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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech IV Year I Semester Regular Examinations Feb-2021**

**MICRO IRRIGATION ENGINEERING**

(Agricultural Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Define sprinkler irrigation? List out the adaptability and limitations of sprinkler irrigation. **6M**
- b Define micro irrigation and briefly explain about the types of micro irrigation systems. **6M**

**OR**

- 2 a List out the advantages and disadvantages of sprinkler irrigation system. **6M**
- b Difference between surface irrigation and micro irrigation. **6M**

**UNIT-II**

- 3 a Define sprinkler head and what are the different types of sprinkler heads? **8M**
- b Briefly explain about different fertilizer injection devices. **4M**

**OR**

- 4 a Explain moisture distribution pattern of sprinkler irrigation system? **7M**
- b Determine the uniformity coefficient from the following data obtained from a field test on a square plot bounded by four sprinklers: **5M**
- Sprinkler - 4.365 × 2.381 mm nozzles at 2.8 kg/cm<sup>2</sup>
- Spacing - 24 m × 24 m
- Wind - 3.5 km/hr from south-west
- Humidity - 42 %
- Time of test - 1.0 hour.

S	8.9	7.6	6.6	S
8.1	7.6	9.9	10.2	8.3
8.9	9.1	9.1	9.4	8.9
9.4	7.9	9.1	8.6	9.1
S	7.9	6.6	6.8	S

**UNIT-III**

- 5 a Determine the required capacity of a sprinkler irrigation 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 lines is 18m. **6M**
- b Determine the system capacity for a sprinkler irrigation system to irrigate 16 ha of maize crop. Design moisture use rate is 5 mm/day and moisture replaced in soil at each irrigation is 6 cm. Irrigation efficiency is 70 % and irrigation period is 10 days in 12 days interval. The system is to be operated for 20 hr/day. **6M**

**OR**

- 6 a** Briefly explain about operation and maintenance of sprinkler irrigation system. **5M**
- b** Define filter and explain the types of filters used in sprinkler irrigation. **7M**

**UNIT-IV**

- 7 a** List out the adaptabilities of drip irrigation system. **6M**
- b** Define dripper and explain the different types of drippers. **6M**

**OR**

- 8 a** Explain different types of filters used in drip irrigation system. **6M**
- b** Explain about hydraulics of drip irrigation system. **6M**

**UNIT-V**

- 9 a** Explain the operation and maintenance of drip irrigation system. **6M**
- b** Explain the chemical, acid and chlorine treatment of drip irrigation system. **6M**

**OR**

- 10 a** Explain the computer software programs used for designing the drip irrigation system? **6M**
- b** The following data were obtained in a field test to determine the emission uniformity of a drip irrigation lateral:  $C_v = 0.07$ ,  $q_{min} = 45$  lit/he,  $q_{ave} = 50$  lit/hr, land slope = 1.5 %. **6M**

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