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Explain the Water Cycle?

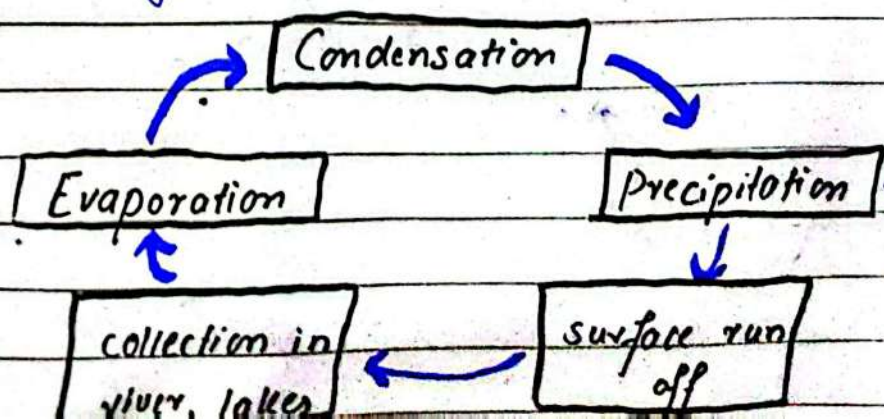
① INTRODUCTION:

Water is one of the most essential elements that sustains life on Earth. It is continuously recycled through a natural process known as the water cycle or hydrological cycle. Water moves in a cyclic form between the earth and the atmosphere. The water cycle plays a pivotal role in maintaining ecological balance, weather patterns and climate regulation.

② WHAT IS THE WATER CYCLE:

It is continuous movement of water in a cyclic manner between the biosphere atmosphere, lithosphere and hydrosphere

Water moves through the hydrosphere in a cycle



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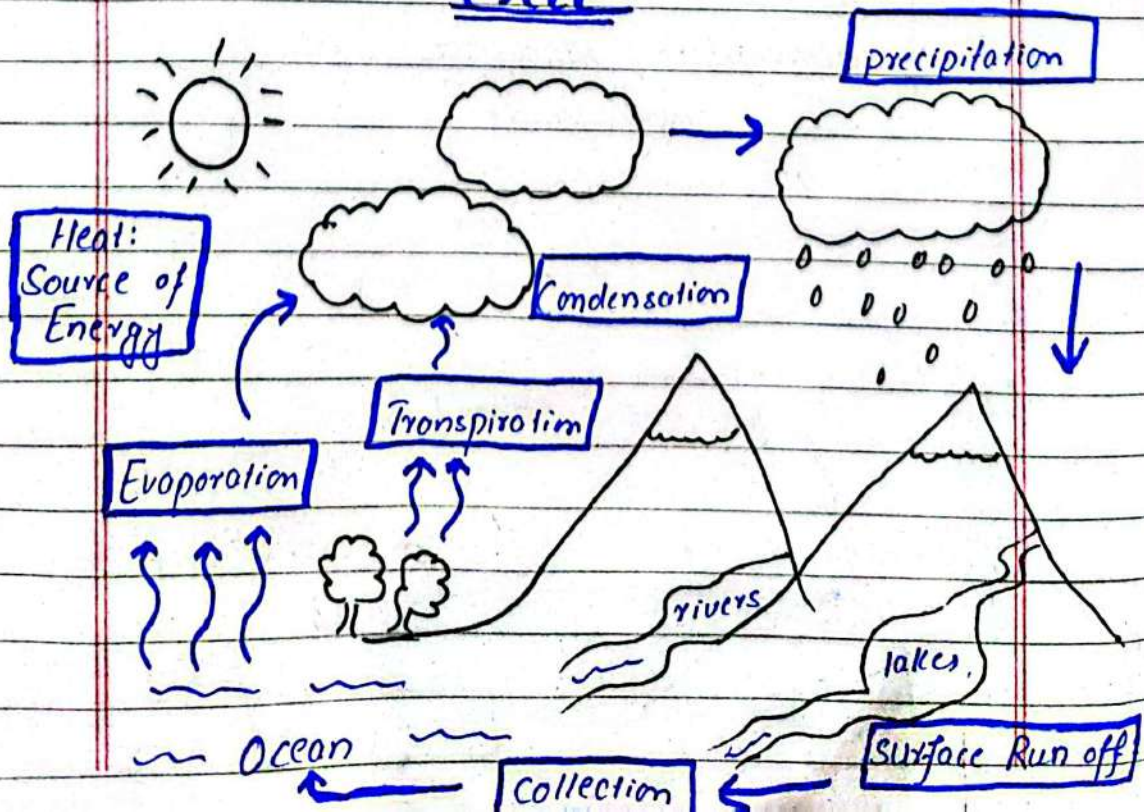
A fundamental characteristic of the hydrological cycle is that it has no beginning and no end. It moves from one reservoir to another by processes like evaporation, condensation, precipitation, run off and infiltration.

③ MAJOR RESERVOIRS OF WATER:

Water exists in three states - Solid, liquid and gas. Water is stored in the following reservoirs:



④ Main Processes Of the WATER CYCLE



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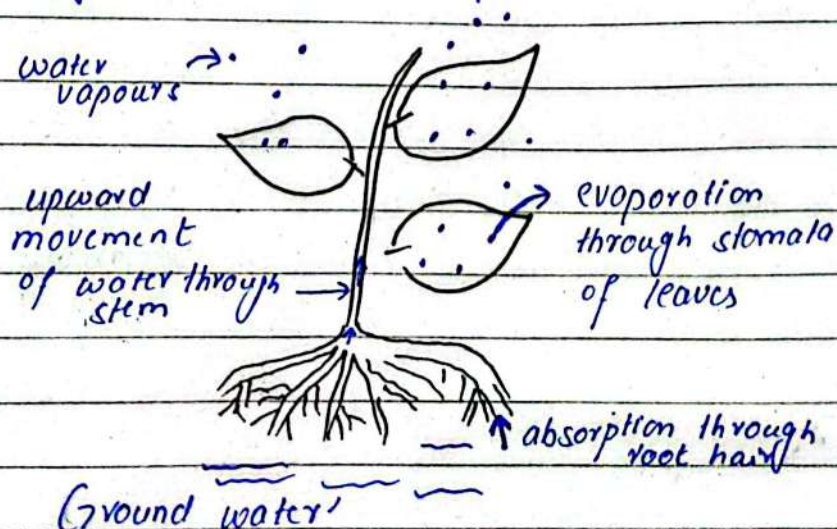
The water cycle is driven by solar energy and operates through a series of interconnected processes as follows.

(4.1) Evaporation:

Evaporation is the process in which a liquid, in this case water, changes into a gas. When the sun heats up the water bodies like the ocean, rivers and lakes, the water is converted into vapours which rises up in the atmosphere.

(4.2) Transpiration:

The process of evaporation through plant leaves is called transpiration. As plant absorbs water from the soil, the water moves from the roots through the stems to the leaves, eventually being evaporated through the leaves.



Process of Transpiration

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(4.3) Condensation:

Condensation is the opposite of evaporation. It involves the transformation of ~~kg~~ gas into liquid due to decrease in temperature. The water vapours condense into water droplets forming clouds.

(4.4) Precipitation:

Precipitation is the process that occurs when any and all forms of water particles fall from the atmosphere and reach the ground. Precipitation usually occurs in the form of:

- Rain
- Hail
- Snow
- Sleet

(4.5) Surface Run off:

Much of the water that reaches the earth in the form of precipitation runs off to the surface of the land and flows downhill into rivers, lakes and oceans. It is an important part of the water cycle, as much of the water returns to the ocean.

(4.6) Infiltration:

Infiltration is an important process where most of the ^{rain} water soaks into the ground through the soil and underlying rock layers. This process contributes towards replenishing ground-water reserves.

⑤ IMPORTANCE OF WATER CYCLE:

- (a) ↳ Maintains Earth's temperature through latent heat exchange
- (b) ↳ Evaporative phase of the cycle purifies water which replenishes the land with freshwater
- (c) ↳ Helps in weather pattern formation and climate regulation
- (d) ↳ The flow of liquid and ice transports minerals across the globe
- (e) ↳ It is also involved in reshaping the geological features of the Earth, through processes like erosion and sedimentation.

⑥ CONCLUSION:

The water cycle is a dynamic and essential natural process that maintains life on earth. Each stage plays a key role in maintaining the ecosystem and climate.