R20 Regulation *Subject code:3P6AD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

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

WATER RESOURCE ENGINEERING-I

(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 which carries 10M.
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 Write the applications of hydrology.
2 What do mean by catchment area?
3 Define Unit hydrograph?
4 What do you understand about flood hydrograph?
5 What are the parameters considered in aquifer?
6 Define Permeability.
7 What is soil fertility?
8 Define Duty and Delta.
9 What is the IS standards used for canal design?
10 What is Lacey's theory?

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 A. Explain evaporation process. Describe various factors that affect rate of evaporation. (7M)
B. How do you measure evapotranspiration using a Lysimeter? (3M)

OR

12 Explain the following in brief. [3+2+3+2]
(i) Isohyet
(ii) Average Annual Rainfall
(iii) Probable maximum precipitation
(iv) Rain gauge density

13 A. Enumerate the factors which affect the runoff from a catchment. (4M)
B. During a storm event an average depth of 10 cm of rain fell over a watershed with a land use of pasture in good condition and soils from hydrologic soil group C. Estimate the direct runoff. (6M)

OR

14 A. Discuss a method to obtain UH from complex storms. (6M)
B. What do you understand by the principle of linearity and time invariance in unit hydrograph? (4M)

15 A. Write short notes in determination of yield of an open well. (3M)
B. Explain about well construction and well development. (7M)

OR

16 A well with a radius of 0.5m penetrates completely a confined aquifer of thickness 40 m and permeability 30 m/day. The well is pumped so that the water level in the well remains at 7.5 m below the original piezometric surface. Assuming that the radius of influence is 500 m compute the steady state discharge from the well. (10)

17 A. Explain the methods of application of irrigation water. (4M)
B. Concentration of Na, Ca and Mg are 22, 3 and 2.5 milli-equivalents per liter respectively and the electrical conductivity is 200 micro-mhos per cm at 25°C? What problems may rise in using this water on fine textured soils? What remedies do you suggest overcoming this trouble? (6M)

OR

18 A. Describe the necessity of irrigation in India. (5M)
B. Write the benefits and ill effects of irrigation. (5M)

19 A. Write down the classification of canals. Explain canal alignment. (7M)
B. Differentiate the detention storage and depression storage. (3M)

OR

20 A. What precautions do you take during the design of weirs? (3M)
B. Design a canal for 50 cumec discharge by Kennedy's theory. The other data required is given as N = 0.0225, meter and S = 16 cm per km. (7M)