

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2018

00813

ET-532(A) : HYDROLOGY

Time : 3 hours

Maximum Marks : 70

Note : Answer any *five* questions. Each question carries equal marks. Use of only non-programmable calculators is allowed.

1. (a) Discuss differential heating of Earth and its effect on the atmosphere. What factors are responsible for atmospheric circulation? 7
- (b) What is the usefulness of various methods of computing the average depth of rainfall over a given area? Discuss any two methods of analysis of rainfall data. 7
2. (a) Explain the process of evaporation and evapotranspiration. List various factors that influence these processes. 7
- (b) Distinguish between depression storage and surface detention. Deduce the relationship between rate of depression storage to the rate of rainfall and rate of infiltration. 7

3. (a) Explain flow duration curve. What are the important uses of flow duration curve in water resources planning ? 7
- (b) What is the difference between the discharge measurement using current meter in an ordinary boat and in a moving boat ? 7
4. (a) Explain unit hydrograph. How will you derive the ordinates of unit hydrograph from a storm hydrograph ? Explain with suitable example. 7
- (b) What is the probability that a 5-year flood will : (i) occur four times in a ten-year period; (ii) not occur at all in a ten-year period ? 7
5. (a) What do you mean by large area floods and small area floods ? Describe the basic principles of flood routing in brief. 7
- (b) A 35 m thick confined aquifer is pumped at a constant rate of 170 m^3 per hour till steady-state conditions were reached. Find the coefficient of transmissibility T of the aquifer if following observations were noted : 7

r (m)	2.00	40.00	95.00
s (m)	1.85	0.56	0.15

6. (a) Describe various empirical formulae to estimate the peak flood. 7
- (b) What are the basic data required in different methods of flood forecasting ? Present your answer in the form of a suitable chart. 7
7. Write short notes on the following :
- (a) Ground Water Deficit 5
- (b) Drought Prone Areas in India 5
- (c) Low Flow Analysis 4
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