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

III B.Tech I Semester Supplementary Examinations, May - 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 [8]
(i) Runoff and surface runoff (ii) runoff and yield of a drainage basin.
b) Describe with a neat sketch the construction and use of a float-type of a recording gauge. [7]

2 a) Explain the difference between evaporation, interception and transpiration. What is transpiration ratio? [7]
b) Explain: (i) evaporation, (ii) infiltration, (iii) interception, (iv) transpiration, (v) percolation and (vi) consumptive use. [8]

3 a) What is meant by 'stream gauging'? Describe the velocity area method that is used for stream gauging. [7]
b) What is a 'Unit Hydrograph'? How would you obtain a unit hydrograph from an isolated intense short duration storm occurring uniformly over the basin? [8]
The ordinates of a 6hour Unit Hydrograph are as under:

Time in hours	0	6	12	18	24	30	36	42	48	54	60	66
Ordinates of the Unit Hydrograph (cumecs)	0	20	50	150	120	90	70	50	30	20	10	0

If two storms, each of unit rainfall excess in 6hours duration, reach the catchment in a succession, then draw the hydrograph resulting from these two storms. The stream may be assumed to have a uniform base flow of 2 cumecs.

4 a) What are the methods of computing run-off from a catchment area? Give various formulae stating clearly the area for which each is applicable. [7]
b) What if flood routing? Write down basic flood routing equation. Explain in detail any one method of flood routing. [8]

5 a) Derive an expression for discharge from a well in unconfined aquifer. The well fully penetrates it. [7]
b) Design a tube well for the following data : [8]
(i) Yield required =0.2 cumec (ii)Thickness of confined aquifer =40m
(iii)Radius of circle of influence =300m
(iv)Permeability coefficient =80m/day (v)Drawdown =6m

6 a) What do you understand by contour farming? Compare it with wild flooding method. [8]

b) What do you understand by crop rotation? What are its advantages? [7]

7 a) Discuss various methods of assessment of irrigation water. [7]

b) The discharge available from a tube well is 120 m^3/hour. Assume 3200 hours of working for a tube-well in a year; estimate the culturable area that this tube-well can command. The intensity of irrigation is 50% and the average depth of Rabi and Kharif crops is 48cm. [8]

8 a) Using Lacey's basic regime equations derive an expression for Lacey's scour depth. [7]

b) The slope of a channel in alluvial soil is 1/5900. Find the channel section and the maximum discharge which can be allowed to flow in it. Take Lacey's silt factor f=1. The channel is of trapezoidal section, having side slopes ½:1 [8]

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