Code: 9A01503

R9

B.Tech III Year I Semester (R09) Supplementary Examinations, May 2013

WATER RESOURCES ENGINEERING - I

(Civil Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 What is hydrology? Explain the various terms associated with hydrologic cycle.

2 (a) List the various factors which affect evaporation.

(b) List the various methods with which you can measure the evaporation and explain any one method in detail.

3 (a) Explain electromagnetic method of stream flow measurement.

(b) Explain ultrasonic method of stream flow measurement.

4 (a) What is an IUH? What are its characteristics?

(b) Given below are the ordinates of a 6-h unit hydrograph for a catchment. Calculate the ordinates of the DRH due to a rainfall excess of 3.5 cm occurring in 6 hr.

Col(1)	0	3	6	9	12	15	18	24	30	36	42	48	54	60	69
Col(2)	0	25	50	85	125	160	185	160	110	60	36	25	16	8	0

Here Col(1) indicates Time(h)

And Col (2) indicates U.H ordinates in m^3/s.

5 (a) Write short notes on: (i) Interfacing among wells. (ii) Artesian-gravity wells. (iii) Spherical flow to a well.

(b) Two identical tube wells of 25 cm diameter are spaced 60 m from each other. Calculate the discharge of each well under a drawdown of 4 m when working simultaneously. Take the radius of influence as 250 m and the thickness of the confined aqauifer as 60m. The coefficient of permeability is 5.6×10^{-4} m/s. What would have been the discharge under the same raw down, had there been only one well?

6 (a) Examine critically the extent of development of irrigation in different states of India. Assess the present status of irrigation potential created in India and the prospect of its further development.

(b) What are the different methods of sub irrigation? Describe the methods. Point out the prerequisites for adoption of this method.

7 (a) Describe with the help of sketch various forms of soil moisture. Which of these soil moistures is mainly available for utilization by the plants?

(b) Find the field capacity of a soil for the following data:

(i) Depth of root zone = 2 m

(ii) Existing water content = 6%

(iii) Dry density of soil = 1400 kg/ m^3

(iv) Water applied to soil = 500 m^3

(v) Water lost due to evaporation and deep percolation = 10 %

(vi) Area of land irrigated = 1000 m^2

8 (a) Derive an expression for the silt transporting capacity of a channel according to Kennedy's theory.

(b) Describe Lacey's theory for the design of irrigation channel in alluvial soil.

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