-term impact on the water table?

Ans: The effect on the water table depends on the replenishment of underground water. Only five families will share a tube well, the water used for daily domestic purposes will not affect the water table. But if there is shortage of rains, the water used by the family will not replenished and water table will fall down.

4. You have been asked to maintain a garden. How will you minimise the use of water?

Ans: To minimise the wastage of water we will use the drip irrigation which throws the water at the base of plants. We will check the leakages in the water pipes and arrange small pits for rainwater harvesting. The collected rainwater will be used later.

5. Explain the factors responsible for the depletion of water table.

Ans: Various factors responsible for the depletion of water table are:

- i) Increased population:** Demand of water has been increased by the increased population. As the number of humans increase, the consumption of water also increases.
- ii) Increasing industries:** All industries need water. As the number of human population increase, the number of industries are also increased this definitely increases the consumption of water.
- iii) Lack of water conservation techniques:** Main source of water on earth and for the underground water is rain. The water of the rain, if conserved can increase the ground water level. But this is not done due to lack of water conservative techniques.
- iv) Agricultural activities:** India is a country which depends on agriculture. The land used for cultivation has increased. So, the consumption of water for agriculture has increased. Irregular rainfall has increased the consumption of groundwater. This has increased the depletion of groundwater.

6. Fill in the blanks with the appropriate answers:

- (a) People obtain groundwater through and
- (b) Three forms of water are , and
- (c) The water bearing layer of the earth is
- (d) The process of water seepage into the ground is called

Ans.

- a) wells, hand pumps
- b) Solid, liquid, gas
- c) aquifer
- d) infiltration

7. Which one of the following is not responsible for water shortage?

- (i) Rapid growth of industries
- (ii) Increasing population
- (iii) Heavy rainfall
- (iv) Mismanagement of water resources

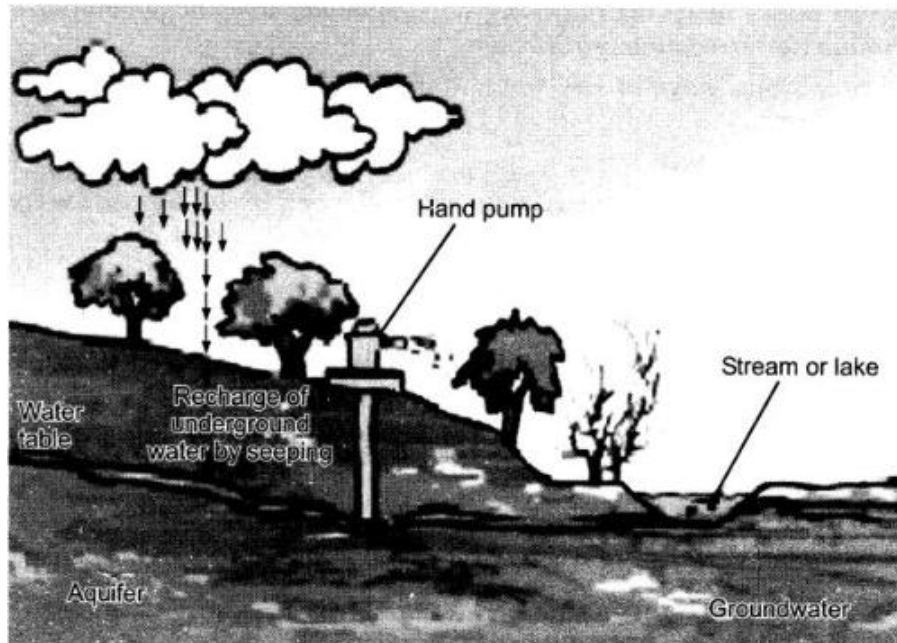
Ans.(iii) heavy rainfall

8. Choose the correct option. The total water
- (i) in the lakes and rivers of the world remains constant.
 - (ii) under the ground remains constant.
 - (iii) in the seas and oceans of the world remains constant.
 - (iv) of the world remains constant.

Ans.(iv) of the world remains constant.

9. Make a sketch showing groundwater and water table. Label it.

Ans:



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EXTRA QUESTIONS AND ANSWERS

1. When is the World Water Day celebrated? What is its significance?

Ans: The World Water Day is celebrated on 22nd March every year. This is done to attract attention to depleting water resources on earth and the need for their conservation.

2. What is the minimum amount of water recommended by the UN per day?

Ans: The minimum amount of water recommended by the UN per person is 50 litres per day. This is the minimum amount of water required for drinking, cooking, washing and maintenance of basic hygiene.

3. What year was celebrated as the International Year of Freshwater and what was its significance?

Ans: 2003 was celebrated as the International Year of Freshwater so as to bring awareness about the depleting freshwater resources and the need for its conservation.

4. What is water table?

Ans: The upper limit of the soil or earth beneath which the soil is always saturated with water is called as water table. Beneath the water table water is always found. The level of water table varies from place to place and may change over time.

5. What do you mean by ground water?

Ans: The water found below the water table is called ground water.

6. What is the source of ground water?

Ans: The rain water and water from other sources such as rivers and ponds are the sources of the ground water.

7. How will you minimise the use of water in garden?

Ans: We can reduce the usage of water for gardening by adopting drip irrigation method. In this method, water will reach the roots of the plant drop by drop, which will reduce the wastage of water.

8. What is an aquifer?

Ans: Ground water stored between layers of hard rock beneath the water table is called as aquifer. This water can be pumped out by using tube wells and hand pumps.

9. What is meant by drip irrigation? Explain its significance?

Ans: Drip irrigation is a method of irrigation that is used by farmers to conserve water and efficiently manage available water. In drip irrigation a network of narrow tubing's is placed throughout the field with holes that open near the base of plants. The tubes are connected to a source of water supply. When water is pumped the

tubing's directly deliver water only to the base of the plant and not the whole field thereby ensuring economic use of water.

10. Explain the distribution of water on earth.

Ans: Approximately 71% of earth's surface is covered by water. Of this nearly 97% is sea or ocean water. The remaining 3 % is available as freshwater. 2% of earth's water is present rivers, lakes, ponds and glaciers whereas 1 % is available as groundwater.

11. What is rainwater harvesting?

Ans: The process by which rainwater is used to recharge groundwater is called as rainwater harvesting. In this method the rainwater that falls on earth, roofs, etc. is channelled using a system of pipes. This water can be used either as temporary storage or allowed to infiltrate the soil and recharge groundwater.

12. Explain the use of bawris in water management.

Ans: Bawris or step wells are a traditional method of rainwater harvesting. In this method people build very deep step wells into the ground. During rains these step wells get filled up with water. Being very deep the evaporation is very less. Therefore, water can be stored in these wells for a longer time and used in times of shortage.

13. Explain water cycle with a diagram.

Ans:



We know that water is brought back to the surface of the earth by rain, hail or snow, goes back to oceans. Thus, water from the ocean and surface of the earth goes into air as vapour; returns as rain, hail or snow and finally goes back to the oceans. The circulation of water in this manner is known as the water cycle.

- I. Ground water: The rain water and water from other sources such as rivers and ponds are the sources of the ground water.
- II. Evaporation: Water from the earth's surface-including land, oceans, lakes, rivers, etc. is evaporated due to the heat from the sun. water converts to water vapour and rises into the air.

- III. Transpiration: Water is evaporated from the surface of leaves and the water vapour rises into the air.
- IV. Condensation: The water vapour cool as it rises higher and higher into the air and condenses to form water droplets in the form of clouds.
- V. Precipitation: The clouds get saturated with water and eventually fall on earth as rain, snow, hail or sleet.
- VI. Percolation: Some of the precipitation that falls on earth is able to infiltrate through the soil and recharge ground water.
- VII. Surface run-off: Water that falls on slopes flows down due to gravity and is eventually deposited into water bodies.

14. How can we save water?

Ans: We can adopt different ways to minimize the wastage of water:

- i. Always keep the taps closed while brushing or washing the face to prevent water from flowing away unnecessarily. One should use it only when needed.
- ii. Fix any water taps that are leaking, immediately.
- iii. Instead of taking a shower use a bucket to take bath.
- iv. Use water left from washing clothes for mopping the floor and washing cars instead of running water.
- v. Water your plants in the morning or evening times so that the water does not immediately get evaporated.
- vi. Do not waste food as it takes a lot of water to irrigate the fruits and vegetables.
- vii. Do not throw away water unnecessarily. Use water in a judicious amount

15. How is water cycle important in maintaining the water levels on earth? How can we utilise it efficiently to obtain freshwater?

Ans: Water cycle is the cycling of water between the earth and the atmosphere in a cyclical manner. The water cycle is extremely important in maintaining water levels on earth.

- i. It ensures that all the water on earth remains in earth and does not escape into space.
- ii. It ensures that the water which has been lost from land by various processes is returned to land by precipitation.
- iii. As most of the water on earth's surface is in the seas and oceans, maximum evaporation occurs from these surfaces. Sea/ocean water is not directly potable due to the high salt content. But when it condenses, precipitation occurs in the form of fresh water which can be used for human consumption.
- iv. Water will be lost by transpiration and human activities that exploit groundwater. This will lead to depleting groundwater.
- v. The groundwater can be recharged and fresh water can be harvested by using appropriate water management techniques.
- vi. Rainwater harvesting pits and step wells can be used to recharge ground water and to provide water in times of shortage.
- vii. Dependence on ground water and fresh water can be reduced by using drip irrigation

16. What are the causes of depleting water table?

Ans: The main causes of depleting water table are population explosion, urbanization, industrialization and agriculture

- i. **Population Explosion:** A very rapid increase in population is termed as population explosion. A rapid increase in human population increases the dependence on all resources including water. The amount of water on earth is limited but the demand is constantly increasing. Therefore, we use up more and more groundwater without allowing sufficient recharge thereby causing its depletion
- ii. **Urbanization:** Increased urbanization and changing lifestyles further increase our dependence on water. Commercialization and materialistic lifestyle causes us to depend on products which require a lot of fresh water to be manufactured. This further decreases the ground water.
- iii. **Industrialization:** As population grows and lifestyles change, more and more industries have come up to provide for our need and greed. Most industrial processes require a lot of water further dwindling the groundwater resource
- iv. **Agriculture:** Agriculture is a water intensive process as plants require sufficient water to grow and propagate. Certain plants are more dependent on water than others. Most of agriculture in India is still dependent on rain (rain-fed agriculture). However, rains are erratic and unpredictable. Therefore, to make water available for agriculture, more and more groundwater is being used causing further depletion in its levels.

17. How scarcity of water affects the plants?

Ans: The scarcity of water affects the plants by:

- The plants get dried up as they get no water and hence they can die.
- There is no water to conduct photosynthesis and hence they are not able to produce any food.
- They will not be able to grow upright because of scarce water.
- They will no longer be able to get enough nutrients from the soil because of less or water.
- As a result, there will be no food, no oxygen and hence no life without the plants.

18. The distribution of water over the globe is not even. Why? Give reasons.

Ans: The distribution of water over the globe is not even due to a number of factors. Some places have good amount of rain and are water rich. On the other hand there are deserts which have scanty rainfall.

India is a vast country and the rainfall is not same everywhere. Some regions have excessive rain while some others have very little rainfall. Excessive rains cause the floods whereas the absence of rains results in droughts. Therefore, some regions in our country may have floods while others may suffer from droughts at the same time.