HYDROLOGY

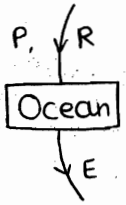
- Hydrology is the science of water which deals with occurence, circulation & distribution of water on earth surface & its atmosphere.

⇒ Hydrologic Cycle :- it is the cyclic movement of water in which water moves from one phase to the other having different residence time in each phase. This is achieved by the process of precipitation, evaporatio, runoff etc.

- Residence time :- this is the avg. time taken by a water particle in crossing one particular phase of the hydrologic cycle.

$$\left[t_r = \frac{V}{Q_{avg}} \right]$$

Note :-



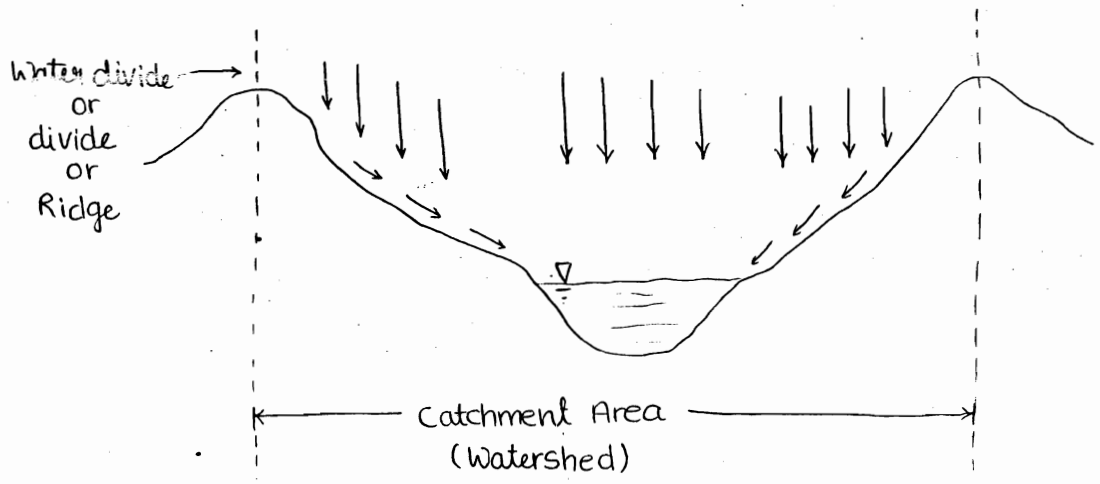
$(P + R = E \Rightarrow E > P)$

over the ocean surface evaporation is greater than precipitation (approx. 9%) whereas on the land mass Precipitation is greater than evaporation.

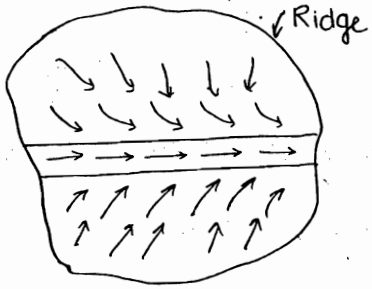
$P = E + R + T \Rightarrow (P > E)$

- Sun is the source of energy which derives the hydrologic cycle.

⇒ Catchment Area :- Area draining into a river or stream is called as catchment area of that particular river / stream at a given location. It is also called as a water shed.



• Ridge:- it is the line which differentiate or demarkets two adjacent catchment areas. It is also called as water divide or divide. In British English - it is also called as watershed.



Plan view.

⇒ Water- budget Equation - this equation is based on law on conservation of mass & it states that:- mass inflow = mass outflow = change in Storage.

Q-20) Pg-83)

Inflow = $6\ m^3/s + 145mm$

$$= \frac{6 \times 30 \times 24 \times 60 \times 60}{5000 \times 10^4} + 0.145 = 0.456$$

Outflow = $6.5 m^3/s + 6.1cm$

$$= \frac{6.5 \times 30 \times 24 \times 60 \times 60}{5000 \times 10^4} + 0.061 = 0.397$$

Final elevation = $103.2 + 0.456 - 0.397$

$= 103.258$ m.

⇒ World water balance -

1386 M km^3

~ 1400 M km^3

- → 96.5%:- Ocean - Saline } 97.5%
- → 1%:- Land - Saline }

Fresh water (2.5%) - 35 M km^3

- 10.6 M km^3 (liquid)
- 24.4 M km^3 (Frozen)