

GUJARAT TECHNOLOGICAL UNIVERSITY

3rd Semester Civil Engineering – PDDC

Subject Code & Name : X30601 - Hydrology and Water Resources Engineering

Assignment – 1

Theory :

Date : 31-07-2014

1. Define and explain Hydrological Cycle with neat sketch.
2. Discuss the application of hydrology & also give the relationship between climate and water availability.
3. What is Precipitation? Discuss type of Precipitation.
4. How are rainfall is measured? Explain non recording type rain gauge with neat sketch.
5. Explain “Thiessen Polygon Method” to calculate average rainfall of a catchment area with neat sketch.
6. What is evapotranspiration? Discuss various factors affecting it.
7. Define and explain ϕ -Index and W-Index.

Examples :

1. Determine the optimum number of rain gauges in a catchment area from the following data.
 - i. Number of existing rain gauges = 8 Nos
 - ii. Mean annual rainfall at the gauges in mm = 1000, 950, 900, 850, 800, 700, 600 and 400.
 - iii. Permissible Error = 6%

2. For a storm of 3 hour durations, the rainfall rates are as follows:

Time Period (in Minutes)	30	30	30	30	30	30
Rainfall Rate (cm/hr)	1.5	3.5	4.5	3.2	2.0	1.0

If the surface rainfall is 3.5 cm. Determine the ϕ -Index and W-Index.

3. For a storm of 2 hour durations, the rainfall rates are as follows:

Time Period (in Minutes)	20	20	20	20	20	20
Rainfall Rate (cm/hr)	2.6	2.5	10.2	7.8	5.2	1.3

If ϕ -Index is 3 cm/hr, Estimate the surface rainfall. Also Determine W-Index.