

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3170617

Date:30-11-2024

Subject Name: Application of GIS in Civil Engineering

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

Q.1	(a) Explain how GIS is useful in civil engineering projects.	03
	(b) Discuss the applications of GIS in hydrological analysis.	04
	(c) What is the methodology that can be adopted for soil erosion modelling using GIS?	07
Q.2	(a) List the applications of GIS in the field of traffic management.	03
	(b) Explain the concept of GIS analysis in water distribution.	04
	(c) Explain the concept of geocoding and reverse geocoding in ArcGIS.	07
	OR	
	(c) Explain the steps involved in creating a network dataset and solving a routing problem.	07
Q.3	(a) List out the applications of GIS in urban analysis.	03
	(b) Explain coverage data structures of point, line and polygon.	04
	(c) Explain the importance of coordinate systems and spatial references in ArcGIS.	07
	OR	
Q.3	(a) Explain the concept of geoprocessing in ArcGIS.	03
	(b) List and explain elements of Raster Data Model.	04
	(c) Explain in detail about Projection File and Predefined coordinate Systems with an example.	07
Q.4	(a) Point out the topological consistency rules.	03
	(b) Distinguish between geo-relational data model and the object-based data model.	04
	(c) Show the regional quad tree method that divides raster into a hierarchy of quadrants.	07
	OR	
Q.4	(a) Write a short note on data quality standards in GIS.	03
	(b) Describe the process to obtain the DEM of the required topography.	04
	(c) What is spatial interpolation? Explain Global methods of interpolation.	07
Q.5	(a) Write a short note on GIS post processing.	03
	(b) Explain the concept and features of Triangular irregular networks (TIN)	04
	(c) Write a note on decision making in GIS modelling.	07
	OR	
Q.5	(a) Write a note on: USGS DEMs	03
	(b) Explain the difference between DEM and DSM.	04
	(c) Write a note on dynamic visualization in GIS modelling.	07
