

A 197

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Seventh Semester

Civil Engineering

CE 432 — IRRIGATION ENGINEERING

(Including Drawing)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the necessity for irrigation in India?
2. Distinguish between Kharif crops and Rabi crops.
3. Define the term Transpiration ratio.
4. What is the use of Lysimeter?
5. State the method of water distribution in canal command areas.
6. What are the different types of sprinkler systems?
7. What is meant by canal escape?
8. List the functions of canal head regulator.
9. What is meant by optimisation?
10. State the role of an irrigation engineer in water management.

PART B — (5 × 16 = 80 marks)

11. (i) Discuss in brief about the benefits of irrigation. (8)
- (ii) Describe with the help of a diagram, various forms of soil moisture. (8)

12. (a) (i) Explain the terms duty and delta. Derive the relationship between the two. (8)

(ii) A loam soil field capacity of 22% and wilting coefficient of 10%. The dry unit weight of soil is 1.5 g/cm^3 . If the root zone depth is 70 cm, determine the storage capacity of the soil. Irrigation water is applied when moisture content falls to 14%. If the water application efficiency is 75%, determine the water depth required to be applied in the field. (8)

Or

(b) (i) Discuss in brief the direct measurement of consumptive use of water. (8)

(ii) A water course has a culturable commanded area of 1200 hectares. The intensity of irrigation for crop A is 40% and for crop B is 35%, both the crops being rabi crops. Crop A has a kor period of 20 days and crop B has a kor period of 15 days. Calculate the discharge of the water course, if the depth for crop A is 10 cm and for crop B is 16 cm. (8)

13. (a) Describe the various methods of surface and sub surface irrigation. (16)

Or

(b) (i) Explain the various classification of canals based at the discharge and its relative importance in a given network of canals. (8)

(ii) What is lift irrigation? Explain the methods of lifting water from the source. (8)

14. (a) (i) Describe, with sketches, various types of cross-drainage works. (12)

(ii) State the necessity and location of canal falls. (4)

Or

(b) Explain various types and classifications of river training works, using neat sketches. (16)

15. (a) (i) Discuss in brief, about various types of irrigation efficiencies. (10)
(ii) Discuss the role of farmers in water management. (6)

Or

- (b) (i) Explain the important features of National Water Policy. (6)
(ii) A stream of 135 lps was diverted from a canal and 100 litres/sec were diverted to the field. An area of 1.6 hectare was irrigated in 8 hrs. The effective depth of root zone was 1.8 m. The runoff loss in the field was 432 cumec. Available moisture holding capacity of the soil is 20 cm per metre depth of soil. Determine the water convergence efficiency, water application efficiency and water storage efficiency. Irrigation was started at a moisture extraction level of 50% of the available moisture. (10)