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# SECTION-2

Q.2. Design flood: It is the value of the instantaneous peak discharge adopted for the design of a particular project or any of its structure. The term design flood is used to denote the maximum flood flow that could be passed without damage or serious to the stability of engineering structure.

factors :- following are the factors affecting the flood hydrograph.

(i) Physiographic factors.

(1) Basin characteristics.

a) shape. b) Size c) slope
d) Nature of the valley e) Elevation
f) Drainage density

(ii) Infiltration characteristics.

a) Land use and cover
b) Soil type and geological conditions
c) lakes, swamps and other storage.

(2) Climatic factors :-

(i) Storm characteristics: precipitation, intensity, duration, magnitude and movement of storm.

(ii) Initial loss.
(iii) Evapotranspiration loss.

(3) Shape of the Basin:
(i) The shape of the basin influences the time taken for water from the remote parts of the catchment to arrive the outlet, thus the occurrence of the peak and whether the shape of the hydrograph are affected by the basin shape.

(4) Size:
(i) Small basin behave different from the large ones in terms of the relative importance of various phases of the run off phenomenon.

(5) Slope:
(i) The slope of the main stream controls the velocity of flow in the channel.

(ii) Large stream slope gives rise to quicker depletion of storage and thereby results in steeper recession limb of hydrographs.

(6) Drainage Density:
(i) The drainage density is defined as the ratio of the total channel length to the total drainage area.

ii) A large drainage density creates situation conducive for quick disposal of runoff down the channel

(7) Climatic factors:-

i) A large drainage density creates the intensity, duration, and direction of storm movement are the three important ones affecting the shape of a flood hydrograph

ii) This aspect is made use of in the unit hydrograph theory of estimating flood flow hydrograph