

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022****Subject Code:3170621****Date:12-01-2023****Subject Name:Design of hydraulic structures****Time:10:30 AM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Discuss various external forces acting on gravity dam.	03
	(b) Explain the importance of subsurface exploration.	04
	(c) Discuss various foundation treatment methods used in dam.	07
Q.2	(a) Explain different types of settlements in rockfill dam.	03
	(b) Explain methods of reduction of uplift pressure with neat sketch.	04
	(c) Explain the method of developing seepage line for an earth dam without horizontal filter at downstream.	07
	OR	
	(c) Explain how you would account for earthquake effects in design of a gravity dam.	07
Q.3	(a) Draw a typical section of earthen dam having a horizontal filter at downstream.	03
	(b) Distinguish clearly between a low gravity dam and high gravity dam.	04
	(c) Explain Construction and Contraction joints in gravity dam.	07
	OR	
Q.3	(a) Write an explanatory note on shaft spillway.	03
	(b) Discuss the provision of drainage system in earth dams.	04
	(c) Explain analytical method for stability analysis of a gravity dam.	07
Q.4	(a) Explain the difference between controlled and uncontrolled spillways.	03
	(b) Explain side slope protection measures of earth dams.	04
	(c) Describe the method used for analysing stability of slope of an earthen dam.	07
	OR	
Q.4	(a) Define: Chute blocks, Dentated sills, Baffle piers.	03
	(b) Write a brief note on I.S.I. standardized basins.	04
	(c) Write the construction procedure of earth and rockfill dams.	07
Q.5	(a) Write a note on Bucket type energy dissipater.	03
	(b) Discuss the merits and demerits of installing spillway gates.	04
	(c) Explain design criteria for ogee spillway. Also discuss about ogee profile.	07
	OR	
Q.5	(a) Explain the use of priming devices in syphon spillway.	03
	(b) Describe design features of chute spillway.	04
	(c) Enlist different types of stilling basins and explain USBR basins in detail.	07
