

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014****Subject code: 731202****Date: 27-11-2014****Subject Name: Water Use Management****Time: 02:30 pm - 05:00 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) What are the main component parts of sprinkler irrigation? Give brief account of them. **07**
- (b) Write short note on Maintenance of sprinkler units. **07**
- Q.2** (a) What are the types of soil, crops & terrain which are suitable for drip irrigation? Discuss the limitations of this method. **07**
- (b) Discuss the hydraulics of flow in the drip irrigation method. **07**
- OR**
- (b) Discuss briefly the factors affecting the choice of methods of irrigation. Discuss in brief check basin method **07**
- Q.3** (a) Give the factors governing the alignment & longitudinal section of surface drains. What information should be contained in cross section of a drain? **07**
- (b) Calculate the most efficient bottom width for a drainage channel to carry a flow of 2.5m deep in clay soil. Compute the velocity and discharge capacity of the channel if the channel gradient is 0.04 per cent. **07**
- OR**
- Q.3** (a) What are the operations involved in maintenance of tile drain? **07**
- (b) Determine the size of the tile drain for a drainage area of 6 hectares and drainage coefficient of 1.25cm. The longitudinal gradient of the drain is 0.2% and the rugosity coefficient of the material of drain is 0.016. **07**
- Q.4** (a) Give the factors which should be considered while planning crop rotation? **07**
- (b) Explain crop-water relationship. **07**
- OR**
- Q.4** (a) What are the primary reasons for underutilization & poor management of irrigation water? **07**
- (b) Calculate the reservoir capacity, if the conveyance losses are 15% and reservoir evaporation and seepage losses are 10%. **07**

Crop	Base Period (days)	Duty at the field (ha/cumec)	Area under the crop (ha)
Wheat	120	1800	8000
Rice	115	850	4000
Sugarcane	310	750	2000
Cotton	200	1500	1000
Other crops	110	600	800

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| Q.5 | (a) | Discuss command area development in detail. | 07 |
| | (b) | Write short note on conjunctive use of surface water and ground water. | 07 |
| OR | | | |
| Q.5 | (a) | Write short note on water use management. | 07 |
| | (b) | Explain modernization of existing irrigation projects. | 07 |
