Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170609 Date:10-01-2023

Subject Name:Irrigation Engineering

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)**	Define: G.C.A., Kor period, Paleo.	**03**
	(b)	Define duty and delta. Derive a relationship between them.	**04**
	(c)	After how many days will you supply water to soil in order to ensure efficient irrigation of the given crop, if (1) Field capacity of soil =25% (2) Permanent wilting point =15% (3) Density of soil=1.5 g/cm^3 (4) Effective depth of root zone= 70 cm (5) Daily consumptive use of water for the given crop=11 mm (6) Consider readily available moisture be 80% of the available moisture.	**07**
Q.2	**(a)**	Give classification of irrigation canals.	**03**
	(b)	Give classification of dams.	**04**
	(c)	Explain the procedure of designing a channel using Kennedy's theory.	**07**
		OR	
	(c)	Explain the procedure of designing a channel using Lacey's theory.	**07**
Q.3	**(a)**	Write down advantages and disadvantages of canal lining.	**03**
	(b)	Explain vertical drop weir with a neat sketch.	**04**
	(c)	An impervious floor of a weir on permeable soil is 18 m long and has sheet piles at both the ends. The upstream pile is 4.5 m deep and the downstream pile is 6 m deep. The weir creates a net head of 3 m. Neglecting the thickness of the weir floor; calculate the uplift pressures at the junction of the inner face of the u/s pile with the weir floor, by using Khosla's theory.	**07**
		OR	
Q.3	**(a)**	Differentiate between: non-modular and semi-modular outlet.	**03**
	(b)	Discuss various causes of failure of weir and their remedies.	**04**
	(c)	Explain in detail the difference between Khosla's theory and Bligh's theory for the design of weir on a permeable foundation.	**07**
Q.4	**(a)**	Explain phreatic line in an earthen dam.	**03**
	(b)	Explain notch type fall.	**04**
	(c)	Discuss the causes of failure of earthen dam.	**07**
		OR	
Q.4	**(a)**	Explain rolled fill method of construction of an earthen dam.	**03**
	(b)	Write a note on canal escape.	**04**
	(c)	Discuss various forces acting on a gravity dam with a neat sketch.	**07**
Q.5	**(a)**	Write down functions of distributary head regulator and cross regulator.	**03**

	(b)	Differentiate between: (1) aqueduct and super passage (2) canal syphon and syphon aqueduct.	**04**
	(c)	Write a note on land reclamation.	**07**
		OR	
Q.5	**(a)**	Write a note on losses in canal.	**03**
	(b)	Write a note on canal alignment.	**04**
	(c)	Discuss the causes and remedial measures of water logging.	**07**

****