Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VIII (OLD) EXAMINATION – SUMMER 2019

Subject Code: 180601   **Date: 15/05/2019**
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.**

Q.1	**(a)**	Discuss in brief earthern dam and rockfill dam.	**07**
	(b)	Describe the factors governing the selection of site for a dam.	**07**
Q.2	**(a)**	Describe hydraulic and seepage failure of earthen dam.	**07**
	(b)	A flow-net is plotted for homogeneous earthen dam of height 22 m and free board 2 m. Number of potential drops and flow channels are 10 and 4 respectively. The dam has a horizontal filter of 30 m length at a downstream end and the coefficient of permeability of the dam material is 5 x 10^{-4} cm/sec. Calculate the discharge per m run of the dam.	**07**

OR

	(b)	Describe Swedish slip circle method for analysis of Embankment Dam.	**07**
Q.3	**(a)**	Enlist the various forces acting on gravity dam and discuss in detail water pressure and uplift pressure.	**07**
	(b)	Describe stability analysis of gravity dam by graphical method.	**07**

OR

Q.3	**(a)**	Explain Inspection gallery and Construction joints in gravity dam.	**07**
	(b)	A concrete gravity dam (Non-overflow section) is given in Figure A on page 2. Compute the following: (1) Water Pressure (2) Weight of dam and (3) Wave Pressure. Consider specific weight of Concrete = 24 kN/m^3, Fetch = 12 km, Wind velocity = 80 kmph and α_h = 0.1 g	**07**
Q.4	**(a)**	Explain mode of failure of a gravity dam.	**07**
	(b)	Write short note on Ogee Spillway.	**07**

OR

Q.4	**(a)**	Write short note on Bucket type Energy Dissipators.	**07**
	(b)	Compute the discharge over an ogee weir with coefficient of discharge equal to 2.4 at a head of 2 m. The length of spillway is 100 m. The weir crest is 8 m above the bottom of the approach channel having the same width as that of the spillway. Consider velocity of approach.	**07**
Q.5	**(a)**	What is canal fall? Why is it required to provide in a canal?	**07**
	(b)	How can seepage be controlled in earth dams?	**07**

OR

Q.5	**(a)**	Discuss various functions of cross regulator and distributary head regulators.	**07**
	(b)	Explain design of Sarda Fall.	**07**

RL=180 m ▽

→ 10 m

①

1

②

1.5

Centre line of drainage gallery

▽ RL=85 m

15 m

RL=80 m

← 70 m →

FIGURE A

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