

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:2170609****Date:16-12-2023****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) Derive the relation between duty and delta.	03
	(b) What are the benefits and ill effects of irrigation?	04
	(c) Explain the salient features of the sprinkler irrigation system. Give advantages and limitations of sprinkler irrigation.	07
Q.2	(a) Write a short note on Irrigation development in India.	03
	(b) Explain following terms: (i) Crop period (ii) Base period (iii) Paleo	04
	(c) What is consumptive use of water? Describe any one method in detail.	07
	OR	
	(c) A certain crop is grown in an area of 4000 hectares which is fed by a canal system. The data pertaining to irrigation are : Field capacity of soil = 25% Optimum moisture = 12% Permanent wilting point = 10% Effective depth of root zone = 80cm Relative density of soil = 1.4 If the frequency of irrigation is 10 days and overall efficiency is 23% , find (i) the daily consumptive use (ii) the water discharge in m ³ /sec required in the canal.	07
Q.3	(a) Explain the different stages of river.	03
	(b) Write short note on spillway crest gates.	04
	(c) Describe Bligh's creep theory for the design of weir over pervious foundation.	07
	OR	
Q.3	(a) What are contour laterals?	03
	(b) What are the advantages of furrow irrigation?	04
	(c) Explain the salient features of the drip irrigation system.	07
Q.4	(a) What is leaching?	03
	(b) What are the ill effects of water logging?	04
	(c) The bed slope of a regime channel is 1 in 6000. Determine the channel section and discharge. The average particle size is 0.323mm.	07

OR

- Q.4** (a) Differentiate between alluvial and non-alluvial canal. **03**
(b) Describe with neat sketches various methods adopted for controlling seepage through the body of an embankment dam **04**
(c) Discuss the various forces acting on gravity dam with sketches. **07**
- Q.5** (a) What are scouring sluices? Why it is provided? **03**
(b) Draw a neat sketch of vertical drop weir. **04**
(c) What is fish ladder? Why it is provided? **07**
- OR**
- Q.5** (a) Write a note on land reclamation **03**
(b) Define water logging? Discuss causes of water logging. **04**
(c) Procedure for designing an irrigation channel using Lacey's theory. **07**
