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BT-5 / D-19
HYDROLOGY
Paper–CE-305N

Time allowed : 3 hours] *[Maximum marks : 75*

Note:- *Attempt any five questions, selecting at least one question from each unit. All questions carry equal marks. Assume any missing data.*

Unit- I

1. (a) Define hydrological cycle. Discuss its various components with a neat diagram. 7.5

(b) How precipitation is expressed and measured with recording and non recording gauges? 7.5

2. (a) Explain the following relationship as applicable over a basin: 7.5

(i) Depth-Area relationship.

(ii) Maximum depth-area-duration curves.

(b) The normal annual rainfall at station P,Q,R and S are 81, 66, 76 and 91cm respectively. In one of the year, the station 'S' was not working. The stations P,Q and R recorded annual rainfall as 91, 72 and 80 cm respectively. Estimate missing rainfall at station 'S'. 7.5

Unit-II

3. (a) Describe different evaporation pan for estimation of evaporation with all dimensions. 7.5

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(b) Write down Penman's equation with its meaning used in evapotranspiration along with the data needed. 7.5

4. (a) What do you understand by the infiltration? Describe working of infiltrometer with the help of diagram. 7.5

(b) A storm with 10cm of precipitation produced a direct run-off of 5.8cm. The duration of rainfall is 6 hours and its distribution is given below: 7.5

Time from Start (h)	0	2	4	6	8	10	12	14	16
Cumulative rainfall (m)	0	0.4	1.3	2.8	5.1	6.9	8.5	9.5	10

Unit- III

5. (a) What are the different method used for discharge measurement in a river? Explain dilution technique in detail. 7.5

(b) Give various empirical formulae for determing the runoff indicating the area for which each of them is applicable. 7.5

6. (a) Define the term flood. Discuss Gumbel's method in brief for flood estimation. 7.5

(b) Given the ordinates of a 4-h unit hydrograph as below, derive the ordinates of 12-h unit hydrograph for the some Catelment. 7.5

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Time (n)	0	4	8	12	16	20	24	28	34	36	40	44
Ordinates of 4-hUH (m^3/s)	0	20	80	130	150	130	90	52	21	15	5	0

Unit-IV

7. (a) Explain the terms Aquifer, Aquiclude, Aquifuge and Aquitard. 7.5

   (b) Define Porosity Specific field and Specific retention and obtain relation between them. 7.5

   (a) Define well. Describe well operating in a confined aquifer with neat diagram. 7.5

   (b) Describe the Recuperation test for an open well. 7.5

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