Code: CE5T3

III B.Tech - I Semester – Regular Examinations - November 2015

WATER RESOURCES ENGINEERING - I
(CIVIL ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Answer any FIVE questions.   All questions carry equal marks

1 a) Hydrology is a highly interdisciplinary science. Justify.
      Also List out various practical applications of hydrology.

6 M

    b) The isohyets drawn for a storm which occurred over a
       drainage basin of area 950 km^2 yielded the following
       information. Determine the average rainfall depth.   8 M

Isohyetal Interval, mm	85-75	75-65	65-55	55-45	45-35
Area between Isohyets (km^2)	125	236	264	175	150

2 a) Describe the various methods of reducing evaporation from
      a water body.   6 M

b) The average rainfall over 45 Ha of watershed for a particular storm was as follows : 8 M

Time in hrs	0	1	2	3	4	5	6	7
Rainfall in cm	0	0.5	1	3.25	2.5	1.5	0.5	0

The volume of runoff from this storm was determined as 2.25 Ha m. Establish $\emptyset$-Index.

3 a) Define Unit Hydrograph. Mention the assumptions and limitations of Unit Hydrograph theory. 6 M

b) For a basin of 198 sq.km construct a 4 hr Unit hydrograph from the following data using Snyder's method. The length of the main channel is 21.6 km, length of the centroid form the outlet along the river is 11.2 km. take the coefficients c_t and c_p as 1.5 and 0.59 respectively. 8 M

4 a) Explain SCS curve number method for estimation of runoff from a catchment. 6 M

b) Explain the Muskingum method of channel flood routing. 8 M

5 a) Define porosity, specific yield and specific retention. 6 M

b) Calculate the discharge from a tube well of 20cm diameter penetrating fully into a confined aquifer of 20m thick and having a permeability of 40m/day. The drawdown in the well is 3m and zero drawdown at 300m form the well.

8 M

6 a) Explain the method of drip irrigation with a neat sketch.

6 M

b) Explain the methods of improving soil fertility.　　8 M

7 a) Define duty and delta, also derive their relationship.　　8 M

b) Explain the various irrigation efficiencies.　　6 M

8 a) Classify Canals.　　4 M

b) Explain the design procedure of canal using Kennedy's Theory.

10 M