

Roll No.

3303

**B. Tech. 6th Semester (Civil)
Examination – May, 2023**

IRRIGATION ENGINEERING

Paper : PCC-CE-302-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) State the necessities of irrigation. 2.5 × 6
- (b) Mention the National Water Policies in India.
- (c) Define Canal Fall. Where they are located ?
- (d) What do you mean by cross-drainage works ?
Explain as to why such works are not set within a ridge canal system ?

- (e) Write the importance of outlets in irrigation canal system.
- (f) Distinguish between alkaline and saline soil.

UNIT – I

2. (a) Discuss the advantages and disadvantages of irrigation. 5
- (b) Explain the various types of irrigation. 10
3. A sandy loam soil holds water at 140 mm/m depth between field capacity and permanent wilting point. The root depth of the crop is 30 cm and the allowable depletion of water is 35%. The daily water use by the crop is 5 mm/day. The area to be irrigated is 60 ha and can be diverted at 28 l.p.s. the surface irrigation application efficiency is 40%. There are no rainfall and ground water contribution. Determine : (i) Allowable depletion depth between irrigation (ii) Frequency of irrigation (iii) Net application depth of water (iv) Volume of water required (v) Time to irrigate 4 ha plot. 15

UNIT – II

4. (a) Enlist the various types of canal falls. Discuss about ogee falls. 8
- (b) What are Canal Escapes ? How do they help in preventing the adjoining area against flooding ? 7
5. (a) Draw a neat sketch of suitable design aqueduct for following crossing : 10
- (i) A major canal over a small drainage
- (ii) A canal carrying low discharge over a large drainage
- (b) Mention the factors affecting the selection of cross drainage. 5

UNIT – III

6. (a) Elaborate the design criteria for judging the performance of outlets. 7
- (b) Describe any *one* non-modular outlet. 8
7. (a) Explain the various methods used for energy dissipation between spillways. 9
- (b) Write merits and demerits of : 6
- (i) Ogee spillways
- (ii) Straight spillways

UNIT - IV

8. (a) What are the different types of rivers and their characteristics? 7
- (b) Discuss the functions of launching apron. Draw neat sketch also. 8
9. (a) State the principles, causes and effects of water logging. 7
- (b) Describe the working of tile drain. 8
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