

Code No: **R204101K**

R20

SET - 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Regular/Supplementary Examinations October 2025

URBAN HYDROLOGY

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. a) Describe the changes in the hydrologic cycle due to urbanization? [7M]
b) Discuss the effect of urbanization on evaporation and transpiration rates. [7M]

(OR)

2. a) Illustrate the role of green infrastructure in mitigating the adverse effects of urbanization on the hydrologic cycle? [7M]
b) Explain how urbanization alters the time of concentration for urban drainage systems. [7M]

UNIT-II

3. a) Explain how time of concentration influences the design of drainage systems. [7M]
b) Analyze the factors that affect peak flow estimation in urban drainage? [7M]

(OR)

4. a) Describe the use of the Rational Method for small urban catchments. [7M]
b) Explain the relationship between runoff quantity and quality in urban drainage systems. [7M]

UNIT-III

5. a) Describe the basic components of an open channel drainage system. [7M]
b) Classify the different types of underground drains commonly used in modern drainage systems. [7M]

(OR)

6. a) Describe the role of catch basins and manholes in drainage systems. [7M]
b) Construct sustainable practices for source control in urban drainage systems to mitigate flooding and water pollution? [7M]

UNIT-IV

7. a) List the different types of Best Management Practices (BMPs) for stormwater management. [7M]
b) Differentiate between natural and engineered stormwater drainage solutions? [7M]

(OR)

8. a) Analyze how stormwater management models help in urban planning? [7M]
b) Compare different stormwater management models based on their applicability and limitations. [7M]

UNIT-V

9. a) Describe the key issues that must be addressed in an urban drainage master plan. [7M]
b) Analyze how GIS technology can be used in drainage master planning? [7M]

(OR)

10. a) Differentiate between conventional and sustainable drainage systems in urban planning? [7M]
b) Explain the effectiveness of existing urban drainage master plans in mitigating floods. [7M]
