Code No: **R31014** **R10** **Set No. 1**

III B.Tech I Semester Supplementary Examinations, October/November - 2016
WATER RESOURCES ENGINEERING-I
(Civil Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
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1 a) Differentiate between Recording and Non-recording types of rain gauges. [8M]
b) What do you understand by precipitation? Explain various types of precipitation [7M]

2 a) What do you understand by infiltration index? How do you determine it? [7M]
b) Write down the most common empirical formula used to calculate evaporation? What are the factors influencing evaporation? [8M]

3 a) What is Run-off? What are the factors that affect the run-off from a catchment area? [8M]
b) Enumerate the different methods of measuring discharge [7M]

4 a) Explain the method by which maximum runoff can be estimated from a catchment. Describe the method of computing the ordinates of a unit–hydrograph from the data of a flood hydrograph [8M]
b) Explain various methods of determining flood discharge in a stream. [7M]

5 a) Explain the method of determining the coefficient of transmissibility of a confined aquifer by pumping out test. How can this method be extended for unconfined aquifer? [7M]
b) What do you understand by the following terms : [8M]
i) Crop ratio, **ii**) Overlap allowance, **iii**) Capacity factor and **iv**) Full supply coefficient.

6 a) What do you understand by recuperation test? Derive the equations used in the test. [7M]
b) Describe border strip method of irrigation. Derive the expression for the time required to cover a given area by this method, for a given rate of discharge and the rate of infiltration of water in the soil. [8M]

7 a) Define the following: [7M]
G.C.A.,C.C.A., Kor depth, Kor period, outlet factor, capacity factor, nominal duty, open discharge, Rabi and Kharif crops.
b) The left canal of a tank irrigation scheme carries a discharge of 10 cumecs and has a culturable commanded area of 800 hectares. The intensity of Rabi crop is 70% and the base period is 110 days. The right canal of the scheme carries a discharge of 24cumecs and has a culturable commanded area of 15000 hectares. The intensity of Rabi crop is 80% and the base period is 110 days. Compare the efficiency of the two canal systems. [8M]

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8 a) What do you understand by the balancing depth? Derive an expression for the same. [8M]
b) Using Kennedy's theory, design a channel section for the following data: [7M]
Discharge Q = 13.5 cumecs
Kutter's N = 0.0224
Critical velocity ratio m= 1
Side slopes = ½ :1
Bed slope = 1/4800

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