

2018

M.Sc.

2nd Semester Examination

REMOTE SENSING AND GIS

PAPER—RSG-201

Subject Code—34

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Use Separate answer book for each Group.

Group-A

(Digital Image Processing)

[Marks : 20]

Answer any *two* questions.

2×10

1. (a) What is image index ?

(b) Why is NDVI used ?

(Turn Over)

- (c) Describe very briefly about NDVI? 2+3+5
2. (a) What do you understand by digital image?
- (b) Define Picture elements.
- (c) Explain why preprocessing is required in digital image processing.
- (d) What are the characteristics of a good GCP? 2+2+3+3
3. (a) What is spatial frequency?
- (b) How can filters be used to change the spatial frequency of an image? 3+7
4. (a) What do you understand by image transformation and Image enhancement?
- (b) Explain the concept of piecewise linear contrast. 5+5

Group-B**(Information Extraction from Satellite Images)**

[Marks : 20]

Answer any *two* questions.

2×10

1. (a) Using the following data create a scatter diagram and derive the mean of mean class. Describe the diagram.

	Red band	NIR band
Vegetation	10	40
	12	48
	11	47
	8	40
	12	60
Soil	25	29
	26	30
	24	32
	20	24
	22	28
Water	15	5
	16	4
	14	3
	16	2
	17	4

3+3

- (b) Using minimum distance to mean algorithm and the scatter diagram (question 1, a); classify the following unknown pixels calculating distance from each class.

Pixel No.	Red Band	NIR Band	Distance		
			Soil	Vegetation	Water
1	16	6			
2	10	30			
3	18	6			
4	25	20			
5	12	50			

2. (a) Write a note on Spectral Angle Mapper (SAM) classification algorithm. 5

- (b) Create a decision tree to classify an image using the following data.

	Red Band	NIR band
Vegetation	10	56
Soil	20	40
Water	30	10

3. (a) Explain goals of accuracy assessment and error matrix.

(b) "None of classification method is perfect. We should identify the sources of the errors..." — What are those sources of errors? Discuss in brief.

(c) How do you determine location and number of samples for post classification accuracy assessments?
2+3+5

4. (a) Write a note on supervised classification and discuss about the minimum distance to mean and maximum likelihood algorithm.
3+2

(b) Write a note on Unsupervised classification and discuss about the Isodata and K-mean algorithm.
3+2
