

EASTERN UNIVERSITY, SRI LANKA

SECOND YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE – 2004/2005

AEN 2201 – IRRIGATION AND WATER MANAGEMENT

Answer all Questions

Time Allowed: 2 Hours

1. a. Briefly explain the factors considered in the calculation of Gross Water Requirement?
b. What are the steps involved in the calculation of seasonal supply requirement?
c. "Crop water requirement of maize is 484 mm at Batticaloa coastal area". Comment on this statement.
d. The soil moisture contents of a field just before and after a thorough irrigation were 18 and 30 percent respectively. If the permanent wilting point is 12 %, what was the depletion level adopted for the above irrigation?

2. A farmer living in the dry zone wishes to grow chillies in his 3 ha field under irrigation. He approached a research officer to seek assistance in planning his cultivation practices. The research officer was able to collect the following data:
 - Moisture content at field capacity and Permanent wilting point are 24 % and 12 % respectively.
 - Moisture content of air dried soil = 3 %
 - Bulk density of the soil = 1.4 gcm^{-3}
 - Depletion level for chillies = 50 %
 - Maximum rooting depth of chilli = 60 cm
 - Duration between transplanting and final harvest = 120 days and transplanting date is 15th of March.
 - ET_{chilli} during four quarters of growing season are 5,6,6.5 and 6 mm/day respectively.
 - Efficiency of irrigation = 80 %
 - i. How much water is needed for first and subsequent irrigation?
 - ii. Schedule the dates for first 5 irrigations

3. a. The following conditions are maintained for an evaluation of border irrigation.

Long border strip

Mild slope

High infiltration rate

Small irrigation stream

- i. Draw a suitable diagram for above evaluation
- ii. What are the results to be expected?
- iii. How do you improve the above irrigation system?

- b. Determine the distribution uniformity of a border irrigation system by using following data (depth of infiltration at different points of border strip in mm)

12 12 07 07 06 05 05

- c. Briefly describe the cut-off system in a Border irrigation system

4. Write short notes on the following;

- a. Soil moisture characteristic curve
 - b. Reference evapotranspiration
 - c. Application efficiency of irrigation system
 - d. Principle of sprinkler irrigation system
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