Chapter 16. Water A Precious Resource

Very Short Q&A:

Q1: Name the available water resource on earth.

Ans: Oceans, seas, lakes, rivers, ice, ground water and moisture in the air.

Q2: Water that is fit for human consumption is called_____.

Ans: Freshwater.

Q3: What per cent of total water on the earth is actually available for our use?

Ans: 0.006 per cent

Q4: As a solid, water exists as icecaps at the poles. True/ False.

Ans: True

Q5: People obtain ---------through tube wells and hand pumps.

Ans: Groundwater

Q6: Three forms of water are solid, liquid and ---------.

Ans: Vapour

Q7: The water bearing layer of the earth is ----------.

Ans: Aquifer

Q8: The process of water seepage into the ground is called ---------.

Ans: Infiltration

Q9: The process of changing of water into its vapour is called---------.

Ans: Evaporation

Q10: The process of changing water vapour into water is called ---------.

Ans: Condensation

Q11: No rainfall for a year or more may lead to ---------- in that region.

Ans: Drought

Q12: Excessive rains may cause ----------.

Ans: Flood

Q13: What are main sources of water?

a. Rainwater
b. Glaciers, ice
c. River water
d. sea and Ocean water
e. All of the above

Ans: All of the above

Q14: Why ice floats on water?

Ans: Ice is lighter than water so floats on water.

Q15: Name the gaseous form of water around us.

Ans: Water vapour present in the air around us.

Q16: Sometimes, ground water accumulates between layers of hard rock. This is known as an aquifer. True/False

Ans: True

Q17: Plants use ground water and release it in the form of water vapour during transpiration. True/False

Ans: True

Q18: Clouds then release the water through _____.

Ans: Precipitation

Q19: Is increasing population is the reason for depletion of water table?

Ans: Yes

Q20: What is water management?

Ans: Water management is the continuous matching of water resources with the water requirements of a place.

Q21: What do you mean by water harvesting?

Ans: Instead of letting rainwater run -off into the sea, it can be used to recharge ground water. This is known as rainwater harvesting.

Q22: State the advantage of water harvesting?

Ans: Rainwater harvesting can be used to raise the water table in arid areas.

Q23: What is drip irrigation?

Ans: Drip irrigation is an economical way of using water.

Q24: State the use of water in plants.

Ans: Plants need water to absorb nutrients from the soil and make their food.

Q25: Which day is celebrated as World's Water Day?

Ans: 22 March

Q26: Name the process responsible for maintenance of water on earth.

Ans: Water cycle

Q27: Name the region in Gujarat having very eratic rainfall.

Ans: Bhujpur in the Kutch area of Gujarat

Q28: Define infiltration.

Ans: Infiltration is the process of seeping of water into the ground.

Q29: What is aquifer?

Ans: An aquifer is a body of saturated rock through which water can easily move.

Q30: Which of the following is the reason for depletion of water table?

a. Increasing population
b. Increasing industries
c. Deforestation
d. All of the above

Ans: All of the above

Q31: How water in an aquifer can be pumped out?

Ans: With the help of tube wells or hand pumps.

Q32: How does underground water gets replenished?

Ans: By seepage of rainwater.

Q33: State factors affecting water table.

Ans: Increasing population, increasing industries, increasing agricultural activities and scanty rainfall.

Short Q&A:

Q1: Why are we left only tiny fraction of water for use even if about 75 % of the earth surface is covered with water?

Ans: This is because most of the water about 97% of surface water is in sea and ocean as salty water that is unfit for domestic and agricultural use.

Q2: State various uses of water?

Ans: Water is used for various activities such as agriculture, industries, cooking, cleaning utensils,bathing, washing clothes, and, most importantly, for drinking.

Q3: Explain various processes that make up the water cycle.

Ans: There are six important processes that make up the water cycle:

1. Condensation - the opposite of evaporation. Condensation occurs when a gas is changed into a liquid.

2. Infiltration - Infiltration is an important process where rain water soaks into the ground, through the soil and underlying rock layers.
3. Runoff - Much of the water that returns to Earth as precipitation runs off the surface of the land, and flows downhill into streams, rivers, ponds and lakes.
4. Evaporation - the process where a liquid, in this case water, changes from its liquid state to a gaseous state.
5. Precipitation - When the temperature and atmospheric pressure are right, the small droplets of water in clouds form larger droplets and precipitation occurs. The raindrops fall to Earth.
6. Transpiration - As plants absorb water from the soil, the water moves from the roots through the stems to the leaves. Once the water reaches the leaves, some of it evaporates from the leaves, adding to the amount of water vapour in the air. This process of evaporation through plant leaves is called transpiration.

Q4: Why do we need the water cycle?

Ans: The Earth is covered by water, however, almost 97% is salt water found in the oceans. We cannot drink salt water or use it for crops because of the salt content. We can remove salt from ocean water, but the process is very expensive.

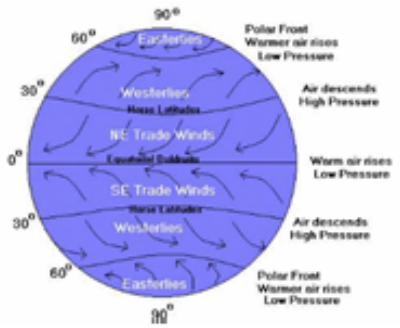
Q5: Why water is considered as a precious resource?

Ans: Water is a precious source because all our daily activities are carried out with the help of water only. Water is found everywhere but not everywhere it is drinkable/ usable. Though the seas have no lack of water but still we can't drink or use it anywhere. Water helps in nourishment of animals and plants. We can't live without water and because it is scarce, that’s why water is precious.

Q6: Enlist some methods to conserve water.

Ans: Water conservation is process of preventing wastage of water, using water carefully and recharging ground water. Water conservation can be done by :-

1. Repairing leaking pipes and taps.
2. Not wasting water during brushing teeth, shaving, bathing, washing clothes and during other activities.
3. Rainwater harvesting.
4. By drip irrigation of plants.



Q7: What do you understand by anomalous expansion of water?

Ans: When water at room is cooled, it contract until reaches 40c and then starts expanding. This strange behaviour of water is called anomalous expansion of water.

Q8: What is the reason behind floating of ice in water?

Ans: Ice is lighter than water so it floats on water.

Q9: Define specific heat capacity of substance?

Ans: The amount of heat required to raise the temperature of substance is known as specific heat capacity of substance.

Q10: Water is a universal solvent. Explain

Ans: A large number of substances dissolve in water so it is called universal solvent. A liquid that dissolve another substance (solute) to form solution is called solvent.

Q11: How cloud is formed?

Ans: The evaporated water above the earth surface is carried away by warm air. As the warm air moves higher from the surface of the Earth, it starts to cool down. It is because the water vapour present starts to condense to form tiny water droplets. These droplets float in the air and form cloud.

Q12: What is precipitation?

Ans: When clouds rub together heat is produced that melt the cloud into droplets. These droplets collect to form bigger drops of water. Some of them may become too heavy fall down as rain. This process is known as precipitation.

Q13: Write short notes on

1. In filtration
2. Aquifer

Ans:

1. In filtration:The water from rain, rivers, lakes and ponds seeps through the soil and fills the space below the ground. The process of seeping of water through the soil is called infiltration.
2. Aquifer:Some places groundwater is stored between layers of hard rock. This is called aquifer. Water from aquifers is pumped and taken out through hand pumps and tube wells.

Q14: Explain how increasing population is responsible for depletion of water table.

Ans: Increasing population creates demand for construction of houses, shops, offices, roads and pavements. This decreases the open areas like parks, and playgrounds. This, in turn, decreases the seepage of rainwater into the ground. A cemented floor does not allow water to seep in easily, while in a grass lawn water seeps through in no time. Moreover a huge amount of water is required for construction work. Often groundwater is used for this purpose. So, on the one hand we are consuming more groundwater, and on the other we are allowing lesser water to seep into the ground. This results in depletion of water table. In fact, the water table in some parts of many cities has gone down to alarmingly low levels.

Q15: Explain how increasing industries are responsible for depletion of water table.

Ans: Water is used by all the industries. Almost everything that we use needs water somewhere in its production process. The number of industries is increasing continuously. Water used by most of the industries is drawn from the ground.

Q16: Explain how increasing agricultural activities are responsible for depletion of water table.

Ans: A majority of farmers in India depend upon rains for irrigating their crops. Irrigation systems such as canals are there only in a few places. Even these systems may suffer from lack of water due to erratic rainfall. Therefore, farmers have to use groundwater for irrigation. Population pressure on agriculture forces increasing use of groundwater day by day. This results in depletion of water table.

Q17: You have been asked to maintain a garden. How will you minimise the use of water?

Ans: For maintaining the garden, we can take following steps to minimise the use of water :

1. We can employ drip irrigation to water the garden. Drip irrigation is a technique of watering plants by making use of narrow tubings which deliver water directly at the base of the plant.
2. We should water the plants in garden in early morning hours.If you are unable to water early in the morning, late afternoon is the next best; this is after the sun's heat has lost its harshness but before the chill in the air begins to set in.
3. We should avoid using a sprinkler during windy weather, as the water will blow away and evaporate, wasting the water.

Q18: There are ten tubewells in a lane of fifty houses. What could be the long term impact on the water table?

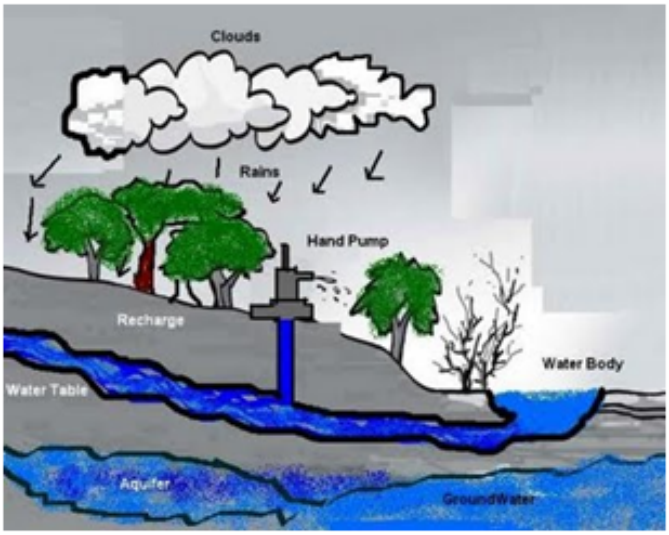
Ans: Water drawn from under the ground gets replenished by seepage of rainwater. The water table does not get affected as long as we draw as much water as is replenished by natural processes. However, water table may go down if the water is not sufficiently replenished. As stated, there are ten tube wells in a lane of fifty houses, so the quantity of water being pumped out by 10 tube wells can not be replenished by the available sources like rain, drainage to recharge the ground water table. As a result of this, in long term the water table beneath will be get depleted and after some years there will be no water for 10 tube wells to pump out.

Q19: Explain how we can recharge ground water?

Ans: The rainwater and water from other sources such as rivers and ponds seeps through the soil and fills the empty spaces and cracks deep below the ground. The process of seeping of water into the ground is called infiltration. The groundwater thus gets recharged by this process. At places the groundwater is stored between layers of hard rock below the water table. This is known as an aquifer. Water in the aquifers can be usually pumped out with the help of tube wells or hand pumps.

Q20: Show groundwater and water table via a sketch.

Ans:



Q21: Explain the three form of water that exists in nature.

Ans: In nature, water exists in three forms:

1. As a solid, it exists as icecaps at the poles, snow-covered mountains and glaciers.
2. As a liquid, it is in the form of water in oceans, lakes and rivers, and underground water.
3. Its gaseous form is the water vapour in the air around us.

Q22: What is water management?

Ans: Water management is the continuous matching of water resources with the water requirements of a place.

- Water management essentially involves activities that identify sources of water, prevent wastage of water, and implement recycling of water.
- It may also include treatment of water to make it suitable for human consumption
- Prevent wastage of water
- Water leaking from pipes
- Leaking tap
- Water over-flowing from buckets while clothes are being washed alongside
- A person brushing teeth with the tap left running

Q23: What is rain water harvesting and how it is important?

Ans: Instead of letting rainwater run-off into the sea, it can be used to recharge ground water. This is known as rainwater harvesting.

Rainwater harvesting can be used to raise the water table in arid areas. It can also be used to create water storage areas.

Q24: How farming can also benefit from good water management.

Ans: Farming, which typically requires huge quantities of water, can also benefit from good water management. Drip irrigation is an economical way of using water. This technique involves the use of tubes to deliver water straight to the base of a plant, where it is taken up by the roots.

Q25: Explain the role of water in the life of plants.

Ans: Plants need water to absorb nutrients from the soil and make their food. Without water, plants would die, and greenery would be lost. This, in turn, would mean the end of all life on the earth, because without plants, there would be no food, oxygen or rainfall. There would also be many other problems.

Q26: Can we keep on drawing water from underground, how it will affect the water table?

Ans: Water drawn from under the ground gets replenished by seepage of rainwater; the water table is not affected as long as we draw as much water as is replenished by natural processes, and however it may go down if the water is not sufficiently replenished.

Long Q&A:

Q1: Describe the role of water in life of animals and plants.

Ans:

Water is used for various activities such as agriculture, industries, cooking, cleaning utensils,bathing, washing clothes, and, most importantly, for drinking.

Water is a precious source because all our daily activities are carried out with the help of water only. Water is found everywhere but not everywhere it is drinkable/ usable. Though the seas have no lack of water but still we can't drink or use it anywhere. Water helps in nourishment of animals and plants. We can't live without water and because it is scarce, that’s why water is precious.

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Q2: Explain the factors responsible for depletion of water table.

Ans:

Increasing population creates demand for construction of houses, shops, offices, roads and pavements. This decreases the open areas like parks, and playgrounds. This, in turn, decreases the seepage of rainwater into the ground. A cemented floor does not allow water to seep in easily, while in a grass lawn water seeps through in no time. Moreover a huge amount of water is required for construction work. Often groundwater is used for this purpose. So, on the one hand we are consuming more groundwater, and on the other we are allowing lesser water to seep into the ground. This results in depletion of water table. In fact, the water table in some parts of many cities has gone down to alarmingly low levels

Water is used by all the industries. Almost everything that we use needs water somewhere in its production process. The number of industries is increasing continuously. Water used by most of the industries is drawn from the ground.

A majority of farmers in India depend upon rains for irrigating their crops. Irrigation systems such as canals are there only in a few places. Even these systems may suffer from lack of water due to erratic rainfall. Therefore, farmers have to use groundwater for irrigation. Population pressure on agriculture forces increasing use of groundwater day by day. This results in depletion of water table.