Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER III (NEW) – EXAMINATION – WINTER-2016

Subject Code: 2733301 **Date:25/10/2016**

Subject Name: Design of Hydraulic Structures

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 functions of Dam. Classify various types of dam and write their functions	**07**
	(b)	Define Hydraulic structure. Enlist and explain various hydraulic structures and their functions in brief.	**07**
Q.2	**(a)**	Explain the function of Gravity dam with neat sketch. Also discuss the functions of various components of gravity dam.	**07**
	(b)	Enlist and explain the aspects to be considered for selection of dam site.	**07**
		OR	
	(b)	Explain various criteria for safe design of earthen dam.	**07**
Q.3	**(a)**	Describe about homogeneous and zone type earthen dam in detail with neat sketch.	**07**
	(b)	Write short note on : (1) Difference between Earthen dam and Gravity dam (2) Design aspects of pen stroke	**07**
		OR	
Q.3	**(a)**	Describe about seepage and piping in earthen dam. Also discuss the methods of controlling seepage.	
	(b)	Discuss about Phreatic line and mention the methods to locate Phreatic line.	
Q.4	**(a)**	Define spillway. Also classify various types of spillway with their functions.	**07**
	(b)	An earth dam mad of homogeneous material has the following data: Co-efficient of permeability of dam material = 6 x 10^{-4} cm/sec ,Top Level of Dam =208 mt ,Deepest river bed level=185 mt.,H.F.L of Reservoir = 202 mt., Width of top of the dam =4.8 mt ,Upstream slope =3:1,Downstream slope =2:1 Determine the phreatic line for this dam section and discharge passing through the dam.	**07**
		OR	
Q.4	(a)	Write short note on (1) Function of stilling basin with sketch (2) Relief Well	**07**
	(b)	Discuss the function and design criteria of chute spillway	**07**
Q.5	(a)	Describe the Ogee spillway and discuss the design criteria of Ogee spillway	**07**
	(b)	Write short note on (1) Maintenance of hydraulic structure(2) . Energy dissipation works	**07**
		OR	
Q.5	**(a)**	Discuss about various forces acting on gravity dam with sketch.	**07**
	(b)	Write short note on (1) Features of Sardar Sarovar Dam (2) Causes of failure of hydraulic structure.	**07**

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