B.E. / B.Tech. Civil Engineering (Model Curriculum) Semester-IV

PCC-CE406 - Hydrology and Water Resources

P. Pages : 2 **GUG/S/25/13720**

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Time : Three Hours Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Explain different types of precipitation. **8**

b) Determine the optimum number of rain gauge for a basin with the following data. Number of existing gauge = 6
Allowable percentage error = 10%
The average rainfall at the existing gauge = 85, 100, 75, 60, 55 & 46 cm. **8**

OR

2. a) Explain in details about Rain gauge density. **8**

b) Explain features & working of weighing bucket Rain gauge with neat sketch. **8**

3. a) Write a short note on W-index & ϕ -index. **8**

b) Explain Evaporation loses & different method to reduce evaporation losses. **8**

OR

4. a) Explain transpiration & Evapotranspiration. **8**

b) Describe water Budget & energy budget method for estimation reservoir evaporation. **8**

5. a) What are the factors affecting runoff from catchment area. **8**

b) For a catchment in Punjab, India the mean monthly temperatures are given. Estimate the annual runoff & annual runoff coefficient by Khosla's method. **8**

Month	Temp in ºC	Rainfall in cm
January	13	3
February	17	4
March	20	2
April	28	0
May	34	0
June	36	14
July	31	35
August	30	30
September	29	18
October	25	2
November	18	1
December	14	2

OR

6. a) Define Area velocity method & slope area method. **8**

b) What is runoff? State & explain various component of Runoff with neat sketch. **8**

7. a) Write a short note on co-relation curve. **8**

b) Explain briefly: **8**
i) Linear regression
ii) Standard error of estimate.

OR

8. a) Describe the probability method of flood frequency analysis. **8**

b) Explain the estimating of design flood & its importance. **8**

9. a) What are the ground water provinces India. **8**

b) Explain with neat sketches the occurrence of ground water. **8**

OR

10. a) Write a short note on: **8**

i) Well loss & specific – capacity.

ii) Recuperating test.

b) Define Aquifer. Explain the behaviour of water level in wells in confined aquifers due to changes in the atmospheric pressure. **8**

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