

M.Sc. 2nd Semester Examination, 2025

REMOTE SENSING AND GIS

(Information Extraction from Satellite Images)

PAPER – RSG-202

Full Marks : 25

Time : 1 hour

Answer all questions

The figures in the right hand margin indicate marks

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

Illustrate the answers wherever necessary

GROUP—A

Answer any two questions out of four questions :

2 × 2

- 1. What is ground truth data and why is it critical for image classification ?**

(2)

2. How can remote sensing distinguish between flooded and non-flooded areas ?
3. What are unique features of ISODATA compared to K-means ?
4. State the differences between parametric and Non-parametric classifiers.

GROUP - B

Answer any two questions : 4 × 2

5. What are training samples and how are they selected ?
6. Describe the Parallelepiped Approach of classification and highlight the limitations of the same ?
7. Compare the assumptions of Minimum Distance and Maximum Likelihood classifiers.

8. How are errors of omission and commission identified using an error matrix ?

GROUP - C

Answer any one question : 8×1

9. Elaborate on the conceptual foundation of K-means clustering and detail its iterative algorithmic steps.
10. A land cover classification was carried out using satellite imagery, and the results were validated against reference (ground truth) data for five land cover classes. The error matrix (also known as a confusion matrix) below presents the number of pixels corresponding to each class comparison. Using the error matrix provided, compute overall

(4)

Accuracy User's Accuracy for each class,
producer's Accuracy for each class and
Kappa Coefficient (K-hat).

Reference\ Classified	Forest	Agriculture	Water	Urban	Barren	Row Total
Forest	40	5	0	2	3	50
Agriculture	4	38	1	5	2	50
Water	0	2	45	1	2	50
Urban	3	6	2	35	4	50
Barren	1	3	0	2	44	50
Column Total	48	54	48	45	55	250

[Internal Assessment – 5 Marks]
