

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – III • EXAMINATION – WINTER 2012

Subject code: 731202**Date: 26/12/2012****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) Compare in a tabular form furrow, sprinkler and drip irrigation methods. **07**
- (b) How will you determine the following losses in sprinkler irrigation system? **07**
- (i) Head loss in mainline due to friction.
 - (ii) Frictional loss in lateral line.
 - (iii) Head loss in pipe couplings and other fittings.

- Q.2** (a) Explain the following stages of planning and design of sprinkler system. **07**
- (i) Capacity of the system.
 - (ii) Operating pressure.
 - (iii) Spacing between sprinklers and laterals.

- (b) Discuss the hydraulics of flow in the drip irrigation method. **07**

OR

- (b) Explain in detail the component parts of drip irrigation system. **07**

- Q.3** (a) Discuss soil-water-plant relationship in detail. **07**
- (b) What is crop planning? What are the various crop patterns? Discuss the methods of crop improvement. **07**

OR

- Q.3** (a) Explain the different methods used for determination of consumptive use of water. **07**
- (b) Calculate the reservoir capacity, if the conveyance losses are 18% 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

- Q.4** (a) What is waterlogging? What are the ill-effects of waterlogging? **07**
- (b) What types of works are entailed in the maintenance of drains? Describe them briefly. **07**

OR

- Q.4** (a) How will you decide the following in a drain: **07**
- (i) Alignment
 - (ii) Longitudinal section
 - (iii) Water surface slope
- (b) Determine the size of the tile drain for a drainage area of 7 hectares and drainage coefficient of 1.25 cm. The longitudinal gradient of the drain is 0.2% and the rugosity coefficient of the material of drain is 0.016. **07**

- Q.5** (a) Write short note on “water use management.” **07**
- (b) Explain modernization of existing irrigation projects. **07**

OR

- Q.5** (a) Discuss command area development. **07**
- (b) Describe automation and control and regulation of canals. **07**
