

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM****IV B. Tech I Semester Advanced Supplementary Examinations March 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

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**UNIT-I**

1. a) Analyze the impact of urbanization on groundwater recharge. [7M]  
b) Illustrate how urbanization influences surface runoff during rainfall times. [7M]

**(OR)**

2. a) Evaluate the effectiveness of urban drainage systems in controlling stormwater runoff. [7M]  
b) Recommend methods for improving urban drainage systems based on the effects of urbanization on hydrology. [7M]

**UNIT-II**

3. a) Analyze the impact of land use on the time of concentration in urban drainage systems. [7M]  
b) Assess the limitations of peak flow estimation methods in urban settings. [7M]

**(OR)**

4. a) Interpret the significance of the runoff coefficient (C) in the Rational Method. [7M]  
b) Analyze how soil type, land use, and cover affect the NRCS Curve Number value in urban areas. [7M]

**UNIT-III**

5. a) Compare open channel drainage to underground drainage in terms of efficiency. [7M]  
b) Examine the materials typically used for underground drains and their benefits. [7M]

**(OR)**

6. a) Investigate the importance of flow control devices in drainage systems and their applications. [7M]  
b) Evaluate the role of source control measures in reducing stormwater runoff. [7M]

**UNIT-IV**

7. a) Identify the key components of a storm water network? [7M]  
b) Summarize the role of constructed wetlands in storm water management? [7M]

**(OR)**

8. a) How to Implement BMPs to improve stormwater quality in an urban setting? [7M]  
b) Investigate the relationship between land use changes and storm water network performance? [7M]

**UNIT-V**

9. a) Explain how water resources investigations contribute to urban drainage planning. [7M]  
b) Develop a case study showing the impact of poor drainage planning on urban flooding. [7M]

**(OR)**

10. a) Evaluate the impact of land use changes on surface water drainage in cities? [7M]  
b) Propose policy recommendations for improving urban drainage resilience. [7M]

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