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B.E / B.Tech. (Full Time) DEGREE ARREAR EXAMINATIONS, NOV/ DEC 2013

CIVIL ENGINEERING BRANCH

VI SEMESTER – (REGULATIONS 2008)

CE9352– IRRIGATION ENGINEERING

(English and Tamil Medium)

Max Marks: 100

Time : 3 hours.

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is the necessity of Irrigation in India?
2. Discuss on soil water retention in a clayey soil, loamy soil and sandy soil.
3. Define soil-water-plant relationship.
4. Define permanent wilting point and write down the procedure for estimating it.
5. Define cross drainage works.
6. Given that the base period of a crop is 120 days and the total depth of water required is 80 cm. What is the duty of the crop?
7. Compare between salinity and sodicity of soil.
8. Write the advantages of furrow irrigation?
9. What is consumptive use efficiency?
10. What is meant by Kudimaramath?

Part – B (5 x 16 = 80 Marks)

11. i) What are the advantages and disadvantages of irrigation? (5)
ii) What is a soil structure? Explain with sketch the components and functions of Tensiometer and how the soil moisture measurement is done? (8)
ii) Differentiate between gravitational and capillary water. (3)
12. i) What is lysimeter? Explain the functions and a water requirement of plant is measured? (10)
ii) The monthly consumptive use values for paddy are tabulated in Table. Calculate the total consumptive use. What is the average monthly consumptive use and peak monthly consumptive use? (6)

Month	Date	Rice (clay soil) C_u in cm
June	1-30	28.73
July	1-12	8.76
July	13-31	15.34
August	1-31	22.73
September	1-30	21.29
October	1-31	25.50

November	1-24	15.06
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OR

- b.i) Making use of the following information and Christiansen method calculate pan evaporation and consumptive use for the month of April: (12)

Consumptive use coefficient	0.8
Latitude of location	20°N
Mean temperature	30°C
Mean wind velocity at 0.5m above ground	180 km/day
Mean relative humidity	38%
Mean sunshine percent	85%
Elevation of location	400 m
Extra-terrestrial radiation	46 cm

- ii) Briefly explain the Blaney-cridle method research on consumptive use of water. (4)

13. a.i) Draw a neat sketch of the layout of the diversion headwork works, indicating the components and their functions of each. (16)

OR

- b. i) Explain the factors affecting irrigation water requirement of a crop? (6)
 ii) Explain the necessity of cross drainage works and also explain the super passage and syphon super passage with sketches. (10)

14. a. i) What is method of irrigation? Explain various types of surface irrigation methods with neat sketches. (16)

OR

- b. i). Write short note with neat sketch on (10)
 Land leveling, Tile drains, Mole drains, Field measurements- Current meter and field measurement- water meter.
 ii) Design the irrigation channel to carry a discharge of 50 cusecs. Assume Kutter's constant as 0.0255, $m=1$. The channel has a slope of 15 cm/km. Do necessary checks. (6)

15. a. i) Define the term of irrigation efficiency. (2)
 ii) A stream of 130 litre/second was diverted from a canal and 100 litre per second were diverted to the field. An area of 2 hectares was irrigated in 10 hours. The effective depth of root zone was 1.6 m. The runoff losses in the field was 400 cu.m. The depth of water penetration varied linearly from 1.8 m at the head end of the field to 1.2 m at the tail end. Available moisture holding capacity of the soil is 20 cm per meter depth of the soil. It is required to determine the water conveyance efficiency, water application efficiency, water storage efficiency and water distribution efficiency. Irrigation was started at a moisture extraction level of 50% of the available moisture. (12)
 iii) What is a irrigation scheduling? (2)

OR

- b. i) Write briefly about Warabandi system of scheduling water for irrigation (6)
 ii) Draw the neat sketch of structure of PSC and FC of farmer's organization and explain. (4)
 ii) Discuss briefly explain the roles of Water User's Associations in the farmers organization. (6)
