Section-2

Design Flood – It is the value of Instantaneous Peak discharge adopted for the design of Particular Project or any of its structure. The term design flood is used to denote the maximum flood flow the cloud be passed without damage or series threat to the Stability of Engineering structure.

Factors

1-) **Physiographic factors**–

(1) shape (2) size (3) slop
(4) Nature of valley (5) Elevation
(6) Drainage density.

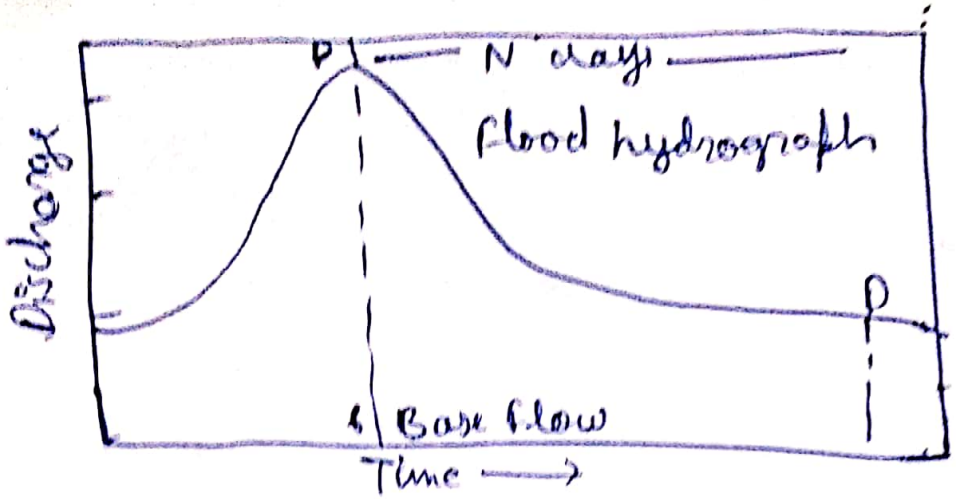
2-) Climatic factors → ① Storm characteristics ~~Preception~~ Precipitation, intensity, duration, Magnitude, movement.
① initial loss ② ~~Evaporation~~
③ Evapotranspiration.

3-) Shape of the basin →
The shape of the basin influences the time taken for water from the remote parts of the catchment to arrive outlet.

4-) Size → Small basin behave diff. from the large ones in terms of the relative importance of varies phases of the runoff phenomenon

5-) Slop → The Slop of the main stream control the velocity of flow In the storage the stream channel Slop will have a pronounced effect on this part of the hydrograph.

6-) Drainage → The drainage density as define as the ratio of the total channel length to the total drainage area.



① Calculate direct run-off (m) by the eqn -

$$m = \frac{0.36\,(\Sigma O)\times t}{A}\ cm$$

ΣO = sum of discharge, t = time, A = Area

② calculate the ordinates of unit hydrograph by the relation -

ordinate of unit hydrograph = $\frac{\text{ordinate direct runoff}}{\text{Direct runoff in cm.}}$

* Procedure

(1) Plot the assumed design storm as a bar diagram with the unit hydrograph duration as the time interval

(2) Subtract the infiltration losses to obtain the effective precipitation

(3) Applying Linarity and Superposition Principle obtain hydrograph corresponding to each storm interval by Multiplying the unit hydrograph

(4) Add the ordinates of hydrograph corresponding to each time interval to obtain the direct run off hydrograph for composite storm

(5) add the estimated base flow to get the anticipated flood hydrograph