

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014****Subject code: 2713302****Date: 07-01-2015****Subject Name: Hydrology and Watershed Management****Time: 02:30 pm - 05:00 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) How instantaneous unit hydrograph does differ from unit hydrograph of finite duration? **07**
 (b) Discuss the various factors affecting run off from a basin. **07**
- Q.2** (a) Explain in detail through equations the lag time and time of concentration of a watershed. **07**
 (b) Define and Explain the following terms: **07**
 (1) Hydrograph of a storm.
 (2) Average Annual rainfall.
 (3) Watershed and its characteristics.
- OR**
- (b) Explain the channel routing by Muskingum method **07**
- Q.3** (a) Explain the Reservoir routing by Modified Puls method. **07**
 (b) What are the different ways of harvesting rainwater? Explain any two. **07**
- OR**
- Q.3** (a) Define watershed and watershed hydrology. **07**
 (b) What is the difference between interception and transpiration? What is Transpiration Ratio? **07**
- Q.4** (a) Distinguish between Stochastic Model and Deterministic Model. **07**
 (b) How GIS is used in watershed modeling and management. **07**
- OR**
- Q.4** (a) Explain: Model Calibration. **07**
 (b) Discuss dynamic models for hydrological analysis of catchment. **07**
- Q.5** (a) Explain California method of flood frequency analysis **07**
 (b) Write various possible treatments, their role and impact on watershed. **07**
- OR**
- Q.5** (a) What is stochastic process? Give classification of stochastic process **07**
 (b) What return period you would adopt in the design of a dam if you are allowed to accept only 6 % risk of flooding in 40 years of expected life of the dam. **07**
