Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R,S) Examination November 2025 (2019 Scheme).

Course Code: CET465

Course Name: GEOINFORMATICS

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1	List and briefly describe the key components of a GIS system.	(3)
2	Explain the methods used for inputting data into a GIS.	(3)
3	Describe the key components of a vector data structure.	(3)
4	Briefly explain the role of a DBMS in managing spatial data.	(3)
5	Describe the purpose of point pattern analysis in spatial studies.	(3)
6	What is a raster calculator, and how is it used in GIS analysis?	(3)
7	List and briefly describe the major global navigation satellite systems.	(3)
8	Explain the process of satellite ranging for calculating positions in GPS.	(3)
9	How does GIS assist in combating illegal logging and forest crimes?	(3)
10	How does GIS improve transportation network planning in urban areas?	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Examine the different sources of spatial data for GIS. Discuss the advantages and limitations	(7)
	b)	Explain the differences between spatial data models and describe how each is used in GIS. Include examples of the types of analysis each model supports.	(7)

OR

12	a)	Analyze how different map scales influence data representation and accuracy in GIS. Provide examples of how scale affects spatial analysis and decision-making.	(7)
	b)	Explain the georeferencing process in detail, including the techniques and tools used. Discuss its importance in creating accurate and reliable GIS data.	(7)

Module II

13	a)	Evaluate the effectiveness of raster data models in representing continuous data. Explain their use in environmental and remote sensing applications.	(7)
	b)	Compare and contrast discrete and continuous data. Explain their representations and usage in GIS applications.	(7)

OR

14	a)	Discuss the advantages of using an RDBMS in GIS. Explain how it supports complex spatial queries and data relationships.	(7)
	b)	Explain the concept of topology in vector data structures. Discuss its importance in maintaining spatial relationships and data integrity.	(7)

Module III

15	a)	Describe buffer analysis in detail, including its purpose, methodology, and applications. Provide an example of how buffer analysis is used in environmental impact assessments	(7)
	b)	Explain the line in polygon operation in GIS. Discuss its significance and provide an example of its application in spatial analysis.	(7)

OR

16	a)	Discuss the various techniques used in spatial data analysis and their applications in real-world scenarios.	(7)
	b)	Explain the polygon in polygon operation in GIS. Discuss its significance and provide an example of its application in spatial analysis.	(7)

Module IV

17	a)	Describe the process of generating a Digital Terrain Model (DTM). Discuss the significance of DTMs in topographic analysis and infrastructure planning.	(7)
	b)	Explain the concept of a Triangular Irregular Network (TIN). Discuss how TINs are created and their advantages over regular grid-based models.	(7)

OR

18	a)	Explain the components of the Global Positioning System (GPS) and their functions. Discuss the working principle of GPS in determining positions on Earth.	(7)
	b)	Describe the process of satellite ranging used in GPS to calculate positions. Discuss the importance of signal travel time and the role of atomic clocks.	(7)

Module V

19	a)	Describe how GIS is utilized in environmental science to monitor and manage natural resources, study climate change, and implement conservation efforts.	(7)
	b)	Explain how GIS aids in comprehensive urban planning by integrating various datasets to create effective urban development strategies.	(7)

OR

20	a)	Describe the use of GIS in irrigation management, explaining how spatial data helps in optimizing water use and improving irrigation efficiency.	(7)
	b)	Discuss how GIS is utilized in flood management, focusing on floodplain mapping, early warning systems, and post-disaster damage assessment.	(7)

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