Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013

Subject code: 731202 Date: 28-11-2013

Subject Name: Water Use Management

Time: 10.30 am – 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 briefly the factors affecting the choice of the method of irrigation. Discuss in brief the border strip method.	**07**
	(b)	Discuss the factors affecting water requirements of a crop.	**07**
Q.2	**(a)**	Define and explain consumptive use of water. List the various factors which affect it.	**07**
	(b)	An outlet has a gross commanded area of 700 ha out of which only 75% is culturable. The intensity of irrigation for Rabi season is 70% and for Kharif season 25%. Assuming losses in conveyance system as 8.0% of the outlet discharge, determine the discharge at the head of the irrigation channel. Take outlet discharge factor for Rabi season as 1550 ha/cumec and for Kharif season as 750 ha/cumec.	**07**
		OR	
	(b)	Discuss soil surveys and irrigability classification.	**07**
Q.3	**(a)**	Enumerate the conditions which are favorable for the adoption of sprinkler irrigation system.	**07**
	(b)	Discuss the hydraulics of flow in the drip irrigation method.	**07**
		OR	
Q.3	**(a)**	How will you determine the following losses in sprinkler irrigation system? (i)Head loss in mainline due to friction. (ii) Frictional loss in lateral line. (iii) Head loss in pipe couplings and other fittings.	**07**
	(b)	What are the types of soils, crops and terrains which are suitable for drip irrigation system? State the limitations of this method.	**07**
Q.4	**(a)**	What are the causes and ill effects of water logging?	**07**
	(b)	How will you decide the following in a drain: (i) Water surface slope (ii) Velocity of flow (iii) Side slopes.	**07**
		OR	
Q.4	**(a)**	What are the main objectives of providing drains? List the essential requirements of a drain.	**07**
	(b)	Determine the discharge capacity of a tile drain if it caters to an area of 15 hectares and has a drainage coefficient of 1.24 cm/day. Also determine the capacity of water removed if the drain flows at the design capacity for three days.	**07**
Q.5	**(a)**	Discuss automation and control regulation of canals.	**07**
	(b)	Describe conjunctive use of surface water and ground water	**07**
		OR	
Q.5	**(a)**	Explain modernization of existing irrigation projects.	**07**
	(b)	Write a short note on CROP Pattern.	07