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B.E / B.Tech. (Part Time) DEGREE ARREAR EXAMINATIONS, APR / MAY 2014

CIVIL ENGINEERING BRANCH

VI SEMESTER – (REGULATIONS: 2002/2005/ 2009)

PTCE 471/ PTCE 432 / PTCE 9352 – IRRIGATION ENGINEERING

Time : 3 hours.

Max Marks: 100

Answer ALL Questions

Part - A (10 x 2 = 20 Marks)

- 1. Highlight the need for irrigation with any of its advantages,
- 2. What are soil water constants?
- 3. Write short notes on Consumptive use.
- 4. How capillary water is important to plants?
- 5. How many hectare of paddy can be irrigated to satisfy a field duty and delta of 108 cm of water over a base period of 100 days, when the canal is maintained at 125 cumec.
- 6. Compare Weir with Barrage.
- 7. Differentiate between waterlogging and salinity.
- 8. Compare between surface and sub-surface drainage.
- 9. Define the term field irrigation requirement.
- 10. What is a Water Users Association?

$Part - B (5 \times 16 = 80 Marks)$

- 11. il) What are the benefits and ill effects of Irrigation? (4)
 ii) Explain briefly the irrigation development before independence during pre-historic times in India. (12)
- 12. a. i) Write a note on: (i) wilting point (ii) field capacity (iii) saturation point (6)
 ii) Field capacity of soil 25 percent, permanent wilting point 13 percent, density of soil 1.5 g/cm3, effective depth of root zone 700 mm and daily consumptive use rate for the crop is 10 mm. If the soil is clay loam what should be the frequency of watering so that yield of the crop is not affected. (6)

iii) 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?

Dates	Nursery	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

b. (i) Describe in details the relation between soil moisture and plant growth. Show this relationship diagrammatically also. (8)

ii) Using Blaney-Criddle equation and a crop factor K= 0.72 for certain crop whose details have been given in the table below, determine the following (i) Consumptive use
 (ii) Consumptive irrigation requirements (iii) Field irrigation requirement

Month	Monthly (Av)°C	temp	Montly % of day time hours of the year	Useful rainfall in cr
October	25		8.09	-
November	20°C		7.40	-
December	16°C		7.42	1.5
January	14°C		7.53	0.9
February	15°C		7.14	-

- 13. a i) Draw a neat sketch of a diversion head wok and name its various parts. Give brief explanation on each part. (16)
 - b. i) Describe an ogee and trapezoidal Notch fall with neat sketch.
 ii.)With a neat sketch explain about aqueduct and level crossing.
 iii)What do you understand by the term scouring sluices? State its functions.
 (4)

OR

- 14. a. i)What do you understand by term water logging? What are the ill-effects of water logging?
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 - b. i)What do you understand by term drainage of area? Explain briefly surface drainage and sub-surface drainage with a neat sketch. (16)
- 15. a. i) Briefly explain the structure of farmer organizations- 3 tier organizational structure in Tamil Nadu with a schematic diagram. (10)
 ii)) Write briefly about Warabandi system of scheduling water for irrigation. (6)

OR

b. i) A stream of 130 litres per second was diverted from a canal and 100 litres per second were diverted to the field. An area of 1.6 hectares was irrigated in 8 hours. The effective depth of root zone was 1.7 m. The runoff loss in the field was 420 cu.m. The depth of water penetration varied linearly from 1.7 m at the head end of the field to 1.1 m at the tail end. Available moisture holding capacity of the soil is 20 cm per meter depth of soil. Calculate 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.

 ii) Discuss on the improvements made in the agricultural sector because of the introduction of OFD works.
 (8)

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