UPES
End Semester Examination, December 2024

Course: Advances in Remote Sensing & Image Processing   Semester: V
Program: B.Sc Hons. Geology   Time   : 03 hrs.
Course Code: PEGS3054P   Max. Marks: 100

Instructions:
- **Question 6 has Internal Choice. Attempt any One.**
- **Answer any TWO questions in Section C**

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Differentiate between Mie and Rayleigh scattering.	4	CO1
Q 2	What do you mean by Spectral ratioing? Explain the advantages of vegetation indices.	4	CO2
Q 3	Why is Contrast stretching of a satellite image important for image interpretation?	4	CO1
Q 4	Summarize the advantage of using hyperspectral remote sensing over optical remote sensing.	4	CO4
Q 5	What do the three sides of a hyperspectral data cube represent.	4	CO4

SECTION B
(4Qx10M= 40 Marks)

Q 6	What is Edge Enhancement? With the help of a diagram containing input image pixel values and suitable filter values, show how you would distinguish between areas with no variation in gray level values and areas with variation. OR With the help of a diagram and relevant calculations, show how the number of bands are reduced in histogram equalization. You may choose any arbitrary values for frequencies limited to just 8 grey values.	10	CO2
Q 7	What are the basic elements of visual image interpretation and give examples of how they can be used for interpreting remote sensing images?	10	CO1
Q 8	Signify the usage of Error Matrix in Remote sensing and describe the different types of accuracies with simple calculations.	10	CO3
Q 9	With the help of a suitable diagram describe the various parts of Imaging Spectroscopy.	10	CO4

	SECTION-C Answer ANY TWO Questions (2Qx20M=40 Marks)		
Q 10	Describe the different types of errors that could be present in a raw satellite image. How does DIP aid in rectifying those errors?	**20**	**CO1**
Q 11	Define the term spatial filtering and explain the different types of filters used for image enhancement.	**20**	**CO2**
Q 12	Discuss in detail the techniques involved in processing of hyperspectral data.	**20**	**CO4**