



Iqra National University

MID TERM ASSIGNMENT

Azaz Ali Shah KHan

ID: 14237

M.S Civil Engineering

Instructor :

Engr . Nadeem Ullah

Lecturer INU



Name: Azaz Ali Shah Khan

ID: 14237

Water Demand Supply & Distribution (CE-562)

Instructor: Engr. Nadeem Ullah

Discipline: M.S (Civil Engineering)

April 14,2020

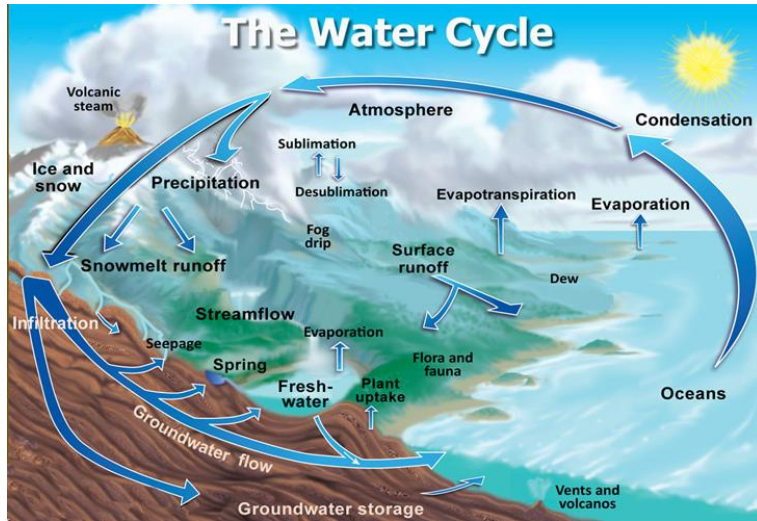
Answer#1:

Hydrological Cycle:

Water cycle, also called hydrological cycle, a cycle in which the water circulates in Earth atmosphere system, composed of many processes i.e. evaporation, transpiration, condensation, precipitation, and runoff. Although the total amount of water within the cycle remains essentially constant, its distribution among the various processes is continually changing.

Hydrological cycle includes the following processes:

1. Evaporation
2. Condensation
3. Precipitation
4. Interception
5. Infiltration
6. Percolation
7. Transpiration
8. Runoff and storage



It is a reality that Hydrological Cycle has been disturbed but the research on this is still continue. Many impact studies have found that changes in evapotranspiration rates due to global warming have only a marginal effect on surface runoff when compared with changes in precipitation. Recent research supports the claim that changes in climate recorded over the present century are due to increases in greenhouse gases in the atmosphere.

The earth's water circulatory system is called as hydrological cycle.

Total supply of earth is in constant circulation from earth to atmosphere and back to earth.

The cycle has no begging or end it occurs continuously.

There are many processes involved in hydrological cycle that is Precipitation, evaporation, infiltration, runoff, transportation etc.

Yes, hydrological cycle has been disturbed.

Yes, hydrological cycle is disturbed and its reality and the answer

To this lies in a simple fact and that is 'climate changes'.

Earth climate is changing that's mainly due to the atmospheric activities, that greatly involves pollution.

Answer#2:

Ground water Sustainability:

It is defined as; the development and use of groundwater resources to meet current and future beneficial uses without causing unacceptable environmental or socioeconomic consequences.

Rainwater Harvesting essentially means collecting rainwater on the roofs of building and storing it underground for later use. Not only does this recharging arrest groundwater depletion, it also raises the declining water table and can help augment water supply.

Broadly there are two ways of harvesting rainwater

1. Surface runoff harvesting
2. Roof top rainwater harvesting

Rainwater Harvesting could be the most sustainable solution to be included in the urban water management system. It could mitigate the water crisis problem, reduce the burden on traditional water sources, alleviate nonpoint source pollutant loads, control water logging problems, prevent flooding, help in controlling climate change impacts, contribute to the storm water management.

Answer#3:

Quality Parameter for designing water supply system for a community:

In order to design the water supply scheme there are several quality parameters which should be taken in account.

1. Water Sampling
2. Testing Procedure
3. Water treatment methods

1. Water Sampling:

Water should meet the drinking water standards if it is to be considered safe. to ensure the water quality the water sampling and analysis should be done by ISO-certified laboratories. Sampling and monitoring tests should be carried out by qualified technicians.

2. Testing procedure:

Testing procedures and parameters may be grouped into physical, chemical, bacteriological and microscopic categories.

- Physical tests indicate properties detectable by the senses.
- Chemical tests determine the amounts of mineral and organic substances that affect water quality.
- Bacteriological tests show the presence of bacteria, characteristics of pollution.

3. Water treatment methods:

After testing procedure is done then now it is required to treat the water for safety and requirements. So, for this there are 3 types of treatments;

- Primary treatment consists chlorination, ozone treatment, Ultraviolet irradiation treatment, Membrane filtration.
- Secondary treatment consists Cartridge filtration, Rapid sand filtration, Multimedia sand filtration, Up-flow filtration.
- Complete treatment consists of flocculation, coagulation, sedimentation and filtration followed by disinfection. Chemical treatment may be required to reduce excessive levels of iron, manganese, chalk, and organic matter.

Water supply system should be designed in such a way that is long lasting and meet the demands of the community effectively.

As design of water supply system consists of complex pipe networks, so careful design is required.