Nirma University

Institute of Technology

Sessional End Examination (IR/RPR), May 2023

B. Tech. in CSE/EC/EI, Semester-VI

2CLOE02 REMOTE SENSING, GIS & GPS (OPEN ELECTIVE)

Roll / Exam No.		Supervisor's initial with date	

Time: 3 Hours Max. Marks: 100

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Assume suitable data whenever required.
4. Draw neat sketches wherever necessary.

SECTION-I

Q.1 (a) CO1 BL3 Elaborate remote sensing. Explain component, advantages and application of remote sensing. [08]

Q.1 (b) CO1 BL4 Describe the spectral reflectance curve. Explain spectral reflectance of different materials. [08]

OR

Q.1 (b) CO1 BL4 Following reflectivity measurements are done in two agricultural fields: [08]

	NIR Band	Red band	NDVI
Crop 1	0.6	0.09	
Crop 2	0.5	0.4	

Calculate NDVI of both the crop. Explain which crop is healthy and why?

Q.2 (a) CO1 BL3 Explain the following with suitable diagram: [08]

a. Spectral resolution
b. Spatial resolution
c. Radiometric resolution
d. Temporal Resolution

Q.2 (b) CO1 BL3 Explain working principle of Lidar. Discuss the advantages of microwave remote sensing. [08]

Q.3 (a) CO2 BL5 Explain working principle of multispectral imager. Differentiate between along whiskbroom and push broom multispectral resolution sensors. [08]

Q.3 (b) CO2 BL4 Which image will be better for each of following: [06]

(i) 10 meter or 20-meter resolution
(ii) 10 bit or 5-bit image
(iii) Multispectral or hyperspectral images

Q.3 (c) CO2 BL3	What is image histogram? Explain uses of image histogram.	[04]

OR

Q.3 (c) CO2 BL3	Explain GIS with its components and concept of 4Ms.	[04]

SECTION-II

Q.4 (a) CO3 BL5	Explain DEM and LULC? List out the step wise process to download the DEM data.	[08]
Q.4 (b) CO3 BL4	Explain the GIS spatial data types. Differentiate between raster and vector data models.	[08]

OR

Q.4 (b) CO3 BL4	Distinguish the supervised and unsupervised image classification. Explain steps involved in supervised image classification.	[08]
Q.5 (a) CO4 BL3	Discuss the applications of GNSS Remote Sensing.	[08]
Q.5 (b) CO4 BL4	Define GNSS and also explain any one Global Navigation Satellite Systems that can be used as alternatives to GPS.	[08]
Q.6 (a) CO4 BL4	Discuss the main functions of GPS three segments. Describe the advantages and limitations of GPS positioning.	[08]
Q.6 (b) CO4 BL6	Discuss why GPS requires minimum four satellites. Explain basic principle of GPS.	[06]
Q.6 (c) CO4 BL3	Elaborate the general steps of image processing.	[04]

OR

Q.6 (c) CO4 BL3	What are the advantages and disadvantages of using UTM coordinates in GPS/GNSS positioning?	[04]