

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch – ENVIRONMENTAL SCIENCE

REMOTE SENSING AND GIS IN ENVIRONMENTAL MANAGEMENT

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Question No.	Question	K Level	CO
1	What is the term for the process of representing the Earth's three-dimensional surface on a two-dimensional map a) Geocoding b) Georeferencing c) Geospatial analysis d) Cartography	K1	CO1
2	In the Universal Transverse Mercator (UTM) coordinate system, the Earth is divided into: a) 60 zones, each 6 degrees of longitude wide b) 24 time zones, each 15 degrees of longitude wide c) 90 zones, each 4 degrees of latitude wide d) 360 zones, each 1 degree of longitude wide	K2	CO2
3	Rayleigh scattering is most significant in which part of the EM spectrum? a) Microwave b) Infrared c) Visible blue d) Thermal	K1	CO2
4	The energy E of electromagnetic radiation is given by: a) $E=h\lambda$ b) $E=h\nu$ c) $E=c/\lambda$ d) $E=\lambda\nu$	K2	CO2
5	The ability of a sensor to distinguish between two closely spaced features on the ground is called: a) Radiometric resolution b) Spectral resolution c) Spatial resolution d) Temporal resolution	K1	CO2
6	The principal point on an aerial photograph is: a) The point on the ground directly below the camera lens b) The point where the optical axis intersects the photo plane c) The point of maximum image distortion d) The center of the fiducial marks only	K2	CO1
7	Which of the following is the first step in supervised image classification? a) Histogram equalization b) Selection of training samples c) Accuracy assessment d) Filtering	K1	CO1
8	The NDVI (Normalized Difference Vegetation Index) is calculated using: a) $(\text{Red} + \text{NIR}) / (\text{Red} - \text{NIR})$ b) $(\text{NIR} - \text{Red}) / (\text{NIR} + \text{Red})$ c) $(\text{Green} - \text{Red}) / (\text{Green} + \text{Red})$ d) $(\text{SWIR} - \text{Red}) / (\text{SWIR} + \text{Red})$	K2	CO2
9	Which type of data integration helps in wildlife corridor mapping? a) GPS tracking + RS + GIS b) NDVI + DEM + Radar c) DEM only d) Census + GIS only	K1	CO3
10	Which GIS analysis is most suitable for selecting a solid waste landfill site? a) Network analysis b) Multi-criteria overlay analysis c) Buffering only d) Histogram matching	K2	CO3

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	"Remote sensing"- A part of an Applied Physics. Justify.	K5	CO2
	(OR)		
11.b.	Explain the significance of coordinate systems in mapping and GIS.		
12.a.	Inspect atmospheric interactions of electromagnetic radiation and their significance in remote sensing.	K4	CO2
	(OR)		
12.b.	Analyze spectral reflectance curve for vegetation, soil, and water.		
13.a.	Compare between LEO, MEO and GEO.	K4	CO2
	(OR)		
13.b.	Examine in detail about different types of aerial photographs.		
14.a.	Assess the significance of Digital Elevation Models (DEMs) in GIS.	K5	CO3
	(OR)		
14.b.	Evaluate the suitability of raster and vector data for environmental modeling and decision-making.		
15.a.	Discuss the role of Remote Sensing and GIS in land use and land cover change detection.	K6	CO2
	(OR)		
15.b.	Elaborate the application of Remote Sensing and GIS in hazards and disaster management.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Question No.	Question	K Level	CO
16	Classify different types of maps used in geospatial studies.	K4	CO1
17	Analyze the key steps in the remote sensing process with the help of neat labeled diagram.	K4	CO2
18	Appraise the operation of a whiskbroom scanner with the help of a diagram. Explain how it is different from push broom scanner.	K5	CO2
19	Explain the importance of digital image processing steps in extracting meaningful information from satellite imagery.	K5	CO3
20	Discuss the application of Remote Sensing and GIS in watershed management.	K6	CO2

Z-Z-Z END