



**PRESIDENCY UNIVERSITY,
BENGALURU**

SCHOOL OF ENGINEERING

TEST 2

Odd Semester: 2018-19

Course Code: CIV 216

Course Name: Hydrology and Water Resources Engineering

Branch & Sem: CIV & VII Sem Group - I

Date: 27 November 2018

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:

- (i) *Non programmable calculators are allowed for the examination.*
- (ii) *Answer all the questions.*

Part A

Answer **all** the Questions. **Each** question carries **four** marks. (3x4=12)

1. State and explain the terms involved in Horton's Equation.
2. Define ϕ index and time of concentration.
3. State the assumptions of a unit hydrograph.

Part B

Answer **all** the Questions. **Each** question carries **eight** marks. (2x8=16)

4. (a) State the equation of Peak Flow Estimation using Rational Method and explain the terms involved.
- (b) Why is it necessary to estimate the peak flow from a catchment?
5. What is a flow duration curve? Explain what information can be gathered from the study of a flow duration curve of a stream with a neat sketch.

Part C

Answer the Question. Question carries **twelve** marks. (1x12=12)

6. Given the ordinates of a 4 hour Unit Hydrograph (UH) as below, derive the ordinates of a 12 hour UH for the same catchment.

| | | | | | | | | | | | | |
|---------------------------------|---|----|----|-----|-----|-----|----|----|----|----|----|----|
| Time (h) | 0 | 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 |
| 4 hour UH | | | | | | | | | | | | |
| Ordinate in (m ³ /s) | 0 | 20 | 80 | 130 | 150 | 130 | 90 | 52 | 27 | 15 | 5 | 0 |



Roll No.

**PRESIDENCY UNIVERSITY
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END TERM FINAL EXAMINATION

Odd Semester: 2018-19

Course Code: CIV 216

Course Name: Hydrology and Water Resources Engineering

Programme & Sem: CIV & VII Sem (Group-1)

Date: 27 December 2018

Time: 2 Hours

Max Marks: 80

Weightage: 40%

Instructions:

- (i) Answer all the questions.
- (ii) Assume suitable data, if necessary, wherever needed.
- (iii) Draw neat sketches wherever necessary.

Part A

Answer **all** the Questions. **Each** question carries **five** marks.

(4Qx5M=20)

1. Define Gross Command Area and Culturable Command Area.
2. Why irrigation is necessary in India? Mention the two major crop seasons in India.
3. Define Duty and Delta.
4. Discuss the effect of excess Sodium in irrigation water and its remediation measures.

Part B

Answer **all** the Questions. **Each** question carries **ten** marks.

(3Qx10M=30)

5. Define Saturation Capacity, Field Capacity, Irrigation Intensity and Irrigation Frequency
6. What are Temporary, Permanent and Ultimate Wilting Points? What happens to crop when soil water level drops below Ultimate Wilting Point?
7. (a) What is Balancing Depth for a Canal?

(b) A trapezoidal canal has a bed width of 8m, full supply depth 2.5m, bank width 3m, cutting slope 1:1, filling slope 1.5:1 and a free board of 0.5m. Calculate Balancing Depth for this Canal.

Part C

Answer **both** the Questions. **Each** question carries **fifteen** marks. (2Qx15M=30)

8. The root zone of a certain soil has a field capacity of 30% and permanent wilting percentage of 10%.

(a) What is the depth of moisture in the root zone at field capacity and permanent wilting point?

(b) How much water is available if the root zone depth is 1.2m?

Take dry weight of soil as 13.73 kN/m^3 .

9. Find field capacity for the following data:

Depth of root zone = 2m

Existing water content = 6%

Dry Density of Soil = 1400 kg/m^3

Water Applied to Soil = 500 m^3

Water lost due to evaporation and deep percolation = 10%

Area of land irrigated = 1000 m^2