Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– IV • EXAMINATION – SUMMER 2015

Subject Code: 741201 **Date: 01/05/2015**

Subject Name: Hydrological Modeling

Time: 2:30 pm to 5:00 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 basic rules of modeling.	**07**
	(b)	Discuss the following models. (i) Lumped models (ii) Distributed models	**07**
Q.2	**(a)**	Define the following terms: (i) Variance (ii) Covariance (iii) Central tendency (iv) skewness coefficient	**07**
	(b)	Discuss the application of modeling in water resources management.	**07**
		OR	
	(b)	Explain the process of hydrological model with flow chart and discuss each component in detail.	**07**
Q.3	**(a)**	Discuss 'calibration' and 'validation' of hydrological models.	**07**
	(b)	What is sensitivity analysis? How it could be performed in hydrological models.	**07**
		OR	
Q.3	**(a)**	Discuss hydrological simulation in meteorological and climatic models.	**07**
	(b)	Define and discuss the following processes: (i) Log-normal distribution (ii) Gumble's distribution.	**07**
Q.4	**(a)**	Demonstrate the role played by remote sensing and GIS in preprocessing and post processing by hydrological data.	**07**
	(b)	Compare the capabilities of HEC-HMS and SWAT simulation packages.	**07**
		OR	
Q.4	**(a)**	Discuss the various watershed models.	**07**
	(b)	Discuss the following ground water models. (i) Prediction models (ii) Management models	**07**
Q.5	**(a)**	Discuss limitations and sources of error in numerical models.	**07**
	(b)	Explain SCS Curve Number (CN) method for runoff estimation and MUSLE theory for soil erosion.	**07**
		OR	
Q.5	**(a)**	Discuss various types of surface water quantity management models.	**07**
	(b)	Write short note on "MODFLOW".	**07**

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