Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER 2012

Subject code: 731204 **Date: 26/12/2012**

Subject Name: Flood Management

Time: 10.30 am – 01.00 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 graphical method of flood routing.	**07**
	(b)	Describe the various structural methods adopted for control of flood.	**07**
Q.2	**(a)**	What are the factors that affect the flood in river?	**07**
	(b)	Write brief note on: (i) Importance of flood estimation. (ii) Causes of flood.	**07**
		OR	
	(b)	Explain briefly the following terms: (a) Risk (b) Design flood (c) Standard projected flood. (d) Probable maximum flood (e) Safety margin (f) Submergence (g) Flood Hazards.	**07**
Q.3	**(a)**	What do you understand by routing of a flood? Write the basic equations in hydrologic reservoir routing.	**07**
	(b)	Describe the Modified Plus method of flood routing.	**07**
		OR	
Q.3	**(a)**	Describe the trial and error method of flood routing.	**07**
	(b)	If the annual flood series data for a catchments are available for N consecutive year, explain a procedure to determine a flood discharge with a return period of T (where T>N) by using log Pearson type-III distribution.	**07**
Q.4	**(a)**	Explain the rational method of computing the peak discharge of a small catchments.	**07**
	(b)	(i) Explain the terms flood, flood frequency and flood hydrograph.	**03**
		(ii) Write any four empirical flood formulae developed in India, clearly indicating the units of various terms involved.	**04**
		OR	
Q.4	**(a)**	Describe the problem of floods and their control with special reference to the Gujarat scene.	**07**
Q.4	**(b)**	Flood-frequency computations for river Chambal at Gandhisagar dam by using Gumbel's method, yielded the following results: Return period T (years) — Peak flood (m^3/s) 50 — 40,809 100 — 46,300 Estimate the flood magnitude in river with a return period of 500 years.	**07**
Q.5	**(a)**	What do you understand by the terms 100-years average return period flood? Briefly explain salient features of Gumbel's method of flood frequency analysis.	**07**
	(b)	Write in detailed the classification of flood by giving the appropriate examples.	**07**
		OR	
Q.5	**(a)**	Derive the Muskingum channel routing equation $O_2=C_0 I_2 + C_1 I_1 + C_2 O_1$ Where I_i are the inflows, C_i the constants and O_i the outflows.	**07**
	(b)	Explain the following phenomena with sketch: (i) Translation of peak (ii) Attenuation of peak	**07**

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