Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)
B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV/DEC 2024

GEOINFORMATICS
V SEMESTER
GI5502 DIGITAL IMAGE PROCESSING

(Regulation 2019)

Time:3hrs Max.Marks: 100

CO1	Understand about Remote sensing and Image processing systems
CO2	Acquire knowledge about the source of error in satellite image and also to remove the error from satellite image.
CO3	Select appropriate image Enhancement techniques based on image characteristics
CO4	Classify the satellite image using various method and also evaluate the accuracy of classification.
CO5	Apply the advanced image classification methods and conduct lifelong research in the field of image processing.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A(10x2=20 Marks)
(Answer all Questions)

Q.No	Questions	Marks	CO	BL
1	What are satellite orbits? Differentiate between various types of orbits.	2	1	L1
2	Write short note on different types of resolutions.	2	1	L1
3	Write short note on different color coordinate systems.	2	2	L2
4	What do you understand by the term "topographic attenuation"?	2	2	L2
5	Differentiate between histogram and Scattergram.	2	3	L2
6	What is the purpose of image enhancement in digital image processing?	2	3	L1
7	What is the purpose of signature and training sets in classification?	2	4	L1
8	What is the role of error matrices in classification accuracy?	2	4	L2
9	What is texture based classification?	2	5	L2
10	Write short note on Hebbian learning.	2	5	L1

PART- B(5x 13=65Marks)
(Restrict to a maximum of 2 subdivisions)

Q.No	Questions	Marks	CO	BL
11 (a) (i)	Explain the role of Digital Image Processing Systems in satellite image processing. Discuss the hardware and software design considerations.	10	1	L3
(ii)	Discuss briefly about encoding and decoding.	3	1	L3
	OR			
11 (b) (i)	Describe the different types of satellite data products. Discuss their applications and limitations.	13	1	L3
12 (a) (i)	Explain the concept of atmospheric correction with neat sketch and discuss the importance of atmospheric correction in image processing.	13	2	L4
				PTO

	OR			
12 (b) (i)	Discuss the concept of image geometry restoration. Explain the importance of image geometry restoration in image processing.	13	2	L4
13 (a) (i)	Discuss in detail about contrast and spatial feature manipulation techniques.	13	3	L3
	OR			
13 (b) (i)	Explain the concept of morphological and adaptive filters.	4	3	L3
(ii)	Discuss in detail about the concept of PCA.	9	3	L3
14 (a) (i)	Provide a detailed analysis of the Chain and ISODATA algorithms for unsupervised image classification. Compare their performance.	13	4	L4
	OR			
14 (b) (i)	Discuss in detail about various supervised classification methods and Provide merits and demerits of all the methods.	13	4	L4
15 (a) (i)	Briefly describe about object based classifier.	4	5	L4
(ii)	Explain the concept of knowledge based Expert systems and its importance in advanced image classification techniques. How can these systems be applied to improve classification performance?	9	5	L4
	OR			
15 (b) (i)	What is ADALINE network? Discuss various steps of calculating the optimal weight (w^*)	10	5	L4
(ii)	Discuss briefly about the concept of Fuzzy logic.	3	5	L4

PART- C (1x 15=15 Marks)
(Q.No.16 is compulsory)

Q.No	Questions	Marks	CO	BL
16. (i)	Describe in detail about various process involved in Sub-pixel classification.	9	5	L5
(ii)	Discuss in detail about the concept of Support Vector Machine (SVM)	6	4	L6