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

C.U.SHAH UNIVERSITY

Summer Examination-2017

Subject Name : Irrigation Water Management

Subject Code : 4TE08IWM1 **Branch :** B.Tech. (Civil)

Semester : 8 **Date :** 18/04/2017 **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)	Enlist various types of irrigation system.	01
b)	What is lift irrigation?	01
c)	What is accumulated infiltration in furrow?	01
d)	Enlist various types of sprinkler irrigation system according to their types.	01
e)	Enlist various components of a sprinkler irrigation system.	01
f)	Write down the formula to determine the discharge of each sprinkler.	01
g)	What is irrigation efficiency?	01
h)	Define leaching.	01
i)	What is salt balance of the area?	01
j)	Define water storage efficiency.	01
k)	State factors affecting the choice of the irrigation method.	01
l)	Write down the formula to determine the capacity of sprinkler system.	01
m)	Define conjuctive use.	01
n)	What is WUO?	01

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

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

(a)	Explain border and check basin irrigation method.	07
(b)	Discuss in detail water management issues.	07

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

(a)	Discuss the application of remote sensing in the field of irrigation.	07
(b)	Furrow 100 m long and 1 m apart having longitudinal slope of 0.3 percent are initially irrigated by a non-erosive stream for 80 minutes. The stream size is then reduced to 40% and continued for another 35 minutes. Determine the average depth of irrigation.	07

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

(a)	Define and explain irrigation scheduling.	07
(b)	A sprinkler irrigation system is designed to apply water at the rate of 1.25 cm/hr. Length of each lateral line is 186 m. Allowing 1 hour for moving each lateral line, how many hours would be required to apply a 5 cm irrigation to a square field of 16 hectare area? How many days are required assuming 10 hour days? The spacing between lines is 18 m.	07

Q-5 **Attempt all questions** **(14)**

(a)	What are the effects of saline water on irrigated land? Which precautions should be taken during use of saline water?	07

(b) Compute the efficiency of an irrigation system based on the following data: 07

1600 litres/min of water is diverted to the farm each day of 24 hours. Each day 0.6 ha of maize and 0.8 ha of wheat are irrigated. The irrigation requirement of maize is 8 cm and that of wheat is 10 cm.

Q-6 Attempt all questions (14)

(a) Explain water requirements of crops. 07

(b) Determine the change in salinity level of the soil due to evaporation of 8 cm of ground water having an electrical conductivity of 10 mmhos/cm. The depth of soil influenced by soil accumulation is 35 cm. The bulk density and saturation percent of the soil are 1.5 g/cm^3 and 50 percent respectively. The density of water is assumed as 1 g/cm^3. 07

Q-7 Attempt all questions (14)

(a) In an orchard with fully grown trees, determine the number of emitters required per tree if 50% of the area is to be irrigated under the following conditions: 07

(i) good quality irrigation water

(ii) Saline irrigation water

The soil is medium texture with homogeneous layers having diameter of wetted circle as 0.90 m. The effective depth of root zone is 0.75 m. The tree-to-tree spacing is 3.0 m and the spacing between laterals is 5 m.

(b) Describe the causes of water logging. 07

Q-8 Attempt all questions (14)

(a) Write about farmer's participation and role of irrigation managers in practicing the irrigation. 07

(b) Classify drainage systems with neat sketches. 07