

Code No: RT41351

R13**Set No. 1**

IV B. Tech I Semester Supplementary Examinations, February/March - 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) Enumerate the components of sprinkler irrigation systems [4]
- b) Explain in brief about the types of sprinkler irrigation systems based on mechanism with diagrams [4]
- c) What are the factors influencing the spray distribution pattern of a rotating head sprinkler irrigation systems? [4]
- d) Explain in brief the working of a screen filter in a drip irrigation system with the help of a diagram [4]
- e) Explain in brief about in-line and on-line drippers and under which situations they are adapted. [3]
- f) What are the important bases for irrigation automation? Enlist and briefly explain. [3]

PART-B (3x16 = 48 Marks)

2. a) Explain the merits and demerits of sprinkler irrigation systems [8]
- b) Explain the recent advances in micro irrigation systems in India [8]
3. a) Determine the theoretical discharge of sprinkler nozzle of size 3.0 x 2.5 mm at operating pressure of 2.0 kg/sq.cm. Assume coefficient of discharge is 0.95. [8]
- b) Determine the water spread area of sprinkler having sprinkler nozzle diameter 3.0 x 2.5 mm at operating pressure of 2kg/ sq.cm. [8]
4. a) Determine the time of irrigation required to apply 5 cm of irrigation water to a 10 ha of land at the rate of 12 mm/hr. two lateral lines of 108 m long are spaced at 12m apart. 9 sprinklers are spaced at 12 m interval on each lateral line. Calculate the system capacity and no. of days required to complete one irrigation assuming 8 operating hours a day. [8]
- b) Compute the rate of application for 0.95 lit/s sprinkler discharge if the sprinkler spacing is 18 m x 12 m. [8]
5. a) Determine the water requirement per m² per row of the crop having pan evaporation of the region as 8 mm/day with crop coefficient as 0.70 and % of wetted area covered by the foliage is 50%. [8]
- b) Explain about the drip lateral hydraulics using suitable equations and charts. [8]

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6. a) Determine no. of emitters and lateral flow rate in 67 m long lateral with 7.5 lit/hr emitters placed at every 1.5 m long along the lateral. [8]
b) Explain about the finding out the distribution of uniformity and its significance. [8]
7. a) Explain the design criteria of the drip irrigation system based on pressure variation [8]
b) With the help of line diagrams, explain Pai-Wu I design charts in the design of drip irrigation systems. [8]

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