Regulation: R18 *Subject code: 2P6AD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, January 2023

HYDROLOGY AND WATER RESOURCE ENGINEERING

(CE)

Maximum Marks: 70 19/01/2023 **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 Run off?
2 What are the factors effecting Run off?
3 What is flood hydrograph?
4 What is hydrograph?
5 What are the aquifer parameters?
6 What are the types of Aquifers?
7 Define Irrigation and Explain its two necessities.
8 Find the delta for a crop if the duty for a base period of 120 days is 1450 hectares/cumecs.
9 Define Canal.
10 What is the classification of Canals?

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. [5M]
b) Discuss the various factors affecting evaporation? [5M]

OR

12 a) What is infiltration? What are the factors affecting infiltration? [5M]
b) Explain in detail about Ø – index. [5M]

13 Explain the method by which maximum runoff can be estimated from a catchment. Describe the method of computing the ordinates of a unit hydrograph from a flood hydrograph. [10M]

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. [10M]

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

OR

16 a) A tube well of 30m diameter penetrate fully in the artesian aquifer. The strainer length is 15m. Calculate the yield from the well under a drawdown of 3m. the aquifer consists of sand effective size of 0.2mm having coefficient of permeability equal to 50m/day. Assume radius of influence is equal to 150m. [5M]

b) Explain the perched aquifer and water table aquifer. [5M]

17 a) What is sprinkler irrigation? Discuss the advantages and disadvantages. [5M]

b) Discuss the various Indian agriculture soils and how to improve their methods of improving soil fertility. [5M]

OR

18 a) Classify the types of irrigation efficiencies. [5M]

b) Write short note on water logging, crop rotation, and soil water and plant rotation. [5M]

19 a) How do you classify the types of canals? Explain any two. [5M]

b) Write the design procedure of irrigation canal using the kennedy theory. [5M]

OR

20 a) What is design discharge over catchment area? Explain SCS method of design discharge. [5M]

b) How many methods stream flow can be measured? [5M]