

**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

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

### 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

24292-5200-(P-4)(Q-9)(16) (2)

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 <sup>3</sup> /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<sup>2</sup>. 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

24292-5200-(P-4)(Q-9)(16) (3)

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