

B.Tech. (Sem. - 6th)

IRRIGATION ENGINEERING - I

SUBJECT CODE : CE - 306Paper ID : [A0620]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

Q1)

(10 × 2 = 20)

- a) Define irrigation.
- b) Define intensity of irrigation.
- c) What is the flooding method of irrigation?
- d) What do you understand by Bandhara Irrigation?
- e) What do you understand by lining of canals?
- f) Why soil is rendered unproductive and infertile.
- g) What are the causes of water-logging?
- h) What is meant by development of a tubewell?
- i) Define confined aquifer and unconfined aquifer.
- j) What is meant by river training?

Section - B

(4 × 5 = 20)

- Q2) What are the defects in Kennedy's and Lacey's theories?
- Q3) Assuming the side slope 1:1, find the bed width B and the depth (D) of flow of an irrigation canal to carry a discharge of $21 \text{ m}^3/\text{sec}$ with a velocity of 0.75 m/sec . Bed slope is 1 in 5000 and value of Chezy's constant $C = 42$.
- Q4) Design a tube well to be sunk in confined aquifer of 20m thickness fully. The yield required is $2400 \text{ m}^3/\text{day}$. Coefficient of permeability of aquifer was found to be 40 m/day . The drawdown in the well was taken to be 4m.
- Q5) Explain different factors affecting water requirement by crops.
- Q6) Enumerate the different methods which are used for controlling and training rivers and describe any one of these methods in details.

Section - C

(2 × 10 = 20)

- Q7) Describe in detail sprinkler irrigation method and enumerate its advantages and disadvantages.
- Q8) (a) What is a guide bank? Draw a good sketch of a guide bank and explain its different parts.
(b) Design a lined canal to carry 100 cumec discharge with the following data :
(i) Angle of repose of the soil = 45°
(ii) Lacey's silt factor = 1.2
(iii) B/D ratio = 3
(iv) Value of $N = 0.018$
- Q9) (a) Distinguish between marginal and retired embankments.
(b) Explain various investigations required for an irrigation project.

