Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER I (NEW) EXAMINATION – SUMMER 2017

Subject Code:2713302 **Date:09/05/2017**

Subject Name: Hydrology & Watershed Management

Time:02:30 p.m. to 05:00 p.m. **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)**	Define watershed, its formation and watershed hydrology.	**07**
	(b)	Define: Sub-watershed, Sink, Stream network, Pour point and HRU.	**07**
Q.2	**(a)**	Explain Synder's method for Synthetic unit hydrograph.	**07**
	(b)	Explain Pul's method of routing a hydrograph through a reservoir.	**07**
		OR	
	(b)	Describe spatial and temporal variability in hydrologic parameters with suitable exemplary data.	**07**
Q.3	**(a)**	How watersheds are classified in India? Give details of two such classifications.	**07**
	(b)	Explain MUSLE equation and its theory for soil transportation.	**07**
		OR	
Q.3	**(a)**	What is watershed equilibrium? How it can be achieved and maintained?	**07**
	(b)	Explain NRCS curve number (CN) method of separating precipitation into abstractions and runoff.	**07**
Q.4	**(a)**	Explain water harvesting through watershed management.	**07**
	(b)	Sketch a standard infiltration capacity curve and explain the mathematical form suggested by Horton.	**07**
		OR	
Q.4	**(a)**	Write a note on stage-discharge rating curve.	**07**
	(b)	Determine mean, median, mode, standard deviation, coefficient of variance and skew ness for the following rainfall data (in mm): 721, 543, 319, 763, 410, 608, 522, 488, 578, 998, 436, 594, 433, 517 and 674.	**07**
Q.5	**(a)**	Compare lumped models to physically based models in detail with at least two examples in each category.	**07**
	(b)	What is model calibration and validation? Write calibration parameters for any one model you have worked on.	**07**
		OR	
Q.5	**(a)**	Distinguish stochastic and deterministic hydrologic models in detail with at least two examples in each category.	**07**
	(b)	"Watershed modeling has brought revolution in water sector" give stepwise justification.	**07**

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