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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T1- EXAMINATION (Summer Semester – June 2018)

B. Tech. (V- SEM.)

COURSE CODE: 10B11CE513

MAX. MARKS: 50

COURSE NAME: Water Resource Engineering

COURSE CREDIT: 4

MAX. TIME: 2 HRS

Note: Attempt all questions. Assume suitable data if required. Carrying of mobile phone during examinations will be treated as case of unfair means

1. With the help of a neat figure explain the working of any one automatic recording rain gauge. (10)
2. The recorded annual rainfall from 5 rain gauge stations in a catchment and the corresponding Thiessen's polygon areas in the map are as follows: (10)

Thiessen's Polygonal Area (cm ²)	Rainfall (cm)
25	125
30	175
30	225
10	275
5	325

The scale of the map is 1:50000. Estimate the volume and the mean depth of rainfall. Also calculate average annual discharge at outlet in cu.m/sec if runoff coefficient (ratio of runoff to precipitation) of the catchment is 0.3.

3. The ordinates of a 6-hr unit hydrograph and excess rainfall hyetograph over a catchment are given below. Arrive at the direct runoff hydrograph from these storms. (10)

Time (hrs)	0	6	12	18	24	30	36	42
Discharge(m ³ /sec)	0	10	40	55	45	30	07	0

4. Describe in detail the various phenomenon of precipitation. Also explain different fronts and their characteristics. (10)
5. In a certain river basin, there are 4 rain gauge stations with their normal annual precipitations amounting to 800, 520, 440 and 400 mm respectively. Determine the optimum no. of rain gauge stations required to limit the error in calculation of mean precipitation to 12%. (10)