Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2024

Subject Code:3144005 Date:20-07-2024

Subject Name: Water Resource Engineering & Hydrology

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)**	Describe the factors affecting rate of evaporation.	**03**
	(b)	Define the following: (i) Aquifer; (ii) Aquitard; (iii) Aquiclude; (iv) Aquifuge.	**04**
	(c)	Explain various types & forms of precipitation.	**07**
Q.2	**(a)**	Explain factors affecting duty.	**03**
	(b)	Describe the various methods used for irrigation.	**04**
	(c)	Write short note on direct runoff hydrograph (DRH) and explain factors affecting it.	**07**

OR

(c) Given below are the ordinates of a 6 hour unit hydrograph for a catchment. Calculate the ordinates of the DRH due to rainfall excess of 3.5 cm occurring in 6 h. **07**

Time (h)	0	3	6	9	12	15	18	24	30	36	42	48	54	60	69
UH ordinate (m^3/s)	0	25	50	85	125	160	185	160	110	60	36	25	16	8	0

Q.3	**(a)**	Explain losses in canals.	**03**
	(b)	Describe syphon aqueduct type cross drainage work.	**04**
	(c)	Design an irrigation channel for following data using Lacey's theory. Q = 25 m^3/s & Silt factor = 1.0.	**07**

OR

Q.3	**(a)**	Enlist different cross drainage works and explain anyone.	**03**
	(b)	Discuss the limitations of Bligh's creep theory.	**04**
	(c)	How Lacey's regime theory for design of canal in alluvial soil differs from Kennedy's theory?	**07**
Q.4	**(a)**	What are the causes of water logging?	**03**
	(b)	Explain the requirement of spillway.	**04**
	(c)	Explain the modes of failure of an earthen dam.	**07**

OR

Q.4	**(a)**	Enlist factors affecting site selection of a reservoir.	**03**
	(b)	Explain Ogee spillway in detail.	**04**
	(c)	Explain in brief different type of forces acting on gravity dam	**07**
Q.5	**(a)**	Define: (i) Full Reservoir Level; (ii) Highest Flood Level; (iii) Dead Storage Level.	**03**
	(b)	Explain various methods of flood forecasting.	**04**
	(c)	Explain procedure for calculating reservoir life	**07**

OR

Q.5	**(a)**	Explain causes of reservoir sedimentation	**03**
	(b)	Explain Muskingum method for flood routing.	**04**
	(c)	Describe the graphical method of determination of safe yield from a reservoir for a given capacity.	**07**

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