

TCE-503

1156

Odd Semester Examination 2017-18

B.TECH (SEMESTER-V)

HYDROLOGY

Time: 03:00 Hours

Max Marks: 100

Note: Attempt all questions

1. Attempt **any four** of the following: [5x4=20]
 - (a) List the methods of computing average rainfall over a basin.
 - (b) Why rainfall-Runoff relationship is necessary? Justify.
 - (c) What are the various forms of Precipitation?
 - (d) How do you measure infiltration?
 - (e) Define synthetic unit hydrograph.
2. Attempt **any four** of the following: [5x4=20]
 - (a) Explain with the help of a neat sketch about the hydrological cycle with its various components.
 - (b) Describe the working principle of a non-recording type rain gauge with neat sketch mentioning its advantages and disadvantages.
 - (c) What are the factors affecting evaporation losses.
 - (d) What are the factors affecting flood hydrograph? Explain.
 - (e) Explain the construction procedure of S-curve hydrograph.
3. Attempt **any two** of the following: [10x2=20]
 - (a) Analysis of data on max one day rainfall depth at Chennai indicated that a depth of 280 mm had a return period of 50 years. determine the probability of one day rainfall depth equal to or greater than 280 mm at Chennai occurring (1) one in 20 successive years (2) twice in 15 successive years.

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(1)

[P.T.O.]

- (b) A runoff data at stream gauge station for a flood are given below in the table. Drainage area is 42 Km². If the duration of rainfall is 3 hours, derive a 3 hrs unit hydrograph for the basin:

Time(hrs)	0	3	6	9	12	15	18	21
Total runoff(m ³ /s)	50	47	75	120	225	290	270	145
Base flow(m ³ /s)	50	47	46	45	45	45	46	48
Time(hrs)	24	27	30	33	36	39	42	45
Total runoff(m ³ /s)	110	90	80	70	60	55	51	50
Base flow(m ³ /s)	50	53	54	57	60	55	51	50

- (c) Discuss on flood control measures and Gumbel's methods of determination of flood magnitude.

4. Attempt **any two** of the following:

[10x2=20]

- Briefly explain the Muskingum method of channel routing and discuss on extreme value series.
- What are the various type of aquifers? Explain.
- What are the methods of estimating design flood? What are their limitations?

5. Attempt **any two** of the following:

[10x2=20]

- Derive an equation to determine the steady state discharge of a confined aquifer.
- State Dupit-Forcheimer assumptions and its uses in groundwater hydrology.
- Explain thoroughly about various flood control measures?
