Code No: **R1641351** **R16** **Set No. 1**

IV B.Tech I Semester Regular Examinations, October/November - 2019

MICRO IRRIGATION ENGINEERING

(Agricultural Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper contains of Part –A and Part-B

Answer ALL sub question from Part-A

Answer any FOUR questions from Part-B

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PART – A (14 *Marks*)

1. a) Explain the scenario of sprinker irrigation system in the World. [2]
   b) Explain the classification of sprinker irrigation system on the basis of method of water application. [3]
   c) How are the successive locations of sprinkler laterals determined? [2]
   d) Distinguish between Media filter and screen filter. [2]
   e) Why is the pressure loss in an on-line emitter more than in an in-line emitter? [2]
   f) What are the major factors influencing the design capacity of a drip irrigation system? [3]

PART – B (4×14 = 56 *Marks*)

2. a) Explain the types of main and lateral lines in sprinker irrigation system. [7]
   b) Explain the types of couplers used in sprinker irrigation system with suitable sketch. [7]

3. a) Explain the precipitation profiles and moisture distribution patterns in sprinker irrigation system. [7]
   b) The date obtained from a field test on determining the water distribution pattern of a sprinkler is given below:
   Sprinkler: 7.10x4.76 mm – 95.76 litres per min, 4.22 kg/cm^2
   Spacing: 18.2x18.2 metres
   Wind: 3.86 km/hr from the south-east
   Humidity: 36 percent
   Time of test: 1 hour

North

S	15.7	13.2	13.2	16.7	17.0	S
15.0	15.0	15.7	15.2	17.5	19.5	17.8
14.5	12.7	16.7	16.0	17.8	11.9	14.2
15.0	15.5	18.3	19.0	16.2	11.9	12.4
17.3	18.8	16.0	15.2	10.7	14.2	16.0
12.2	20.3	14.5	12.4	14.7	10.1	12.9
S	15.5	13.2	13.2	16.5	16.0	S

South

'S' indicates the location of the sprinklers. Determine the Christiansen Uniformity coefficient. [7]

4. a) Explain the inventory of Resources and Conditions in the design of sprinker system. [7]
   b) Determine the required capacity of a sprinkler system to apply water at the rate of 1.25 cm/hr. Two 186 m long sprinkler lines are required. 16 sprinklers are spaced at 12 m interval on each line. The spacing between laterals is 18 m. Allowing 1 hour for moving each sprinkler lateral, how many days required for the irrigating 5 cm depth of water to the 4 ha field assuming 10 hr per day. [7]

5. a) Explain the components of drip irrigation system with neat sketch. [7]
   b) Explain in detail about the operational requirements of drip irrigation system. [7]

6. a) Explain the types of drippers used in drip irrigation. [7]
   b) Explain about emission uniformity in drip irrigation. [7]

7. a) List out a check list of procedures in designing a drip irrigation system. [7]
   b) Explain the causes of clogging in drip irrigation system. [7]