BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MTECH.   SEMESTER : I
BRANCH: REMOTE SENSING   SESSION : MO/2024

SUBJECT: RS501 PRINCIPLES OF REMOTE SENSING AND DIGITAL SATELLITE IMAGE PROCESSING

TIME: 3 Hours   FULL MARKS: 50

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Explain the term 'Scattering'.	[5]	1	2
Q.1(b)	Elaborate the 'Energy Balance Equation'.	[5]	1	2
Q.2(a)	Discuss the difference between aerial and satellite remote sensing.	[5]	2	2
Q.2(b)	Describe Landsat series of satellites.	[5]	2	2
Q.3(a)	Define the following terms: Thermal conductivity, Thermal Inertia, Range Direction, Look angle, Dielectric property	[5]	1	2
Q.3(b)	Bring out the difference between speckle and Noise. Explain any one method to remove speckle from a microwave imagery.	[5]	3	3
Q.4(a)	(i) What is the difference between Radiometric and Geometric Correction?	[2]	3	5
	(ii) Why Radiometric Enhancement is Necessary? Explain any 2 techniques with Examples.	[3]	3	3
Q.4(b)	(i) Give some real-life situations where Low-Pass and High-Pass filters are used.	[2]	3	3
	(ii) Explain, with examples, any 2 Edge Enhancement Filters and 2 Directional Filters.	[3]	3	2
Q.5(a)	Explain 'Minimum Distance to Means classifier' and 'Parallelpiped classifier' and their differences.	[6]	4	4
Q.5(b)	Write the minimum number of spectral bands required to perform the 'Unsupervised K-Means Clustering' and 'Supervised Maximum Likelihood classifier', respectively. Give suitable reasons to justify your answer.	[4]	4	5

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