		No.: Enrolment No	
		GUJARAT TECHNOLOGICAL UNIVERSITY	
		M.E –II <sup>st</sup> SEMESTER–EXAMINATION – JULY- 2012	
	Subj	ect code: 1721206 Date: 12/07/201	2
	Subj	ect Name: Stochastic Models in Water	
	Time	e: 10:30 am – 13:00 pm Total Marks: 7	<b>70</b>
	Inst	ructions:	
	1.	Attempt all questions.	
		Make suitable assumptions wherever necessary.	
O 1		Figures to the right indicate full marks.	07
Q.1	(a)	Differentiate between stochastic and deterministic models. Give the suitability of each in hydrological processes.	07
	<b>(b)</b>	Explain calibration of hydrologic models through suitable examples.	07
Q.2	(a)	Discuss the use of frequency analysis in assessing the characteristics of errors in a temporal model.	07
	<b>(b)</b>	Discuss the implications of using a moving average filter in which the weights do not sum to 1.	07
	<b>-</b> \	OR	
	<b>(b)</b>	Consider a time series based on the <i>sine</i> function: $Y(t) = 20 + sin t$ , in which t is an angle measured in degrees. Assume that the time series is available at an increment of 30 degrees. Calculate the smoothed series for smoothing intervals of 3 and 5, and discuss the results.	07
Q.3	(a)	What model components would be necessary for a model to be capable of simulating the efforts of watershed change?	07
	<b>(b)</b>	Describe a general purpose simulation model of stochastic hydrology. <b>OR</b>	07
Q.3	(a)	Differentiate continuous and discrete probability distribution. Explain any one method for each.	07
	<b>(b)</b>	Explain multiple linear regression and its components.	07
Q.4	(a)	Describe a stochastic experiment that would determine if a regression model is not biased.	07
	<b>(b)</b>	Justify the use of word 'model' to describe the peak discharge rational method, $Q_p = \text{CiA}$ .	07
		OR	
Q.4	(a)	The power model form $y = ax^b$ , is widely used in hydrologic modeling. Discuss whether it can be a conceptual model of a hydrologic process or only an empirical prediction equation.	07
Q.4	<b>(b)</b>	Explain non-stationary time series with examples. How modeling of such series is done.	07
Q.5	(a)	Explain in brief AR model	07
-	<b>(b)</b>	Explain in brief MA model	<b>07</b>
		OR	
Q.5	(a)	Explain in brief ARMA model	07
	<b>(b)</b>	Explain in brief ARIMA model	<b>07</b>

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