Name:

Enrolment No:



UPES

End Semester Examination, May 2024

Course: Remote Sensing and GIS Program: B.Sc Geology Course Code: PEGS 2049

Semester: IV Time : 03 hrs Max. Marks: 100

SECTION A (5Qx4M=20Marks)

Q 1	Briefly describe the three basic types of spatial entities that are used to portray the	04	CO1
	geographical features on paper maps and in GIS.		
Q 2	Draw diagrams to show the angles of latitude and angles of longitude for a given	04	CO2
	point on the surface of earth and define clearly how they are measured.		
Q 3	List and explain the three parts within a spatial reference that are specified while	04	CO3
	creating a feature class in a geodatabase.		
Q 4	Match the following. There is only one possible answer.	04	CO4
	a) SRTM CartoSAT		
	b) Landsat 8 India		
	c) World View 3 0.35m spatial resolution		
	d) AWIFS Canada		
	TIRS		
	Active Sensor		
	2.5m spatial resolution		
Q 5	a) Suppose you have a digital image which has a radiometric resolution of 6 bits.	2X2=04	CO4
	What is the maximum value of the digital number which could be represented		
	in that image?		
	b) What does a remote sensing sensor measure?		
	SECTION B		
	(4Qx10M= 40 Marks)		
Q 6	Explain the following terms:	2X5=10	CO1
	a) Relationship Class (In geodatabase)		
	b) AND & OR binary operator		
	c) Proximity Analysis		
	d) Central Meridian		
	e) Spatial Extent		
Q 7	Below is a real-world problem. Describe the methods and functions you would use	10	
	to propose a GIS solution to the problem. Also draw a flowchart depicting the		CO2
	same.		
	Problem: Find potential locations for a new landfill using these criteria		
	• On flat terrain <= 10 degrees slope		
	No more than 1 km from an existing road		

	At least 500 meters from a stream		
	• Meadow or low-density forest (Some and not all vegetation types are good)		
	✓ You need to develop a Boolean raster for each condition with $1 =$ desirable area, $0 =$ not desirable area.		
Q 8	Summarize the major analytical tools for vector analysis in GIS with applications. OR		
	What is the significance of having domain of an attribute? Describe the different policies underneath a domain in a geodatabase with suitable diagrams.	10	CO3
Q 9	Discuss the major wavelength ranges used for remote sensing and their significance. Draw a diagram showing the major electromagnetic regions along with their wavelength ranges.	7+3=10	CO4
	SECTION-C (2Qx20M=40 Marks)		·
Q 10	a) Define a geodatabase and explain the different elements in a geodatabase.	12	- CO3
	b) Identify the advantages of a geodatabase over traditional databases.	8	
	OR		
	Describe in detail the steps involved in geodatabase development process, with explanation of constituents involved at each of the design phases.	20	1
Q 11	a) Differentiate between a multispectral sensor and a hyperspectral sensor. Draw suitable diagram to illustrate the concept.	3	
	 b) Describe the full path of remote sensing data acquisition and data processing along with the interactions between EMR and atmosphere, if using the Sun as energy source for satellite-based remote sensing. Draw relevant diagram. 	7	CO4
	c) Explain the four types of image resolution that we are concerned about when interpreting remote sensing data with proper examples and specify the units for each type of resolution.	10	