

SECTION – D

8. (a) Derive an expression for specific storage in case of compressible aquifer. 12
(b) What are the limitations of Darcy's Law? 8
9. A 35 cm diameter well is drilled into a confined aquifer of permeability 45 m/day. It has 25 m long strainer and draw down under steady state of pumping is 3.5 m with 300 m influence radius. Calculate yield of well. 20

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(4)

Roll No.

24292

B. Tech. 5th Semester (Civil Engg.)

Examination – December, 2016

HYDROLOGY

Paper : CE-311-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all. Questions No. 1 is compulsory and attempt one question from each section. All questions carry equal marks.

1. Write short notes : 5 × 4 = 20
- (a) An Isohyet
 - (b) Yield of a well
 - (c) Infiltration capacity
 - (d) Catchment area
 - (e) Classification of run-off

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SECTION - A

2. (a) Write the application of hydrology in the engineering problems. 10

(b) What are hypsometric curves? Explain. 10

3. A catchment area has seven rain gauge stations. In a year the rainfall recorded by the gauges are as follows :

Station :	P	Q	R	S	T	U	V
Rainfall (cm) :	130.0	142.0	118.0	108.0	165.0	102.0	147.0

For an error of 10% in the estimation of the mean rainfall, calculate the minimum number of additional stations required to be established in the area. 20

SECTION - B

4. (a) Describe with neat sketch tube type infiltrometer and compare it with double ring infiltrometer. 10
- (b) Distinguish between field capacity and permanent wilting point. 10

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5. (a) Describe Penman's equation. 10

(b) Explain different types of evaporimeter and factors affecting evapo-transpiration. 10

SECTION - C

6. Define unit hydrograph. The unit hydrograph co-ordinate of a 1 cm - 1 hr unit hydrograph are as follows :

Time (h) -	0	1	2	3	4	5	6	7	8	9	10
Discharge - (m^3/s)	0	6	12	21	16	10	8	5	2	1	0

Find flood hydrograph for a storm of 2cm/h for 1h. Also find area of catchment in km^2 . 20

7. (a) Explain the stream flow measurement by area velocity method. 10
- (b) List the factors affecting the seasonal and annual runoff (yield) of a catchment. 10

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P. T. O.