

Roll No.

3201

**B. Tech. (Civil Engg.) 5th Semester
Examination – February, 2022**

HYDROLOGY AND WATER RESOURCE ENGINEERING

Paper : PCC-CE-301-G

Time : Three hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt *five* questions in all, selecting *one* question from each Unit. Question No. 1 is *compulsory*. All questions carry equal marks.

1. Write short note on the following : 2.5 × 6 = 15
- (a) Precipitation
 - (b) Run-off volume
 - (c) Floods
 - (d) Hydrograph
 - (e) Non-recording gauges
 - (f) Flow mass curve

UNIT - I

2. (a) What is hydrology and its application in engineering? 7
(b) What are different types of precipitation and how it is measured using different devices? 8
3. The average normal rainfall of 5 rain gauges in the base station are 89, 54, 45, 41 and 55 cm. If the error in the estimation of rainfall should not exceed 10%, how many additional gauges may be required? 15

UNIT - II

4. (a) Explain different methods of evaporation. 7
(b) Explain evaporation and factors affecting evaporation? 8
5. The data pertaining to discharge at the gauging station is as follows. 15
- | | | | | | | | | | | | | |
|----------------|---|---|---|---|---|----|----|----|----|----|----|----|
| Month- | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Observed flow- | 4 | 4 | 2 | 0 | 2 | 12 | 32 | 29 | 16 | 2 | 1 | 2 |

UNIT - III

6. (a) What is meant by Unit hydrograph and what are the various assumptions? 7
(b) Explain Rational method and Empirical formula used for estimation of floods. 8

7. Flood frequency computations for the river Chambal at Gandhisagar dam, by using Gumbel's method, yielded the following results: 15

| | | |
|---------------------------------|--------|--------|
| Return Period T (yrs): | 50 | 100 |
| Peak Flood (m ³ /s): | 40,809 | 46,300 |

UNIT - IV

8. (a) What is meant by Water resources and their assessment? 8
(b) What is system analysis in water planning? 7
9. (a) What are functional requirements in a multipurpose project in water resource planning? 9
(b) What is basin wise planning in water resource? 6