SCIENCE

Water

Introduction

- Water is one of the most important naturalresources.
- It is one of the basic necessities forsurvival.

Uses of Water

Water is used to carry out day to day household work.

In agriculture, for growing crops.

In industries, for the manufacture and production of different things.

In radiators of vehicles to keep the engine cool.

Rivers and seas are used for transport of passengers and goods from one place to another by boats, motor boats and ships.

Water helps in the dispersal of seeds of several plants and trees.

To generate electricity.

Water forms the habitat of aquatic animals and plants.

Water is an important constituent of the body.

DID YOU KNOW ?

22nd March is celebrated as World Water Day.

Sources of Water

River
- Rainwater is said to be the purest form ofwater.
- When precipitation occurs, rain showers contain purewater.

Lakes
- A lake is a large inland depression which holds standing freshwater for most of the months of theyear.

Ponds
- Ponds are small bodies of shallowwater.

Wells
- Some of the rainwater seeps into the earth and can be collected bydigging a well

Springs
- The place where underground water comes out on the surface of theearth on its own is called aspring.
- Spring water is fit fordrinking.

States of Water

- In nature, water is the only substance which exists in all the three states- solid, liquid andgas

Solid

- Wateris found in the form of ice in polar regions as icebergs in Antarctica and on mountaintops.
- Ice is water in solidstate.

Liquid

- Water in rivers, lakes and ponds is in liquidstate.
- As ice melts, water changes from solid to iquidstate.

Gas

- Water vapour is the gaseous state ofwater.
- Water changes from the liquid state into vapour or gaseous state at100°C.

Processes Involved in the Water Cycle

- During the water cycle in nature, the water goes through changes ofstate.
- Many physical processes such as evaporation, transpiration, condensation, freezing and melting are involved in the watercycle.

Evaporation

The changing of a liquid into its vapour or gaseous form due to heat is called evaporation.

Water from water sources gets evaporated due to the sun's heat.

Transpiration

Plants need water to grow. They use some of the water toprepare food and store some ofit.

The rest of the water is released into theair from the leaf surface in the form of water vapour. This process is calledtranspiration.

Condensation

The changing ofwater vapour into liquid water on cooling is calledcondensation.

This water vapour goes up and forms clouds. When the clouds cool, the vapour condenses into water again and falls asrain.

Importance of Water Cycle

- It makes fresh water available in the form ofrain.
- It keeps the amount of water on the Earth’s surfaceconstant.

Rains

Importance of Rain

- Rains bring relief by cooling the environment after the hot summerseason.
- The sowing of many crops depends on the arrival of rain duringmonsoon.
- Rains provide water to the rivers and dams of hydroelectric powerplants.
- Rains fill up lakes and ponds which act as sources ofwater.
- Rains get accumulated in the form of groundwater which gets stored under the surface of theEarth.

Adverse Effects of Rain

Floods	Droughts
• When it rains heavily, it is calledexcessive rainfall. This may result in **floods**.	• If there is less rainfall, it is called scantyrainfall. This may result in **drought**.
• People residing on the banks of the riverin villages and cities suffer great loss.	• Many people die because of scarcity ofwater and food.
• Field and crops get washedoff.	• Scanty rainfall causesfamine.
• The water gets polluted due to mud and dirt.It results in the spread of epidemics.	• Sowing is not carried out whichadversely affects agriculture.
• Heavy rains also kill animals living in soilas these animals do not get sufficient air to breathe.	• Many animals die of starvation because of scarcity of water andfodder.

Conservation of Water

- Water is a very precious resource. Life on Earth will continue only as long aswe have enough clean water.
- We should try to save water by controlling the amount of water which weuse.
- We should be careful and use only as much water as required.

Measures to Conserve Water

- Avoid throwing plastic bags and other garbage in rivers and lakes as this makes the water dirty.
- Cattle should be bathed at a distance from water bodies.
- Farmers should start growing food grains which require less water.
- Avoid brushing your teeth with the tap open. Use a mug of water while brushing your teeth.
- Do not bathe under the shower. Instead, make use of a bucket to have a bath.
- Make sure you turn off the tap while applying soap to your hands and after washing your hands.
- Do not use a hosepipe to wash your cycle or car. Instead, use a bucket filled with water.
- Use the water used for washing vegetables to water the plants in your garden.
- All taps at home should be closed tightly. Repair all leaking taps and pipes.
- Encourage your family, friends and neighbours to save water.

Harvesting

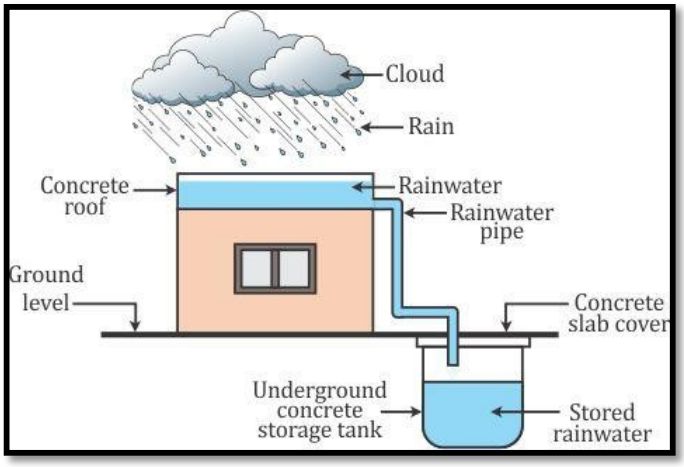
Rainwater which falls on roofs and terraces of buildings can be collected through pipes and stored in underground tanks or can be allowed to percolate into the soil and used to recharge the groundwater table. This is called water harvesting or rainwater harvesting.

Types of rainwater harvesting

Rooftop rainwater harvesting

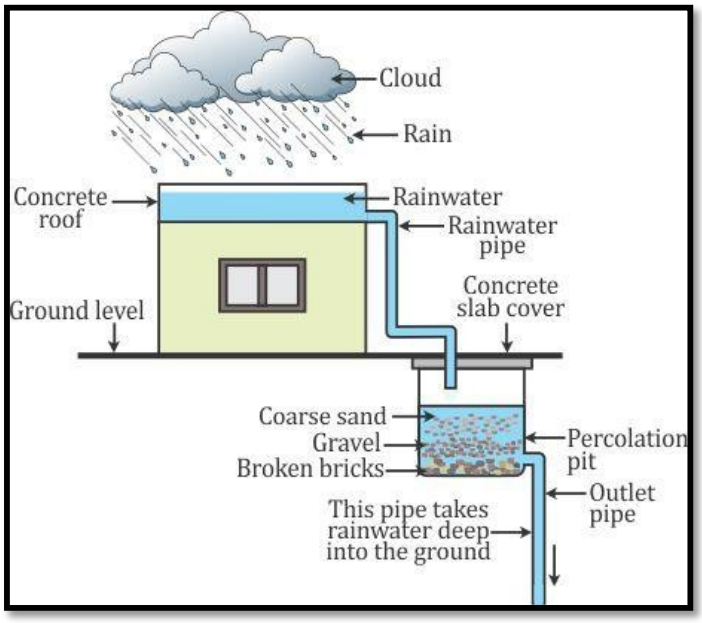
Method 1

- Rainwater which collects on the roof of a house is brought down through rainwater pipes and collected in a large underground tank made ofconcrete.



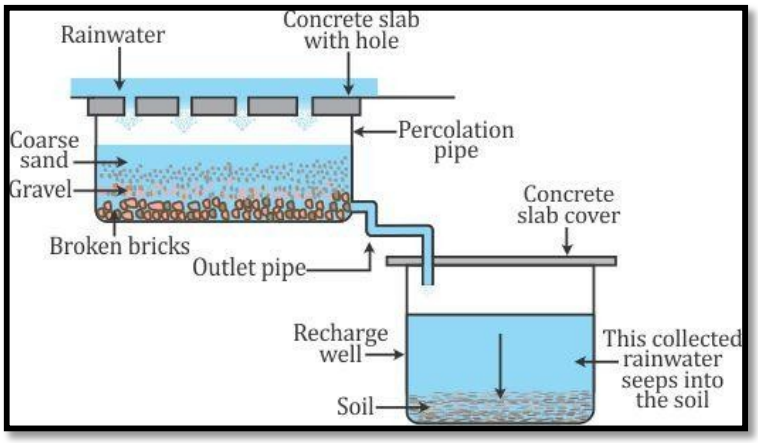
Method 2

- The pipe which brings down rainwater goes directly into a percolation pit made in theground.



Rainwater harvesting from open spaces around buildings

- Percolation pits covered with concrete slabs with holes in them are constructed in theground.



Advantages of rainwater harvesting

- It is a simple and an economically beneficialprocess.
- It has proved to be very useful in urban areas where the demand for freshwater is increasing.
- It also prevents flooding of living areas and streets incities.
- In coastal areas, rainwater harvesting can arrest seawater intrusion and conserve groundwater.
- Themethodofrainwaterharvestingcanalsoreducetopsoillossorsoilerosionand improve plant growth.