

Code No: 135BT**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year I Semester Examinations, May/June - 2019****WATER RESOURCES ENGINEERING****(Civil Engineering)****Time: 3 hours****Max. Marks: 75****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A**(25 Marks)**

- 1.a) Define hydrology. [2]
- b) What do mean by infiltration indices? [3]
- c) What would the advantages of having a 1hr Unit Hydrograph? [2]
- d) Explain concept of Unit step function. [3]
- e) Define Darcy law. [2]
- f) Explain with example of ground water occurrence. [3]
- g) Define ill effects of irrigation. [2]
- h) Write short note on standard water quality in irrigation. [3]
- i) What is canal lining? [2]
- j) How to formulate catchment area? [3]

PART - B**(50 Marks)**

- 2.a) Write short note on computation on rainfall over a basin.
- b) Explain the different factors affecting the runoff. [5+5]

OR

- 3.a) There are four rain gauge stations existing in the catchment of a river.

Station Name	A	B	C	D
Average annual rainfall (mm)	400	520	600	840

Determine the optimum number of rain gauges in the catchment, if it is desired to limit the error in the mean value of rainfall in the catchment to 10%.

- b) Explain the different types of rain gauges. [5+5]
 - 4.a) Define hydrograph. Draw a single peaked hydrograph and indicate its various Components.
 - b) Illustrate the limitations in unit hydrograph. [5+5]
- OR**
- 5.a) Explain the importance of synthetic hydrograph.
 - b) Illustrate the procedure to distribution of runoff. [5+5]

6.a) Compute an expression for discharge from a well full penetrating in an unconfined aquifer.

b) Illustrate the equation for porosity and specific yield. [5+5]

OR

7.a) The elevation of water table in an unconfined aquifer at two locations separated by a distance of 100 metres is 500m and 625m respectively. If the hydraulic conductivity of the aquifer is 18m/day and porosity 25%. Find the actual velocity of flow in the aquifer

b) Explain the importance of transmissivity and storage coefficient. [5+5]

8.a) Explain the relationship between Duty, Delta and Base period.

b) Discuss case study on crop rotation with examples. [5+5]

OR

9.a) Explain the concept of vertical distribution of soil moisture.

b) Illustrate the design discharge for a water course. [5+5]

10.a) Explain the tractive force concept in alluvial canal design.

b) Write assumptions of Lacey's theory. [5+5]

OR

11.a) Explain the design of canals with examples.

b) Explain the methods involved in catchment area of a canal. [5+5]

---ooOoo---