Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2019

Subject Name: Water Resources Engineering
Subject Code: 4TE05WRE1 Branch: B.Tech (Civil)
Semester: 5 Date: 14/03/2019 Time : 10:30 To 01:30 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) What is meant by Recurrence period?

b) Define safe yield.

c) Write the Darcy formula for permeability.

d) Draw the S- curve unit hydrograph.

e) Give two examples for cash crop.

f) What is mass rainfall curve?

g) Enlist various types of precipitation.

h) What is W_{index}?

i) Define: Unit hydrograph.

j) What is meant by Aquifer?

k) What do you understand by the term 'watershed'?

l) Give the name of non automatic rain gauge.

m) Differentiate between hydrograph and hyetograph.

n) Enlist the types of soil.

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

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

(a) Write short note on Water Resources development in India. **06**

(b) The ordinates of **3-hr unit hydrograph** are given in the table. Compute the ordinate of **6-hr unit hydrograph.** **08**

Time (hours)	0	3	6	9	12	15	18	21	24	27	30
Discharge (cumecs)	0.0	3.08	4.94	8.64	9.88	7.41	4.94	3.70	2.47	1.23	0.0

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

(a) Enlist various methods of computing average rainfall over a drainage basin and explain Isohyetal method in detail. **07**

(b) Write the relationship between Duty, Delta and Base period. **07**

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

(a) Results to determine Horton's Infiltration capacity (f) in the exponential form are tabulated below: **08**

Time in hours	0	0.25	0.5	0.75	1.0	1.25	1.5	1.75	2.0
Infiltration capacity (f) in cm/hr	11.0	5.60	3.20	2.10	1.50	1.20	1.10	1.0	1.0

Determine the infiltration capacity exponential equation.

(b) Explain the factors affecting evaporation. **06**

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

(a) Write the assumptions and limitations of unit hydrograph theorem. **08**

(b) Explain the factors affecting infiltration. **06**

Q-6 **Attempt all questions** **(14)**

(a) A rain gauge recorded the following accumulated rainfall during the storm. Draw the mass rainfall curve and the hyetograph. **08**

Time (AM)	8.00	8.15	8.30	8.45	9.00	9.15	9.30	9.45	10.00
Accumulated Rainfall (mm)	0.0	8.5	16.0	27.0	37.0	48.0	62.0	80.0	90.0

(b) Write short note on well irrigation. **06**

Q-7 **Attempt all questions** **(14)**

(a) Explain the rain water harvesting and groundwater harvesting techniques with neat sketch. **07**

(b) How do you select the site for fixing a rain gauge? Describe. **07**

Q-8 **Attempt all questions** **(14)**

(a) Write short note on water user organization. **07**

(b) How do you control the evaporation loss in reservoir? Explain. **07**