

B. Tech 6th Semester Examination

Irrigation Engineering (NS)

CE-322

Time : 3 Hours

Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all. Selecting one question from each of the sections A, B, C & D and all the sub parts of question in section E.

SECTION - A

1. Discuss the multipurpose uses of water and development of irrigation in India. (20)
2. Explain border strip, check basin and furrow methods of irrigation. Compare these methods and state their suitability in different topographic conditions. (20)

SECTION - B

3. (a) Describe important crops, their water requirements and crop seasons in the country. (10)
(b) What do you understand by duty and discuss the factors affecting the duty. (10)
4. (a) Sketch a well in a confined aquifer and obtain an expression for steady state Discharge of well. (10)
(b) Explain soil water crop relationship. What is frequency of applying irrigation water? (10)

[P.T.O.]

SECTION - C

5. (a) With help of a sketch explain various parts of a canal irrigation system. (10)
(b) Discuss the various canal losses and methods to estimate these losses. (10)
6. What is water logging? Write the causes of water logging. Describe the use of open drains and tile drains for land drainage. (10+10=20)

SECTION - D

7. How the outlets are classified? Sketch a semi module and a rigid module and explain their working. (10+10=20)
8. Discuss the functions of guide banks for river training. Give the design procedure for Guide banks when high flood level, bed level, design discharge and silt factor at site on a river are given. (6+14=20)

**SECTION - E
(compulsory)**

9. Fill in the blanks of following statements by choosing appropriate option:
 1. Canals which can irrigate fields on its both the sides are aligned along _____ (valley, ridge, contour)
 2. In case of an undulating land, _____ method of irrigation can be chosen. (flooding, furrow, sprinkler)
 3. Important crop of Rabi season is _____. (wheat, rice, suger cane)
 4. If the base period is 120 days and delta is 0.6 m estimate Duty is _____ hectares per cumec. (864,1728,120)

5. For a design discharge of 1600 cumecs the regime width is _____ m. (475,250,190)
6. Alkaline soils are best reclaimed by _____
(Leaching, drainage, addition of gypsum and leaching)
7. A land is said to be water-logged, when _____
(water flows on the land, pH of soil is high, soil pores in the root zone get saturated with water due to rise in water table)
8. An outlet can be Proportional if the Flexibility is _____
(0.9, 1.0, 1.1)
9. If the average size of soil particles at a place is 1.0 mm. the silt factor is _____ (1.76,1.0, 0.176)
10. Guide banks are constructed to avoid _____ of the structure by the river. (flooding, submergence, out flanking)
(2×10=20)