3.7 WATER RESOURCES

Water is an indispensible resource. Around 97% of world surface is covered with water. Most of the animals and plants have 60-65% of water in their body.

Unique features of water:

- ❖ High specific heat
- ❖ High latent heat of vapourisation
- ❖ Good solvent for oxygen, nutrients and pollutants
- ❖ Anomalous expansion on freezing
- ❖ High surface tension

Global distribution of water is very much random depending on the geographical conditions. The availability of water decreases in the following order.

- ➲ Tropical rain forest
- ➲ Temperate regions
- ➲ Deserts

Water is used for domestic, irrigation and also industrial purposes. Out of the total available water 75% is used for agriculture, 20% for industrial usage.

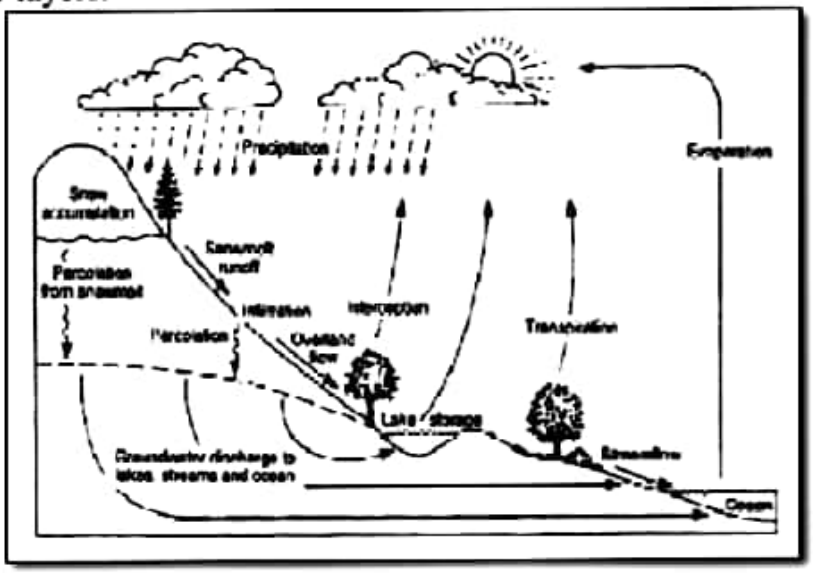
In our country ~93% of water is used for agricultural purposes.

Ground water: 9.86% of fresh water is ground water and it is 35-50% greater than surface water.

Aquifer: The layer of soil which is permeable has the ability to store water is called an aquifer. It is generally made up of gravel, sand etc.

Unconfined aquifer: it is covered by permeable layer. The recharge of this layer is by rainfall or snowmelt.

Confined aquifer: sandwiched between impermeable layers. The recharge is through unconfined aquifer layers.



Water Cycle

3.7.1 OVER UTILIZATION OF GROUND WATER

Over utilization of water leads to rapid depletion of water resources, ground subsidence, lowering of water table and water logging.

Reasons: Economic development, rapid industrial growth and population explosion. The use of ground water and surface water rates which are higher than that of recharge ultimately leads to

- Water scarcity
- Water logging
- Salination
- Alkalization

- Water pollution or contamination
- Creates declining of water levels
- Crops failure and reduction in agricultural production
- Over pumping of ground water create drought, famine and food shortage
- Over pumping of ground water sea water intrusion in coastal aquifers
- Land subsidence may due to over pumping of ground water

Clean water is universal right. It is the responsibility of everyone to ensure the purity of water. Water is a valuable commodity and it has to be conserved.

Surface water: When evaporation and transpiration rates are lower than the rainfall, surface water body like lake, river, pond, streams etc. are formed.

Flood: over flow of water, whenever the water in flow is greater than the carrying capacity of the channels flood occurs.

3.7.2 Causes:

- Heavy rainfall, snow melt, sudden release of water from dams.
- Prolonged down pour leading to overflowing of rivers and lakes
- Reduction in carrying capacity due to obstructions or sediments etc.
- Deforestation, overgrazing, mining increases water run off
- Removal of dense forests from hilly regions

3.7.3 Effects:

- Submerges the flooded area
- Loss of soil fertility due to soil erosion
- Extinction of civilization at costal area

3.7.4 Flood management:

- ✓ Dams and reservoirs can be constructed
- ✓ Embankments and proper channel management
- ✓ Flood way should not be encroached
- ✓ Forecasting or flood warning
- ✓ Decrease of run off by infiltration through afforestation or rain water harvesting etc.