17CV73

USN

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
Hydrology and Irrigation Engineering

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. With a sketch, explain on Rainfall Hyetographs. (05 Marks)
  b. What are the forms of Precipitation? Explain. (05 Marks)
  c. List and explain the types of Precipitation. (10 Marks)

OR

2 a. With neat sketch, explain the Engineering representation of the Hydrological cycle. (10 Marks)
  b. Explain with neat sketch, how amount is measured using Symon's rain gauge. (10 Marks)

Module-2

3 a. Define Infiltration. Explain the factors affecting infiltration capacity. (10 Marks)
  b. Explain with neat sketch, the measurement of evaporation using class A Pan. (06 Marks)
  c. Write Meyer's formula and explain its terms. (04 Marks)

OR

4 a. Describe the method of determining infiltration capacity using a double ring infiltrometer and mention its disadvantages. (10 Marks)
  b. What is Evapo – transpiration and explain factors affecting Evapo - transpiration. (10 Marks)

Module-3

5 a. Define Unit Hydrograph and mention its applications, limitations and assumptions. (10 Marks)
  b. Explain different methods of Base flow separation with neat sketches. (10 Marks)

OR

6 a. Define Hydrograph. Write a neat sketch and explain the components parts of Hydrograph. (10 Marks)
  b. The following ordinates of flood hydrograph were recorded in a stream resulting from a storm in a catchment having an area of 15,400 hectares. Base flow is 5 cumex. Find
    i) The run off in cm   ii) The ordinates of UHG. (10 Marks)

Time (hr)	0	12	24	36	48	60	72	84	96
Discharge (cumex)	5	10	20	35	30	20	15	10	5

Module-4

7 a. Define Irrigation. List and explain the benefits and ill – effects of Irrigation. (10 Marks)
  b. What are the different methods adopted to improve duty of water? (10 Marks)

OR

8   a.   i)   What is Flow irrigation and Lift irrigation?   **(04 Marks)**
          ii)   Define Duty, Delta and Base Period.   **(06 Marks)**
     b.   Find out the capacity of a reservoir from the following data : The culturable command area is 80,000 ha.

Crop	Base period	Duty (ha/cumex)	IoI (%)
Rice	120	1800	25
Wheat	120	2000	30
Sugarcane	320	2500	20

Assume the canal and reservoir losses as 5% and 10% losses respectively.   **(10 Marks)**

Module-5

9   a.   Explain hydrological Investigation of reservoir planning. List the points to be considered for selection of site for a reservoir.   **(10 Marks)**
     b.   What are the types of Reservoir? Explain.   **(10 Marks)**

OR

10   a.   Define Reservoir. Write a neat sketch, explain zones of storage in reservoir.   **(10 Marks)**
      b.   Find the section and maximum discharge of a channel with the following data :
Bed slope = 1 in 5000.
Lacey's silt factor = 0.95.
Side slope = 1 : 1.   **(10 Marks)**

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