

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations March 2025
GEO-SPATIAL TECHNOLOGIES
(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) Explain how GIS integrates spatial data with non-spatial data. [7M]
- b) Analyze the role of GIS in addressing urbanization challenges in developing regions? [7M]

(OR)

2. a) Create a simple map that represents different geographical features (point, line, polygon) using GIS software. [7M]
- b) Explain how transformation between coordinate systems is performed and why it's necessary. [7M]

UNIT-II

3. a) Compare vector and raster data formats, and discuss their advantages and disadvantages in GIS applications [7M]
- b) Explain the use of aerial photographic data in GIS and discuss its advantages for topographical mapping. [7M]

(OR)

4. a) Differentiate between systematic and non-systematic errors in geospatial data and explain how they can be minimized. [7M]
- b) Summarize the challenges of data management in GIS and discuss techniques to overcome them? [7M]

UNIT-III

5. a) Compare different spatial data analysis techniques used in GIS. [7M]
- b) Illustrate the process of recoding overlay data using a practical GIS example. [7M]

(OR)

6. a) Explain the significance of a Digital Elevation Model (DEM) in terrain analysis. [7M]
- b) Illustrate the effectiveness of different GIS analytical functions for environmental monitoring? [7M]

UNIT-IV

7. a) Justify the need for integrating environmental impact assessments in land-use planning. [7M]
- b) Construct a risk management plan to mitigate geological hazards in a metropolitan area? [7M]

(OR)

8. a) Differentiate between raster and vector data models in GIS applications? [7M]
- b) Apply GPS technology in monitoring and managing natural resources? [7M]

UNIT-V

9. a) Describe the historical development and advancements in remote sensing technology? [7M]
- b) Compare passive and active remote sensing sensors with examples? [7M]

(OR)

10. a) Identify the major satellites in the IRS series and their applications? [7M]
- b) Describe how remote sensing is used in watershed modelling? [7M]
