

Sample Question Paper

Course Name : Civil Engineering Group

Course Code : CE/CS/CR/CV

Semester : Sixth

Subject : Micro Irrigation (Elective)

Marks : 80

9140

Time: 3 Hrs

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q.1 Attempt any Four of the following

16 Marks

- a) State four difficulties in Micro irrigation.
- b) Define:
 - i) Field capacity
 - ii) Permanent Wilting Point
 - iii) Readily available moisture.
 - iv) Equivalent Moisture
- c) What are limitations of sprinkler irrigation?
- d) Which factors are to be considered for selection of type of sprinkler?
- e) State four types of dripper with their suitability.
- f) Describe the process of fertigation by using venturi.

Q.2 Attempt any Three of the following

12 Marks

- a) Why govt. promote to farmer to use the micro irrigation system?
- b) Draw a typical layout of sprinkler irrigation system. Label the components.
- c) State benefits of Micro sprinkler irrigation system.
- d) Write two advantages and two limitations of fertigation.

Q.3 Attempt any Three of the following

12 Marks

- a) Explain estimation of depth of irrigation on the basis of Soil Moisture regime concept
- b) State input design data for drip irrigation system.
- c) State the factors to be considered for selection of rapid sand filter.
- e) Why maintenance of filters and drippers is necessary for drip irrigation?

Q.4 Attempt any Two of the following

16 Marks

- a) What is meant by evapotranspiration? How it is determined by Penman method?
- b) Determine the frequency of irrigation and discharge of a sprinkler suitable for following requirements:

- i) Type of crop - Cotton
 - ii) Area of crop - 6 acre
 - iii) Areas Peak moisture requirement for cotton = 3.81 mm/day
 - iv) Total Moisture requirement of crop = 80 mm
 - v) Pump operation Hours = 15 hrs.
- c) Design specific discharge rate of lateral and submain suitable for following field requirements:
- i) Type of crop - Banana
 - ii) Area of crop - 150 m x 150 m on sub main
 - iii) Spacing of plant = 1.5 x 1.5
 - iv) Discharge per dripper = 4 LPH

Q.5 Attempt any Two of the following

12 Marks

- a) How water audit is beneficial for optimum utilisation of irrigation water?
- b) Compare between sprinkler irrigation and drip irrigation on following points:
 - i) Crop
 - ii) Water availability
 - iii) Losses
 - iv) Maintenance
 - v) Cost of operation
 - vi) Effect of Climate
- c) What data is required for design of main for sprinkler irrigation system?

Q.6 Attempt any Two of two following

12 Marks

- a) For which type of crop micro sprinklers are suitable? What data is essential to design micro sprinkler for it.
- b) How following factors will affect the designed discharge of drippers.
 - i) Evapotranspiration
 - ii) Rain Fall
 - iii) Wind Velocity
 - iv) Temperature
 - v) Crop
 - vi) Soil
- c) Calculate the power of Pump in KW suitable for following data:
 - i) Rate of Flow required = 8 LPS
 - ii) Suction head = 2.0 m
 - iii) Deliver Head = 5.0 m
 - iv) Loses in main and sub main = 2.5 m
 - v) Fitting and other losses = 2.0 m
 - vi) Operating pressure = 25 m
 - vii) Efficiency of pump = 80%