

Code No: **R31014****R10****Set No. 1****III B.Tech I Semester Supplementary Examinations, May - 2017****WATER RESOURCES ENGINEERING-I****(Civil Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) What is an intensity duration curve, and how will you proceed to derive such a curve for a given frequency at a rain gauge station from the available data of worst storms of different duration kept for a sufficient number of years. [7M]
b) (i) Explain clearly the three different constituents of runoff. [8M]
(ii) What is a hydrograph and what is its use in hydrology?
- 2 a) Explain the difference between evaporation, interception and transpiration. What is transpiration ratio? [7M]
b) Explain any two methods of reducing the evaporation loss from a free-water surface. [8M]
- 3 a) What is Run-off? What are the factors that affect the run-off from a catchment area? [7M]
b) Starting from 12 noon, storm rainfalls of 2.6, 7.6 and 5.2 cm occur during three successive hours over a 27 square kilometer area. The storm loss rate (Φ index) is 1.45 cm per hour. The percentages of distribution graph for successive hours are 6, 22, 42, 10 and 5. Estimate the value of peak discharge in cubic metres per second and the hour when it is expected. [8M]
- 4 a) Describe the use of levees as flood control measure. Write a note on channel improvement as a flood control measure. [7M]
b) Describe step by step procedure that you will adopt for flood routing computations required for reservoirs under trial and error method. [8M]
- 5 a) Describe with neat sketches confined, semi-confined, unconfined and perched aquifers. [7M]
b) A 30cm diameter well penetrates 20m below the static water table. After 24 hours of pumping at 5000 litres per minute the water level in a test well at 100m away is lowered by 0.5m, and in a well at 30m away the draw down is 1m. What is transmissibility of the aquifer? [8M]
- 6 a) Write a note on sub-surface irrigation, stating clearly the conditions under which this method is suitable. [7M]
b) What is water logging? What are its ill-effects? What are causes of water logging? [8M]

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- 7 a) What are the factors affecting duty? How can duty be improved? [7M]
b) The discharge available from a tube well is $130\text{m}^3/\text{hour}$. Assume 3300 hours of working for a tube-well in a year, estimate the cultivable area that this tube-well can command. The intensity of irrigation is 60% and the average depth of Rabi and Kharif crops is 50cm. [8M]
- 8 a) What do you understand by balancing depth? Derive an expression for the same. [8M]
b) Write the requirements of good lining material. [7M]

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