Regulation: R18 *Subject code: 2P6AD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech VI Semester Supplementary Examinations, June/July 2023

HYDROLOGY AND WATER RESOURCE ENGINEERING

CIVIL ENGINEERING

Maximum Marks: 70 Date:30.06.2023 **Duration: 3 hours**

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M = 20 Marks)

1 What is Evaporation?
2 What are the factors effecting Evaporation.
3 What is unit hydrograph?
4 What is hydrograph?
5 What are the aquifer parameters?
6 Write about the two types of wells.
7 Write about Duty, Delta and Base period.
8 What is water logging?
9 What is balancing depth of cutting?
10 What is canal lining?

Part-B

Answer All the following questions. (5x10M = 50 Marks)

11 a) What is hydrologic cycle? Describe with equation that is used to quantify water going through various individual paths of the cycle. give a neat diagram too. [5]
b) Discuss the various factors affecting evaporation? [5]

OR

12 What is run off? Explain the factors affecting run off from a catchment. And also write it's empirical and rational formulae. [10]

13 What is a hydrograph? Draw a single peaked hydrograph and explain its components. [10]

OR

14 Explain briefly what a unit hydrograph and a distribution graph is? Starting from 12 noon, storm rainfalls of 2.5, 7.5 and 5.0cm occur during three successive hours over a 25 square km area. The storm loss rate (Ø – index) is 1.25 cm per hour. The percentages of distribution graph for successive hours are 5,20,40,10 and 5. Estimate the value of peak discharge in cubic m^3/sec and the hour when it is expected. [10]

15 Derive an expression for the steady state discharge of well fully penetrating into a confined aquifer. [10]

OR

16 In a certain alluvial basin of 110 km², 100 Mm³ of ground water was pumped in a year and the ground water table dropped by 4 m during the year. Assuming no replenishment, estimate the specific yield of the aquifer. If the specific retention is 12 [10]

17 What is irrigation? Write its advantages and disadvantages; also write its ill effects and importance. [10]

OR

18 What is soil- water- plant relationship? Write about vertical distribution of soil moisture in brief. [10]

19 The slope of channel in alluvium is S = 1/5000; Lacey's silt factor = 0.9 and channel side slope = ½:1. Find the channel section and maximum discharge which can be allowed to flow in it. [10]

OR

20 Using Lacey's theory, design an irrigation channel for the following data:
Discharge Q=48 cumecs, silt factor 'f'=1, side slopes=½:1. [10]