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T 1 EXAMINATION (Feb-2020)

B.Tech. 4<sup>th</sup> Semester (Civil Engineering)

COURSE CODE: 18B11CE414

COURSE NAME: Water Resource Engineering

COURSE CREDIT: 3

MAX. MARKS: 15

MAX. TIME: 1 hr

**Note :** Attempt all the questions. Notation has its usual meanings.

**Q.1** Explain briefly (0.5 marks each)

[3]

- Explain Dalton's law of evaporation.
- Differentiate between runoff and surface runoff.
- How can you apply water budget equation in estimation of evaporation?
- Define the Field capacity. How will you differentiate PET and AET.
- What does recurrence interval of an event signify?
- Define the catchment area and its utility in water resource.

**Q2.** Define the infiltration capacity of soil ? Explain double ring infiltrometer.

[2]

**Q3.** The following are the rain gauges observations during a storm. Construct the (a) mass curve of precipitation (b) hyetograph, also find the max intensity of rainfall.

[3]

Time since commencement of storm (min)	5	10	15	20	25	30	35	40	45	50
Accumulated rainfall (cm)	0.2	0.3	0.5	0.8	1.2	1.8	1.8	2.5	3.1	3.9

**Q4 .** (a) Define  $\phi$  index and W Index.

[1]

(b) The rate of rainfall for the successive 30 min period of a 3 hr storm are 1.6 , 3.6, 5, 2.8, 2.2, 1.0 cm /hr. The corresponding surface runoff is estimated to be 3.6 cm. Establish the  $\phi$  index.

[3]

**Q5.** A catchment has six rain gauge stations. In a year, the annual rainfall recorded by the gauges is as follows:

Station	A	B	C	D	E	F
Rainfall (cm)	82.6	102.9	180.3	110.3	98.8	136.7

For a 10% error in the estimation of the mean rainfall, calculate the optimum number of stations in the catchment.

[3]