Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC– SEMESTER VII– • EXAMINATION – SUMMER - 2016

Subject Code: X70605 **Date:18/11/ 2016**

Subject Name: Irrigation Water Management

Time:10:30 AM to 1:00 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)**	Differentiate between portable mains and buried mains. Classify the sprinkler irrigation systems based on portability.	**07**
	(b)	Classify the methods of irrigation and discuss border strip method in detail.	**07**
Q.2	**(a)**	What are the objectives of canal irrigation management? Enlist and explain the methods of improving canal irrigation management.	**07**
	(b)	Write a short note on water users organization.	**07**
		OR	
	(b)	Mention the conditions which are favourable to adopt sprinkler irrigation. Explain hydraulic design of sprinkler system.	**07**
Q.3	**(a)**	Define irrigation efficiency. Enlist and explain the components of project irrigation efficiency in detail.	**07**
	(b)	A sprinkler irrigation system is designed to apply water at the rate of 1.5 cm/hr. Two laterals each 240 m long and spaced 25 m interval are in use. Allowing 2 hrs for moving each lateral line, how many hours would be required to apply 7.5 cm irrigation to a square field of 25 hectare? How many days are required assuming 8 hrs a day.	**07**
		OR	
Q.3	**(a)**	Define dripper. Give its classification and explain various types of emitters.	**07**
	(b)	An area of 2.8 hectare of maize crop was irrigated by a stream of 72 lit/s for 8 hr. The irrigation was applied at 50% soil water depletion. The available water holding capacity of the soil was 16 cm per meter depth. A soil water estimation 2 days after irrigation when the soil sampling in the field could be done, showed that the 2.8 ha of maize stored 18.24 cm depth of water in the 90 cm root zone. Estimate the water application and water storage efficiencies.	**07**
Q.4	**(a)**	What are the ill effects of water logging in irrigation? Also explain the measures to prevent water logging.	**07**
	(b)	Mention the criteria for scheduling irrigation to crops and elaborate the plant criteria.	**07**
		OR	
Q.4	**(a)**	Mention the signs of how the land can be identified as badly drained land. Explain the classification of drainage systems.	**07**
	(b)	Define leaching. How the leaching requirement can be calculated?	**07**
Q.5	**(a)**	Discuss the application of remote sensing in the field of irrigation.	**07**
	(b)	Draw the layout of drip irrigation system and discuss its components. Also write down the advantages of drip irrigation system.	**07**
		OR	
Q.5	**(a)**	Define land grading. Discuss the phases of land levelling operation and explain the criteria for land levelling.	**07**

(b) What are the advantages and limitations of furrow irrigation system? Determine the mean depth of irrigation in a furrow 75 m long and spaced 60 cm apart with an initial flow of 1.5 lit/s for a period of 40 minutes. The stream was then reduced to 0.5 lit/s after it reached the tail end of furrow and the irrigation was continued for another 45 minutes. **07**

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