Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – WINTER • 2014

Subject Code: 180601 **Date: 04-12-2014**

Subject Name: Design of Hydraulic Structures

Time: 02:30 pm - 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 factors affecting for the selection of dam site in detail.	**07**
	(b)	Explain briefly the factors affecting selection of dam type.	**07**
Q.2	**(a)**	Explain how construction operation is carried out in earthen dams?	**07**
	(b)	Discuss briefly the structural failure of earthen dam.	**07**
		OR	
	(b)	Describe with neat sketch how to seepage line is drawn in homogeneous earth dam without any drainage arrangement?	**07**
Q.3	**(a)**	Show forces acting on a gravity dam with sketch.	**07**
	(b)	Explain stability requirements of a gravity dam.	**07**
		OR	
Q.3	**(a)**	Discuss the properties of concrete used in the construction of a gravity dam.	**07**
	(b)	Draw the elementary profile of a gravity dam and explain various forces acting on it.	**07**
Q.4	**(a)**	Define spillway. What is the purpose of its provision? What are the essential requirements? Where the spillway is located?	**07**
	(b)	Describe briefly an ogee spillway.	**07**
		OR	
Q.4	**(a)**	Define energy dissipaters. What are the needs to provide it?	**07**
	(b)	Determine the discharge through a chute spillway of ogee crest; length of spillway is 250m, height of spillway crest above u/s approach channel is 10m, width of approach channel is 250m and depth of water over spillway crest is 5m.	**07**
Q.5	**(a)**	What is canal fall? Why is it required to provide in a canal?	**07**
	(b)	Write short note on cross regulator.	**07**
		OR	
Q.5	**(a)**	Discuss the various considerations according to which the location of a fall is decided?	**07**
	(b)	Design a sarda type fall on a channel of 15cumecs, bed width 18m, depth 1.5m, u/s FSL 101m, bed level 99.5m, NSL 90.0, fall 1.0m and side slope 1/2:1.	**07**

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