

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2013****Subject code: 711202N****Date: 04-06-2013****Subject Name: Hydrology and Watershed Management****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Explain the factors affecting runoff from a catchment. **07**

(b) Explain on Types of Precipitation. **07**

Q.2 (a) Distinguish between Conceptual Model and Emperical Model. **07**

(b) Distinguish between Stochastic Model and Deterministic Model. **07**

OR

(b) Explain on Model Calibration. **07**

Q.3 (a) Explain Trial and Error Method for Flood Routing. **07**

(b) Explain in detail Modified Puløx method. **07**

OR

Q.3 (a) Discuss the factors affecting Infiltration capacity. **07**

(b) Enumerate the different types of Rain-gauges and describe any one with neat sketch. **07**

Q.4 (a) What is evaporation? Mention the factors controlling the evaporation process. **07**

(b) What is the difference between interception and transpiration? What is Transpiration Ratio? **07**

OR

Q.4 (a) Define and Explain the following terms: **07**

(1) Hydrograph of a storm.

(2) Average Annual rainfall.

(3) Watershed and its characteristics.

(b) Describe the various methods for obtaining the maximum flood discharge of a river. **07**

Q.5 (a) For a river, the estimated flood peaks for two return periods by the use of Gumbeløx method, are given below. **07**

Return Period(in years)	Peak flood(m ³ /sec)
100	485
50	445

What flood discharge I this river will have a return period of 1000 years. **07**

(b) What is stochastic process? Give classification of stochastic process.

OR

Q.5 (a) The average annual rainfalls of five rain gauges in a catchment are 72,58,49,42 and 59 cm. determine the additional number of rain gauge station. If the error in estimation of mean rainfall should not exceed 10 percent. **07**

(b) Explain: Synderøx method or synthetic unit hydrograph. **07**
