Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code: 3160618 Date:30-05-2025

Subject Name: Open Channel flow

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)**	Differentiate between pipe flow and open channel flow.	**03**
	(b)	Write a short note on velocity distribution in open channel flow.	**04**
	(c)	Explain the concept of first hydraulic exponent in detail.	**07**
Q.2	**(a)**	Explain equivalent roughness in channel.	**03**
	(b)	Explain channel transition with a hump.	**04**
	(c)	Describe the hydraulically-efficient channel section. Also explain the relationship between the geometric elements to form an efficient section.	**07**
		OR	
	(c)	Explain the compound channel section in detail.	**07**
Q.3	**(a)**	Define the terms: regime flow, ripples, dunes.	**03**
	(b)	Draw the definition sketch of specific energy and explain it.	**04**
	(c)	Explain Shield's analysis method for studying incipient motion in channels.	**07**
		OR	
Q.3	**(a)**	Discuss the requirements for the selection of type of canal lining.	**03**
	(b)	Explain the Shear stress distribution for uniform flow in lined canals.	**04**
	(c)	Explain the stepwise procedure to design the channel using tractive force method.	**07**
Q.4	**(a)**	What data or information are generally needed for computing a flow profile?	**03**
	(b)	Write a note on Mannings roughness coefficient.	**04**
	(c)	Describe the procedure of designing lined canal.	**07**
		OR	
Q.4	**(a)**	State the rule regarding the direction of computation of flow profiles.	**03**
	(b)	Explain why H1 and A1 profiles are practically not possible.	**04**
	(c)	Describe different types of bottom slopes of open channels.	**07**
Q.5	**(a)**	Write the practical applications of hydraulic jumps.	**03**
	(b)	Differentiate between Sharp crested weir and broad crested weir.	**04**
	(c)	Classify the hydraulic jumps in horizontal rectangular channels according to USBR.	**07**
		OR	
Q.5	**(a)**	Define Rapidly varied flow. Also give the characteristics of rapidly varied flow.	**03**
	(b)	Explain positive and negative surges in open channel.	**04**
	(c)	Write a detailed note on sluice gates.	**07**

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