

Code No: RT41351

R13**Set No. 1**

IV B. Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

MICRO IRRIGATION ENGINEERING

(Agriculture Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

PART-A (22 Marks)

1. a) Explain about the flow control valves with the help of a diagram. [4]
- b) Explain the types of sprinkler irrigation systems based on their portability with the help of diagrams. [4]
- c) What is the purpose of overlapping in sprinkler irrigation systems? [4]
- d) Enlist the head losses components in a drip irrigation system? [4]
- e) What is Reynold's number and how the flow is classified based on this number? [3]
- f) What is meant by allowable discharge variation and allowable pressure variation? [3]

PART-B (3x16 = 48 Marks)

2. a) Explain the recent advances of sprinkler irrigation systems in the world. [8]
- b) Explain the purposes of each of the component of sprinkler irrigation system. [8]
3. a) Determine the diameter of sprinkler nozzle having discharge of $2.85 \text{ m}^3/\text{hr}$ with operating pressure of 4.0 kg/sq.cm assume coefficient of discharge is 0.95. [8]
- b) Determine the index of breakup of jet of water for a sprinkler having discharge of $0.40 \text{ m}^3/\text{hr}$ at operating pressure of 2.0 kg/sq.cm . [8]
4. a) Calculate the rate of application for 0.85 lit/s sprinkler discharge, with the sprinkler spacing is $25\text{m} \times 19 \text{ m}$. [8]
- b) Explain about the drift losses in sprinkler and the measures to overcome the drift losses for better uniformity. [8]
5. a) Calculate the water requirement of Gerbera for the design of drip irrigation system whose spacing is $30 \text{ cm} \times 30 \text{ cm}$ with pan evaporation is 10 mm . Assume crop factor as 1 and canopy factor is 1. [8]
- b) Explain about the installation of the drip irrigation system along with all precautions to be taken into account. [8]
6. a) Calculate the discharge rate in drip irrigation system if the field size is 30 ha , Fertilizer rate is 20 lit/ ha , duration is 0.5 hrs . [8]
- b) Explain about the distribution uniformity and Christiansen method for finding out the uniformity coefficient. What is the significance of distribution uniformity in the drip irrigation system? [8]
7. a) Explain the procedure of operation and maintenance of drip irrigation system. [8]
- b) Explain the various automation methods in drip irrigation system. [8]