Enrollment No: _____ **Exam Seat No:** _____

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name: Irrigation Engineering

Subject Code: 4TE05IRE1 **Branch:** B.Tech (Civil)

Semester: 5 **Date:** 01/04/2017 **Time:** 02:30 To 05:30 **Marks:** 70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:** **(14)**

a)	Define irrigation efficiency.	01
b)	Define crop period.	01
c)	Define base period.	01
d)	Define culturable command area.	01
e)	Define kor period.	01
f)	Define capillary water.	01
g)	What is irrigation?	01
h)	What is paleo?	01
i)	What is gross commanded area?	01
j)	What is dowla?	01
k)	Enlist various types of linings in canal.	01
l)	Specific yield.	01
m)	Coefficient of permeability	01
n)	Enlist different types of tube well.	01

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions** **(14)**

(a)	State the types of river training works and explain any one.	05
(b)	Write short note on balancing depth of canal.	05
(c)	Give advantages and disadvantages of well irrigation over canal irrigation.	04

Q-3 **Attempt all questions** **(14)**

(a)	Enlist different methods of irrigation and describe (i) check basin method and (ii) sprinkler irrigation method.	07
(b)	Derive relation between Duty and Delta and find out the duty of water if crop requires total depth of 90 cm of water for base period of 120 days.	07

Q-4 **Attempt all questions** **(14)**

(a)	Explain the salient features of the drip irrigation system. What are the	07

advantages and disadvantages of the drip irrigation?

(b) After how many days the irrigation water should be applied to the land to ensure efficient irrigation for the following conditions: 07

(1) field capacity of soil = 30%
(2) permanent wilting point = 12%
(3) dry density of soil = 1.5 g/cm^3
(4) effective depth of root zone = 0.80 m
(5) daily consumptive use of water = 12mm
(6) Readily available moisture = 80% of the available moisture.

Q-5 Attempt all questions (14)

(a) Explain the procedure for designing an irrigation channel using Kennedy's theory, when Q, N, m and S are given. 07

(b) Design an irrigation channel by Kennedy's theory to carry a discharge of 50 cumec. Take N = 0.0225 and m = 1.05. The channel has a bed slope of 0.2 m per kilometre. 07

Q-6 Attempt all questions (14)

(a) What is canal lining? Why is it necessary? Give the advantages of it. 07

(b) Design a lined concrete channel trapezoidal in section to carry a discharge of 200 cumec at a slope of 30 cm/km. The Manning's N = 0.017 and side slopes are 1.5 : 1. Take B/D = 5. 07

Q-7 Attempt all questions (14)

(a) What do you mean by water logging of soil? Discuss its effects and give the measures to prevent it. 07

(b) Draw cross section of canal in fully cutting and canal in full embankment. 07

Q-8 Attempt all questions (14)

(a) Explain planning process of irrigation project 07

(b) Explain dupuit's theory for unconfined and confined aquifer. 07