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SECTION-2

(Q.no.1)

Ans The concept of S- hydrograph (S-Curve)

(i) If it is desired to develop a unit hydrograph of duration 'n' hours which is a practical, the method of superposition cannot be used.

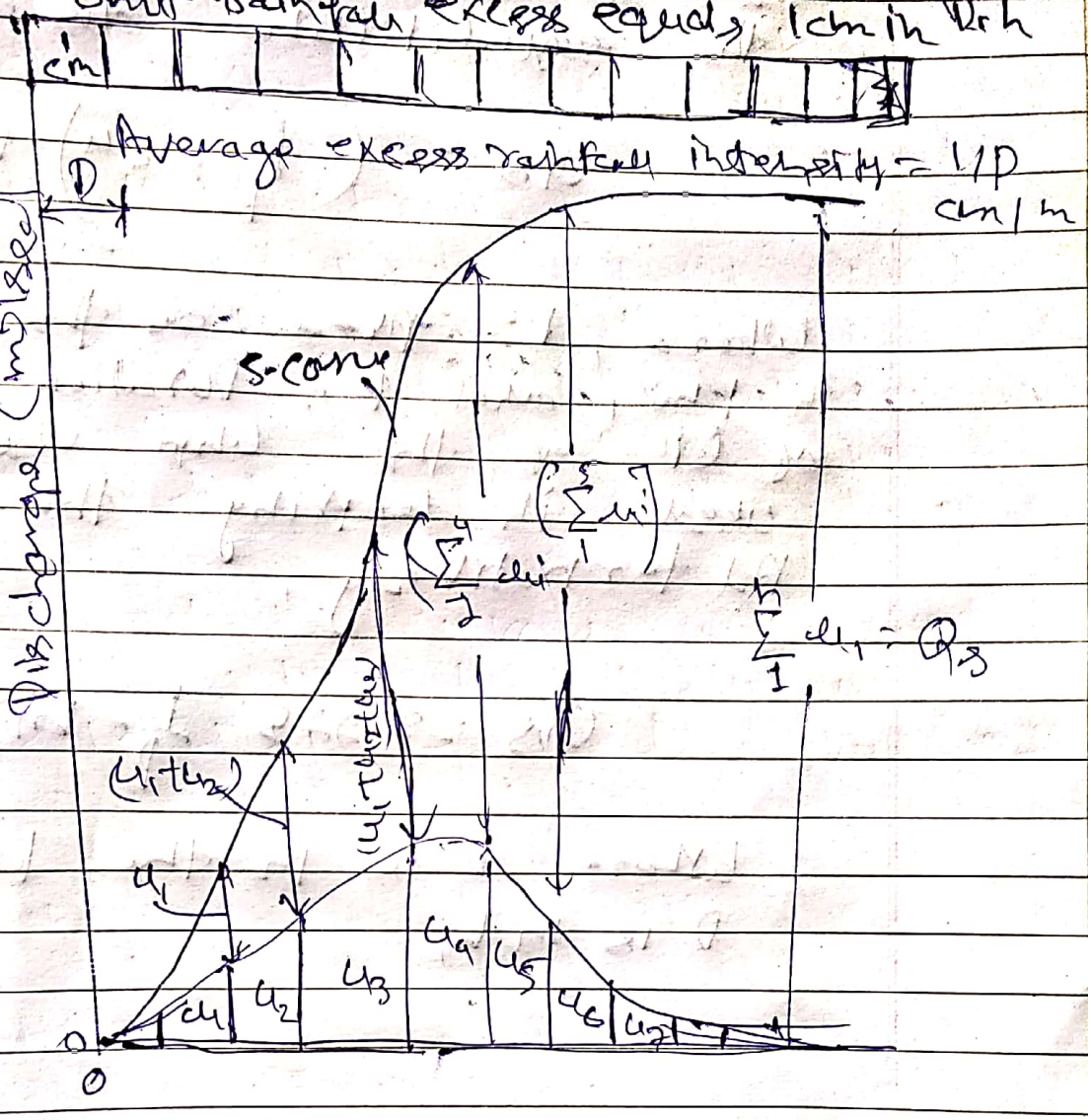
(ii) A different technique known as the S-curve method is adopted in such cases, and this method is applicable to a hydrograph produced by a continuous effective rainfall at a constant rate for an infinite period.

(iii) The S-Curve, also known as S-hydrograph is a hydrograph produced by a continuous effective rainfall at a constant rate for an infinite period.

(iv) It is a curve obtained by summation of an infinite series of 'n'-hour unit hydrographs spaced 'n' hours apart.

(v) In Figure shows such a series of 'n' hr hydrograph arranged with their starting points.

D-h apart.



(vi) A smooth curve through these ordinates results in an S-shaped curve called S-curve.

(vii) This S-curve is due to a D-h unit hydrograph. It has an initial steep portion and reaches at a maximum equilibrium discharge at a time equal to the time base of the final unit hydrograph.

(viii) The average intensity of ER produced the S-curve is 1/D cm/h and the equilibrium discharge,

$$Q_s = \left(\frac{A}{D} \times (0.4)\right) m^3/h$$

Where, A = Area of the catchment in km², and D = Duration in hours of ER of the unit they also equal used in deriving the S-curve Alternatively,

$$Q_s = 2.778 \frac{A}{D} - m^3/sec$$

Where, A is in the km², and D is in h,