Seat No.: _____ *Enrolment No._____*

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 ólag timeô and ótime of concentrationô of a watershed.	**07**
	(b)	Define and Explain the following terms: (1) Hydrograph of a storm. (2) Average Annual rainfall. (3) Watershed and its characteristics.	**07**
		OR	
	(b)	Explain the channel routing by Muskingum method	**07**
Q.3	**(a)**	Explain the Reservoir routing by Modified pulôs 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**

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