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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations August-2021
WATER RESOURCES ENGINEERING - I

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 Explain with the help of a diagram the hydrologic cycle with components. 12M

OR

- 2 Explain briefly non-automatic rain gauge 12M

UNIT-II

- 3 Find the ordinates of a storm hydrograph resulting from a 3 hour storm with rainfall of 2, 6.75 and 3.75 cm during subsequent 3 hours intervals. The ordinates of 3 unit hydrographs are listed below: 12M

Hours	3	6	9	12	15	18	21	24
Ordinates of UH	0	110	365	500	390	310	250	235

Hours	3	6	9	12	15	18	21	24
Ordinates of UH	175	130	95	65	40	32	10	0

Assume an initial loss of 5mm, infiltration index of 2.5mm/hr and base flow 10cumecs

OR

- 4 The rate of rainfall for successive 30 minutes periods of a 4-hour storm are as follow: 3.5, 6.5, 8.5, 7.8, 6.4, 4.0, 4.0, 6.0 cm/hr. Taking a value of ϕ - Index as 4.5 cm/hr compute the following: 12M

i) Total Rainfall ii) Total Rainfall Excess iii) W_i

UNIT-III

- 5 What do you understand by recuperation test? Derive the equations used in the recuperation test. 12M

OR

- 6 Define the following terms: a) Aquifer, b) Aquiclude, c) Aquifuge, d) Specific yield e) Specific retention 12M

UNIT-IV

- 7 Explain the terms 'duty' and 'delta'. Derive a relation between the two. 12M

OR

- 8 A water course has a culturable commanded area of 1520 hectares. The intensity of irrigation for a crop A is 65% and for a crop B is 55%, both the crops being Rabhi crops. Crop A has a kor period of 18 days and crop B has a kor period of 25 days. Calculate the discharge of the water course if the kor depth of crop A is 12 cm and for B it is 18 cm. 12M

UNIT-V

- 9 Compare Kennedy's and Lacey's theories. 12M

OR

- 10 A distributary is to be designed to irrigate 3600 hac in Rabi and 1400 hac in Kharif. Kor depth and kor period for Rabi and Kharif are 13.5 cm and 4 week, 19.0 cm and 2.5 weeks respectively. Design the distributary by Lacey's theory and silt factor 0.85 12M

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