Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-I Remedial Examination January/ February 2011

Subject code: 711203
Subject Name: Design of Hydraulic Structures

Date: 02 /02 /2011 **Time: 02.30 pm – 05.00 pm**
Total Marks: 60

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain in detail Wave pressure acting on a Gravity dam.	**06**
	(b)	What do you understand by construction pore pressure in earth dams and how are they determined?	**06**
Q.2	**(a)**	A trapezoidal concrete Gravity dam having top width 8m, U/S face vertical & D/S face 0.7H : 1V, total height 60m. the water is stored up to 57m. If the co-efficient of friction is 0.75, is the dam safe against sliding?	**06**
	(b)	Explain the filter criteria for the earth dam.	**06**
		OR	
	(b)	Draw the phreatic line in the earth dam having top width 6m, U/S 3H:1V, D/S 2.5H:1V, total height 30m, free board 3m and horizontal filter 25m long from toe of the dam.	**06**
Q.3	**(a)**	Discuss ski-jump bucket type energy dissipater.	**06**
	(b)	Design a suitable section for the overflow section of a concrete gravity dam having D/S 0.7H:1V. The design discharge for the spillway is 6000 m^3/s. The effective length of spillway may be taken as 50m.	**06**
		OR	
Q.3	**(a)**	Draw detailed sketch of stilling basin for $Fr \leq 4.5$.	**06**
	(b)	Distinguish between side channel & chute spillway.	**06**
Q.4	**(a)**	Explain Practical profile of gravity dam.	**06**
	(b)	Explain the Swedish slip circle method of analyzing the stability of an earth dam slopes.	**06**
		OR	
Q.4	**(a)**	Discuss in brief various modes of failure of gravity dam.	**06**
	(b)	What is entry correction for a phreatic line? Why it is given?	**06**
Q.5	**(a)**	Discuss and derive the equations to find out principal & shear stresses in a gravity dam.	**06**
	(b)	Discuss factors affecting co-efficient of discharge for Ogee spillway.	**06**
		OR	
Q.5	**(a)**	Explain with the help of diagram various joints provided in gravity dam.	**06**
	(b)	What are the causes of failure of earth dam?	**06**

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