GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:3170617   **Date:16-05-2025**

Subject Name:Application of GIS in Civil Engineering

Time:02:30 PM TO 05:00 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 the significance of GIS in civil engineering projects.	**03**
	(b)	Discuss the applications of GIS in waste collection and municipal operations in a metropolitan city.	**04**
	(c)	What is the methodology that can be adopted for flood forecasting and early warning to the stakeholders using GIS?	**07**
Q.2	**(a)**	List the applications of GIS in the field of hydrology.	**03**
	(b)	Explain the update and erase in feature manipulation.	**04**
	(c)	Discuss how GIS can be useful to improve the road traffic management in a metropolitan city.	**07**
		OR	
	(c)	Briefly describe the procedure of watershed delineation in ArcMap.	**07**
Q.3	**(a)**	List out the tools of QGIS used in vector data analysis.	**03**
	(b)	Show how the spatial and attribute data is linked in GIS.	**04**
	(c)	Explain the co-ordinate georeferencing procedure in QGIS.	**07**
		OR	
Q.3	**(a)**	What is map scale? Describe the types of map scales.	**03**
	(b)	What is data redundancy in DBMS? Give advantages and disadvantages of data redundancy.	**04**
	(c)	Write a note on following GIS spatial data sources. (i) USGS earth explorer (ii) Open Street map (ii)	**07**
Q.4	**(a)**	Write a note on azimuthal projections.	**03**
	(b)	Explain the spatial and database queries in GIS.	**04**
	(c)	Differentiate between horizontal co-ordinate systems and vertical co-ordinate systems in GIS.	**07**
		OR	
Q.4	**(a)**	Discuss various Digital Elevation file formats.	**03**
	(b)	Explain Metadata styles and standards	**04**
	(c)	Explain various raster and vector data models in GIS.	**07**
Q.5	**(a)**	Write a short note on GIS interfaces.	**03**
	(b)	Explain the main components of Triangular irregular networks (TIN)	**04**
	(c)	Write a note on dynamic visualization	**07**

OR

Q.5 **(a)** List various internet sources of Digital Elevation Model (DEM). **03**

(b) Outline a number of different methods for calculating slope from a DEM. **04**

(c) Design an algorithm that calculates slope and aspect from a triangulated irregular network (TIN) model. **07**

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