

**B.E / B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY - 2011**

**CIVIL ENGINEERING BRANCH**

**SEVENTH SEMESTER**

**CE 471 – IRRIGATION ENGINEERING INCLUDING DRAWING**

**(REGULATIONS 2004)**

17

Time : 3 hr

Max Marks: 100

Answer all questions

**Part – A (10 x 2 = 20 Marks)**

1. Define Irrigation and list its types?
2. What are the components of irrigation system?
3. What is field capacity and state its use in plant growth?
4. List the types of soil degradation.
5. Define Potential Evapo Transpiration (PET).
6. What do you understand by consumptive use?
7. What is the relation between Duty, Delta and Base period?
8. List the different types of irrigation efficiency.
9. State the role of farmers' organization.
10. What do you mean by Irrigation beneficiaries?

**Part - B (5 x 16 = 80 Marks)**

11. (i) What are the advantages and disadvantages of irrigation? (4)  
 (ii) Explain the different types of cross drainage works with appropriate sketch (12)
  - 12.(a)(i) What are the measures to maintain and enhance the fertility of soils? (4)  
 (ii) Explain briefly the soil moisture movement in the soil under saturated and unsaturated conditions. (12)
- (OR)
- (b)(i) Explain briefly about the types of soil moisture potential (4)  
 (ii) Define moisture content in soil and explain the instruments used to measure soil moisture content. (12)
  - 13.(a)(i) Explain modified Penman equation for the estimation of reference crop evapo-transpiration. (4)  
 (ii) The table below gives the details for groundnut crop using Blaney Criddle formula and crop factor 0.7. Determine the following (i) consumptive use; (ii) irrigation requirement, if water application efficiency is 0.76. The latitude of the place is 28° N.

(12)

Month	Average temp. (°C)	Monthly % of day time hours	Useful rainfall (cm)
August	36	7.19	0
September	32	7.30	15
October	30	7.15	65
November	27	7.03	40
December	28	6.84	74

(OR)

- (b)(i) How does soil moisture content influence evaporation from land surface? (4)  
 (ii) Explain the soil-plant-water relationship in sustainable agricultural production (12)

14.(a)(i) A soil sample was taken from field weighing 2.65 kg, after drying its weight was 2.40kg. The size of core sampler is 7.5 cm diameter and 15 cm height. The specific gravity of soil at dry condition is 2.25. The empty weight of core sampler was 1.55 kg. Determine the moisture content and also apparent specific gravity of the soil. (6)

(ii) Explain the general guidelines on planning irrigation scheduling. (10)

(OR)

(b)(i) Explain the methods of land leveling in an agricultural field (4)

(ii) A stream of 0.15 m<sup>3</sup>/s water delivers from a canal and 0.11 m<sup>3</sup>/s were delivered to the field. An area of 1.65 hectares was irrigated in eight hours. The effective depth of root zone was 18 m. the runoff loss in the field was 432 m<sup>3</sup>. The depth of water penetration varied 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 metre depth of soil. Determine 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)

15.(a)(i) What do you meant by interdisciplinary approach in irrigation management and explain? (4)

(ii) Discuss the advantages and framework of farmer organization and turn over in improving the system performance? (12)

(OR)

(b)(i) Write short note on Participatory approach in development of irrigation practices in India. (8)

(ii) Explain in detail about the economical aspect of irrigation. (8)