Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. - SEMESTER – VIII EXAMINATION – OCTOBER 2012

Subject code: 180606 Date: 25/10/2012

Subject Name: : Irrigation Water Management (Department Elective-II)

Time: 02.30pm - 05.00pm Total Marks: 70

Instructions:

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	Explain how RS & GIS is useful for irrigated area?	07
	(b)	Discuss phases of land levelling operation in detail. Enlist & discuss in detail, the land levelling criteria.	07
Q.2	(a)	(i) Which are the problems associates with drip irrigation system?	04
		(ii) Discuss operation & maintenance of sprinkler irrigation system.	03
	(b)	Write the steps to design a drip irrigation system.	07
		OR	
	(b)	Write the steps to design a sprinkler irrigation system.	07
Q.3	(a)	(i) Draw a typical layout of sprinkler irrigation system indicating all components.	03
		(ii) Explain in detail rotating head system and perforated type system.	03
	(b)	What are the needs of proper regulation and management of canal irrigation system? Discuss the parameters of evaluation performance of canal irrigation system in detail.	08
		OR	
Q.3	(a)	(i) Draw a typical layout of drip irrigation system showing all components.	03
		(ii) Write a short note on 'Application of fertilizers and chemicals through drip irrigation system'.	03
	(b)	Discuss in detail the operation & maintenance of canal irrigation system.	08
Q.4	(a)	An area of 2.5 ha. of Maize crop was irrigated by a stream of 54 lit/sec for 8 hr. The irrigation was applied at 40% soil water depletion. The available water holding capacity of the soil was 15 cm/m depth. The soil water estimation 2 days after irrigation, when the soil sampling in the field could be done, showed that the 2.5 ha. of Maize stored 10 cm depth of water in the 80cm root zone. Estimate the water application and water storage efficiencies.	06
	(b)	Explain in detail following terms: (i) Water conveyance efficiency (ii) Water application efficiency (iii) Time of Irrigation (iv) Irrigation Interval & Depth of Irrigation	08
		OR	
Q.4	(a)	Calculate the farm conveyance efficiency and field water application efficiency when a stream of 72 lit/sec received at the farm gate after being diverted from a canal delivered 54 lit/sec to the field. During irrigation to Wheat crop for 8 hr, 300 m3 and 150 m3 of water respectively were lost by runoff and deep percolation.	06
	(b)	Explain in detail following irrigation efficiencies: (i) Water use efficiency (ii) Water storage efficiency	04
	(c)	What are the effects of saline water on irrigated land? Which precautions should be taken during use of saline water?	04
Q.5	(a)	Define 'frequency of irrigation'. Explain factors affecting frequency of irrigation.	04
	(b)	Define 'waterlogging'. How it will affect irrigated land? Discuss in detail the causes of it.	07
	(c)	Write a short note on 'Water User Organization (WUO)'.	03
		OR	
Q.5	(a)	Define Leaching. How the leaching requirement can be calculated?	04
	(b)	(i) Classify the drainage systems with neat sketches.	04
		(ii)What measures can be taken to prevent high water table and waterlogging?	03
	(c)	Write a short note on 'Farmer's participation in irrigation management'.	03

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