U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E. **Semester: VII**

Branch: Institutional Elective **Duration: 3 hrs.**

Course Code: 22CV7OERSG **Max Marks: 100**

Course: Remote Sensing and GIS

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

				CO	PO	Marks
			UNIT - I			
1	a)		Define remote sensing and explain the key steps in the remote sensing process.	*CO1*	*PO1*	**10**
	b)		Define spectral reflectance. With a neat diagram explain the salient features of the spectral reflectance curves of bare soil, water and green vegetation.	*CO1*	*PO1*	**10**
			OR			
2	a)		Explain various elements of the interaction between electromagnetic radiation and the Earth's atmosphere.	*CO1*	*PO1*	**10**
	b)		Interpretation of imagery more difficult than the everyday visual interpretation of our surroundings. Comment on the same emphasizing on the elements of visual interpretation.	*CO1*	*PO1*	**10**
			UNIT - II			
3	a)		Explain GIS, its components and functions in detail.	*CO1*	*PO1*	**10**
	b)		Differentiate between geographic coordinate system (GCS) and projected coordinate system (PCS).	*CO1*	*PO1*	**10**
			OR			
4	a)		Explain the importance of georeferencing and illustrate the steps involved in the process.	*CO1*	*PO1*	**10**
	b)		Explain map projections and the findings of Carl Friedrich Gauss's Theorema Egregium. Based on this, recommend an appropriate map projection for the global navigational purpose and justify the same.	*CO1*	*PO1*	**10**

		UNIT - III			
5	a)	Differentiate between Multi-Objective Decision Making (MODM) and Multi - Attribute Decision Making (MADM) providing an example for each.	*CO2*	*PO1*	**10**
	b)	Explain decision rules and a Pareto-Optimal situation in decision making, taking an example of flight ticket booking.	*CO2*	*PO2*	**10**
		OR			
6	a)	Explain the decisions making process under (i) certainty and (ii) uncertainty.	*CO2*	*PO1*	**10**
	b)	Darshan wants to buy a new smartphone for his daily use. He has three main criteria for decision – Price, Processor, and the camera quality (pixel and sensors). For each criteria, pairwise relative weights of alternatives are given below in the form of matrices using 1-5 scale for comparison. i) Use analytical hierarchical process to advise Darshan which mobile to choose from option A (Iphone), B(Samsung) and C (OnePlus). ii) Comment on the changes that may happen in the decision, if camera quality is removed from the decision criteria.	*CO2*	*PO2*	**10**

Intensity of Importance	Definition	Explanation
1	Equal Importance	Two alternatives contribute equally to the objective.
3	Moderate importance	Moderately favours one alternative over other.
5	Strong importance	Strongly favours one alternative over another alternative.
2,4	Intermediate values between the two adjacent judgements	Compromise between two adjacent judgements
Reciprocals of above	If intensity of one alternative over another is 3 then it will be 1/3 if other alternative is compared with the one.	

Price			
	A	B	C
A	1	1/5	1/3
B	5	1	2
C	3	1/2	1

Processor			
	A	B	C
A	1	3	2
B	1/3	1	1/2
C	1/2	2	1

	Price	Processor	Camera
Price	1	3	2
Processor	1/3	1	1/5
Camera	1/2	5	1

			UNIT - IV			
	7	a)	Explain the following data operations in GIS, stating the procedure and the applications of the same. i) Overlay ii) Clip iii) Union iv) Dissolve and v) Buffering	*CO3*	*PO1*	**10**
		b)	Elaborate on Geographic Resources Analysis Support System as an open-source software and levels of freedom associated with it.	*CO3*	*PO1*	**10**
			OR			
	8	a)	Differentiate between classification and reclassification. Explain the procedure and applications of raster data reclassification.	*CO3*	*PO1*	**10**
		b)	Discuss mechanism of GIS integration with decision making in Expert GIS.	*CO3*	*PO1*	**10**
			UNIT - V			
	9	a)	With a suitable case study, explain the potential application of GIS in the Central government's mission to supply tap water to every homes.	*CO3*	*PO2*	**10**
		b)	Elaborate on Enterprise GIS highlighting the capabilities and objectives.	*CO3*	*PO1*	**10**
			OR			
	10	a)	Discuss case studies on Use of GIS in Traffic management and policies.	*CO3*	*PO1*	**10**
		b)	Discuss capacity planning and the RDBMS software selection in context of enterprise GIS implementation of food delivery organization.	*CO3*	*PO2*	**10**

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