

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE- SEMESTER-VII EXAMINATION – WINTER 2025**

**Subject Code:3170617**

**Date:20-11-2025**

**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.

		<b>MARKS</b>
<b>Q.1</b>	(a) Explain the importance of GIS in water supply engineering.	<b>03</b>
	(b) Discuss the applications of GIS in transportation route assignment.	<b>04</b>
	(c) Explain how GIS can be useful for hydrology and flood forecasting?	<b>07</b>
<b>Q.2</b>	(a) List the applications of GIS to find patterns in natural occurrences like soil erosion.	<b>03</b>
	(b) Discuss the benefits of spatial filtering.	<b>04</b>
	(c) Discuss how GIS can be useful to improve the traffic congestion and parking facilities in a metropolitan city.	<b>07</b>
<b>OR</b>		
	(c) Briefly describe the procedure of watershed delineation in ArcSWAT.	<b>07</b>
<b>Q.3</b>	(a) Explain the significance of vector data analysis in QGIS.	<b>03</b>
	(b) Give out methods of creating a Vector Map.	<b>04</b>
	(c) Explain various features and importance of ArcGIS online (AGOL).	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Describe the types of GIS maps.	<b>03</b>
	(b) Write a short note on Database Management Systems.	<b>04</b>
	(c) Write a note on following GIS spatial data sources. (i) Natural Earth Data (ii) Open Topography (ii)	<b>07</b>
<b>Q.4</b>	(a) Write a short note on spatial interpolation.	<b>03</b>
	(b) What is distortion? Which properties are changed due to distortions in Projections? What are the factors that determine the distortion?	<b>04</b>
	(c) Explain the planer, cylindrical and conical projections of coordinate systems.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) Discuss various raster and vector data file formats.	<b>03</b>
	(b) Describe various measurement levels of attribute data.	<b>04</b>
	(c) What is a geographic phenomenon? What is the difference between a Raster and Vector data?	<b>07</b>
<b>Q.5</b>	(a) Define Datum. Give out difference between Horizontal & Vertical datum.	<b>03</b>
	(b) Explain the specific features of Digital Terrain models.	<b>04</b>
	(c) Enlist the errors found in Digital Elevation Models. Explain how they can be removed.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Write a brief note on USGS DEMs.	<b>03</b>
	(b) Explain Digital Surface Models (DSM).	<b>04</b>
	(c) Discuss the factors affecting DEM accuracy.	<b>07</b>

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