Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER– IV(NEW) EXAMINATION – SUMMER - 2017

Subject Code:2743301 **Date:03/05/2017**

Subject Name: Flood Management

Time: 02:30 pm to 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)**	Discuss the various aspects of flooding? Explain how runoff reduction by watershed management can mitigate flood disaster.	**07**
	(b)	Write a detailed note on vulnerability to floods and its impacts.	**07**
Q.2	**(a)**	Discuss different types of flood damages in detail.	**07**
	(b)	"It is believed that integrated catchment Management is one of the key factors for sustainable water resources management". Justify the statement.	**07**
		OR	
	(b)	Discuss the criteria for sustainable water management.	**07**
Q.3	**(a)**	Explain the application of Geo- Spatial techniques for assessing flood.	**07**
	(b)	What is flood routing and what are its application? Differentiate hydraulic routing and hydrologic routing.	**07**
		OR	
Q.3	**(a)**	Discuss the application of HEC-RAS Software for channel routing.	**07**
	(b)	Differentiate wedge storage from Prism storage. Explain Modified Pul's method for reservoir routing.	**07**
Q.4	**(a)**	The analysis of 30 years flood data at a point of a stream yielded Qavg= 1200 m^3/s and standard deviation σ=650 m^3/s. For what discharge would you design the structure at the point to provide 95 % assurance that the structure would not fail in next 50 years (Assume data to be finite in Gumbel Method). Take values of y_n and σ as 0.5465 and 1.1607 respectively.	**07**
	(b)	Explain in brief flood risk analysis and flood risk management.	**07**
		OR	
Q.4	**(a)**	Enlist the different methods of estimation of flood? For a long record of annual peak flood of a river, the mean Q and standard deviation calculated are 143.9 m^3/s and 56.5 m^3/s. Using Gumbel's approach, obtain the return period of flood for flood of 350 m^3/s of this river.	**07**
	(b)	Explain in detail the significance of "risk" in context of flood management.	**07**
Q.5	**(a)**	Describe the concept of Uncertainty. Discuss various forms of uncertainty involved in flood risk assessment.	**07**
	(b)	Discuss the various flood control measures in detail.	**07**
		OR	
Q.5	**(a)**	Explain rating curve method and rational method for estimating flood. Discuss the limitation of these two methods.	**07**
	(b)	What are the causes of flood? Explain any two non-structural flood mitigation measures.	**07**

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