

Total number of printed pages-4

14 (GGY-4) 4206 (AGRS) (OP)

2023

GEOGRAPHY

Paper : GGY-4206

(Optional)

(Application of GIS and Remote Sensing)

Full Marks : 80

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

UNIT-I

(Spatial Analysis in GIS)

***Answer any one question carrying 16 marks
and three questions of 8 marks.***

1. What is raster data ? Is it always necessary to integrate vector data with raster data in a GIS ? Can GIS analysis be carried out completely without using vector data at all ? Provide examples to illustrate your views.

16

Contd.

2. What is spatial analysis? What is the purpose of using spatial analysis for an area of interest? 16
3. Write short notes on **any two** of the following: 4×2=8
- (i) Buffer
 - (ii) Site suitability analysis
 - (iii) The dynamic nature of a GIS
4. What is environmental impact analysis? What thematic layers would you prepare for such an exercise? 8
5. What is attribute data in a GIS and how is it dynamically linked with the map data? 8
6. How, when and why would you use a DEM? 8

UNIT-II

(Image Analysis, Interpretation and Processing)

Answer any one question carrying 10 marks and one question of 5 marks.

7. What does the term 'image enhancement' mean? What are the commonly used techniques of image enhancement? 10

8. What are the basic principles of image interpretation? When can errors creep in into the process? What are pseudo-invariant features in an image? 10
9. What are image rectification and registration? 5
10. What are the main elements of image interpretation? 5

UNIT-III

(Digital Image Classification)

*Answer **one** question carrying **10** marks
and **one** question of **5** marks.*

11. What is image classification? What are the differences between supervised and unsupervised classification? 10
12. What is accuracy assessment and what are the different methods used to assess? 10
13. What are classification algorithms? Discuss any one algorithm in detail. 5
14. What is ground truthing and is it needed at all? 5

UNIT-IV

(Application of GIS and Remote Sensing in Modelling the Environment)

Answer any one question carrying 10 marks.

- 15 What geo-spatial data, information and techniques are helpful for optimal land governance? 10

16. Can you use geo-spatial data and techniques to assess and manage resources such as land, water, forests and/or climate change? Elaborate. 10