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<tr><td>**Seat No.**</td><td></td></tr>
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Set **P**

M.Sc. (Geoinformatics) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Basics of GIS and GNSS (2331101)

Day & Date: Wednesday, 29-10-2025　　　　　　　　Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
　　　　　　　　2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)　　　　　　　　08

1) What does a "layer" in GIS refer to?
　　a) A physical map　　　　b) A spatial dataset
　　c) A 3D model　　　　　　d) A GPS receiver

2) What is topology in GIS?
　　a) The study of satellite orbits
　　b) The spatial relationships between features
　　c) The process of map digitization
　　d) The creation of 3D models

3) Which file format is primarily used to store vector data in GIS?
　　a) .csv　　　　　　　　　b) .shp
　　c) .tiff　　　　　　　　　d) .jpeg

4) Which of the following is commonly used GIS software?
　　a) MATLAB　　　　　　　b) ArcGIS
　　c) AutoCAD　　　　　　　d) SPSS

5) Which organization is responsible for managing GPS?
　　a) NASA
　　b) European Space Agency
　　c) U.S. Department of Defense
　　d) International Telecommunication Union

6) Which part of the GPS system is responsible for generating and transmitting satellite signals?
　　a) Control segment　　　　b) User segment
　　c) Space segment　　　　　d) Ground station

7) Which of the following technologies is often combined with GPS for more precise location data?
　　a) Remote sensing　　　　b) GLONASS
　　c) Radar　　　　　　　　d) Photogrammetry

8) GPS receivers use signals from how many satellites to calculate a position accurately?
   a) At least 2   b) At least 3
   c) At least 4   d) At least 5

B) Fill in the blanks   **04**
   a) The spatial relationship between features in GIS is referred to as ____.
   b) In GIS, the ____ table contains descriptive data about geographic features.
   c) To calculate an accurate position, a GPS receiver needs signals from at least ____ satellites.
   d) GPS technology uses ____ waves to communicate with satellites.

Q.2 Answer the following. (Any Six)   **12**
   a) Define GIS and explain its importance.
   b) What are raster and vector data in GIS?
   c) Define topology and Explain the role of topology in GIS.
   d) Explain the concept of thematic layers in GIS.
   e) Define GPS and explain its main segment.
   f) How does GPS work to determine a location?
   g) What are the common sources of GPS errors?
   h) What are the sources of Spatial data?

Q.3 Answer the following. (Any Three)   **12**
   a) What are the advantages of using GIS for spatial analysis?
   b) Explain the process of data acquisition in geospatial technology.
   c) Explain the importance of GPS in road navigation.
   d) What is the difference between GPS and GIS?

Q.4 Answer the following. (Any Two)   **12**
   a) What is the difference between spatial and non-spatial data in GIS?
   b) Discuss the role of GIS in common man daily use.
   c) Discuss the role of GPS in geospatial technology.

Q.5 Answer the following. (Any Two)   **12**
   a) Discuss the applications of GPS in transportation.
   b) Explain the importance of GIS in disaster management and risk analysis.
   c) Explain the integration of Geography and GIS with example.

Seat No.

M.Sc. (Geoinformatics) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Principles of Remote sensing (2331102)

Day & Date: Friday, 31-10-2025   Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
                 2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)   08

1) First satellite of NASA was launched _____.
    a) Sputnik 2   b) Explorer 1
    c) Sputnik 1   d) Terral

2) PEM stands for _____.
    a) payload Electronics Module
    b) payload elementary module
    c) Pentium elementary Module
    d) Payload elevation module

3) _____ is the direction perpendicular to flight path of the aircraft.
    a) Range   b) azimuth
    c) Resolution   d) none of these

4) Which is following satellite series concerned India?
    a) Land sat   b) Spot
    c) IRS   d) JRS

5) Remote sensing system which use the naturally available energy are called as _____.
    a) Passive sensor   b) Active sensors
    c) Both a & b   d) None of the above

6) Scale are sometimes represented on maps by a statement is known as _____.
    a) R. F.   b) Graphical scale
    c) Simple statement   d) A & B both

7) IFOV stands for _____.
    a) Incident Field of View   b) Instantaneous Field of View
    c) Incident Front of View   d) Instantaneous Front of View

8) _____ is the science obtaining information about object area through an analysis of the data acquired by device which is not in contact with object.
   a) GIS
   b) Remote sensing
   c) Remote control
   d) All of the above

B) Write true/false. 04
   1) Passive remote sensing system have their own source of energy.
   2) Ratio between map distance and ground distance is called map scale.
   3) The first-aerial photographs taken from an airplane for geologic mapping in the year 1994.
   4) Time of one revolution of geostationary satellite around the earth is 24 hrs.

Q.2 Answer the following. (Any Six) 12
   a) Define remote sensing.
   b) Define datum.
   c) Define Scattering.
   d) Active remote sensing.
   e) Wavelength.
   f) Define resolution.
   g) Define Scale.
   h) Define Atmospheric windows.

Q.3 Answer the following. (Any Three) 12
   a) Ground based aerial photography.
   b) Spatial resolution.
   c) Uses of photogrammetry.
   d) Basic requirements of aerial photography.

Q.4 Answer the following. (Any Two) 12
   a) Energy interaction with atmosphere.
   b) Stereoscopy.
   c) Spectral reflectance of soil, vegetation and water.

Q.5 Answer the following. (Any Two) 12
   a) Nature of remote sensing.
   b) History of remote sensing.
   c) Types of scattering.

Seat
No.

M.Sc. (Geoinformatics) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
IT for Geoinformatics (2331109)

Day & Date: Monday, 03-11-2025   Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
              2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)   **08**

1) What does SQL stand for?
    a) Structured Query Language
    b) Simple Query Language
    c) Sequential Query Language
    d) Standard Query Language

2) Which device is used to input data into a computer?
    a) Monitor   b) Printer
    c) Keyboard   d) Speaker

3) A touchscreen display is an example of: ____.
    a) Input device   b) Output device
    c) Both a and b   d) None of these

4) What does the JOIN operation do in SQL?
    a) Combines data from two or more tables
    b) Deletes records from a table
    c) Updates existing records
    d) Creates a new table

5) Which of the following is not the utility of DBMS?
    a) Backup   b) Data Loading
    c) Process Organization   d) File organization

6) Ctrl N command used as ____ in word documents.
    a) New document   b) Bold text
    c) Save   d) Both b & c

7) Which of the following devices provides the communication between a computer and the outer world?
    a) Compact   b) I/O
    c) Drivers   d) Storage

8) Which of the following can access the server?
    a) Web Client   b) User
    c) Web browser   d) Web server

B) Fill in the blanks OR Write True/False. 04
1) CTRL+ V stands for ____.
2) In a relational database, a table is made up of rows and what? ____.
3) What language is primarily used to manage and manipulate databases? ____.
4) An 'attribute' is a named field of a tuple, with which each tuple associates a value, the tuple's 'attribute value'
   a) True   b) False

Q.2 Answer the following. (Any Six) 12
a) Define Union.
b) Define Data security.
c) Define software and examples of software applications.
d) Write the uses of mouse.
e) Define Normalization data.
f) Define RAM with suitable example.
g) Define Intersection.
h) Define GML.

Q.3 Answer the following. (Any Three) 12
a) Applications of agriculture and Environmental applications in biodiversity.
b) Advantages of DBMS.
c) Write the Computer output devices.
d) Define CPU and Characteristics of computer.

Q.4 Answer the following. (Any Two) 12
a) Geographical applications related with the mapping of settlement.
b) Describe in detail table relationships.
c) Write input devices to the computers.

Q.5 Answer the following. (Any Two) 12
a) What is SQL? Explain Query processing.
b) Explain the role of Administrator in DBMS
c) What is LULC? In which type of computer application LULC studies are used.

Seat No.

M.Sc. (Geoinformatics) (Semester - I) (New) (NEP CBCS)
Examination: October/November - 2025
Research Methodology (2331103)

Day & Date: Thursday, 06-11-2025　　　　　　　　　　Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
　　　　　　　　2) Figures to the right indicate full marks.

Q.1　A)　Choose correct alternative. (MCQ)　　　　　　　　　　**08**
　　　1) What is the primary goal of research?
　　　　　a) To prove an assumption
　　　　　b) To explore new ideas and knowledge
　　　　　c) To document existing information
　　　　　d) To criticize past studies

　　　2) Research can be conducted by a person who: ____.
　　　　　a) holds a postgraduate degree
　　　　　b) has studied research methodology
　　　　　c) possesses thinking and reasoning ability
　　　　　d) is a hard worker

　　　3) Plagiarism can be best defined as: ____.
　　　　　a) Incorrect citation of sources
　　　　　b) Unauthorized use of someone else's ideas or words
　　　　　c) Extensive use of search engines
　　　　　d) A way to check research quality

　　　4) Data collection in research should be: ____.
　　　　　a) Selective　　　　　　　　b) Random
　　　　　c) Systematic and accurate　d) Only

　　　5) What is Google Chrome?
　　　　　a) Browser　　　　　　　　b) Search engine
　　　　　c) E-mail-client　　　　　　d) Website

　　　6) What is the purpose of a patent?
　　　　　a) To encourage secrecy of inventions
　　　　　b) To encourage innovation by protecting inventors' rights
　　　　　c) To help competitors copy the invention
　　　　　d) To allow free use of the invention by the public

　　　7) What is the maximum Zoom percentage in MS PowerPoint?
　　　　　a) 400%　　　　　　　　　b) 300%
　　　　　c) 200%　　　　　　　　　d) 100%

8) Research can be classified as: ____.
   a) Basic, Applied and Action Research
   b) Philosophical, Historical, Survey and Experimental Research
   c) Quantitative and Qualitative Research
   d) All the above

B) Fill in the blanks OR Write True/False. 04
   a) A research problem should be specific and clearly defined to guide the study. (TRUE/FALSE)

   b) Plagiarism is considered a violation of research ethics. (TRUE/FALSE).
   c) A unique number used to identify journals is called ____.
   d) The ____ Factor is used to measure the quality and influence of a journal.

Q.2 Answer the following. (Any Six) 12
   a) Define the term impact factor.
   b) What is the purpose of a literature review in research?
   c) What is plagiarism?
   d) State two ways to identify a gap in existing research.
   e) Define the h-index and describe its formula.
   f) What is the role of e-databases in research?
   g) Explain any two advantages of Microsoft word.
   h) Explain any two advantages of MS-Excel.

Q.3 Answer the following. (Any Three) 12
   a) Explain the importance of using keywords in a search query.
   b) List uses of ISSN and ISBN in academic publishing.
   c) Describe search engines.
   d) Application of Computers in research.

Q.4 Answer the following. (Any Two) 12
   a) Note on Research objective.
   b) Discuss the criteria for quality research with examples.
   c) Describe in detail Impact factor.

Q.5 Answer the following. (Any Two) 12
   a) Define a research problem and explain its importance in the research process.
   b) Explain the SCOPUS index and its significance in academic research.
   c) Explain the importance of record-keeping in research.

Seat No.		Set	P

M.Sc. (Geoinformatics) (Semester - II) (New) (NEP CBCS)
Examination: October/November – 2025
Digital Image Analysis (2331201)

Day & Date: Tuesday, 28-10-2025　　　　　　　　　　Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
　　　　　　　　2) Figures to right indicates full marks.

Q.1　A)　Choose correct alternative. (MCQ)　　　　　　　　　　08

1) Which of the following is the primary goal of remote sensing?
　　a) To capture photographs of Earth
　　b) To measure electromagnetic radiation reflected from Earth
　　c) To detect minerals on Earth's surface
　　d) To track weather patterns

2) In digital image processing, what does a pixel represent?
　　a) The resolution of the image
　　b) The size of the image
　　c) A single point in the image with specific color and intensity values
　　d) The geographical location of the satellite

3) Which of the following remote sensing sensors typically captures images in the visible and near infrared spectrum?
　　a) Thermal Infrared Sensors
　　b) LiDAR Sensors
　　c) Multispectral Sensors
　　d) Radar Senso

4) What is the process of enhancing the visual appearance of satellite images called?
　　a) Georeferencing　　　　　b) Image Preprocessing
　　c) Image Segmentation　　　d) Image Classification

5) Which of the following is NOT a step-in image classification?
　　a) Image Preprocessing　　　b) Data Acquisition
　　c) Feature Extraction　　　　d) Image Enhancement

6) In digital image processing, which technique is used to reduce noise from images?
　　a) Histogram Equalization　　b) Median Filtering
　　c) Fourier Transform　　　　d) Principal Component Analysis

7) Which of the following methods is used to enhance the contrast of an image?
   a) Histogram Equalization
   b) Image Thresholding
   c) Image Segmentation
   d) Edge Detection

8) Which of the following satellite sensors is primarily used for land cover classification?
   a) Landsat
   b) RADARSAT
   c) MODIS
   d) SPOT

B) **Fill in the blanks:** **04**
   1) The process of obtaining information about an object or phenomenon without making physical contact with it is called ____.
   2) In satellite remote sensing, the basic unit of a digital image, representing a specific location on the Earth's surface, is called a ____.
   3) The electromagnetic spectrum ranges from short wavelengths such as ____ to longer wavelengths such as ____.
   4) The sensor used in satellites to capture imagery in the visible and near-infrared spectra is typically called a ____ sensor.

Q.2 **Answer the following. (Any Six)** **12**
   a) What is remote sensing, and how is it used in satellite imaging?
   b) What is the difference between multispectral and hyperspectral imaging in satellite remote sensing?
   c) Explain the term "spatial resolution" in the context of satellite imagery.
   d) What is a "False Color Composite" image, and why is it used in remote sensing?
   e) Define the term "Georeferencing" in satellite image processing.
   f) What is image classification in the context of remote sensing, and why is it important?
   g) What role does "Histogram Equalization" play in satellite image processing?
   h) Explain the concept of "Change Detection" in remote sensing.

Q.3 **Answer the following. (Any Three)** **12**
   a) Describe the process and purpose of "Image Filtering" in satellite image.
   b) What is the significance of the "Near-Infrared" band in remote sensing?
   c) What is Synthetic Aperture Radar (SAR), and how is it used in remote sensing?
   d) Explain the concept of "Supervised Classification" in satellite image processing.

Q.4 **Answer the following. (Any Two)** **12**
   a) How does remote sensing contribute to disaster management?
   b) What is the purpose of "Atmospheric Correction" in satellite image processing?
   c) How does the "Temporal Resolution" of a satellite affect its remote sensing applications?

Q.5 **Answer the following. (Any Two)** **12**
   a) How is "Land Use/Land Cover" classification helpful in environmental monitoring?
   b) Explain the concept of Remote Sensing and describe its significance in satellite-based imaging. What are the key components involved in a remote sensing system?
   c) Describe the electromagnetic spectrum and its significance in remote sensing. Discuss the different regions of the spectrum used in satellite remote sensing.

M.Sc. (Geoinformatics) (Semester - II) (New) (NEP CBCS)
Examination: October/November – 2025
Spatial Modelling & Analysis (2331202)

Day & Date: Thursday, 30-10-2025　　　　　　　　　Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
　　　　　　　　2) Figures to the right indicate full marks.

Q.1　A)　Choose correct alternative. (MCQ)　　　　　　　　08

　　1)　Which of the following is not GIS software?
　　　　a)　ArcGIS　　　　　　　　b)　QGIS
　　　　c)　ERDAS　　　　　　　　d)　Adobe Photoshop

　　2)　Digital representation of the continuous variation of relief over space is known as _____.
　　　　a)　DEM　　　　　　　　b)　TIN
　　　　c)　Fractual　　　　　　　d)　None of these

　　3)　_____ generates a grid in which each grid cell represents the cost to travel to that grid cell from the nearest of one or more start locations.
　　　　a)　3D Analysis　　　　　　b)　Cost Surface Analysis
　　　　c)　Network Analysis　　　　d)　None of these

　　4)　The _____ is based on the length of the route.
　　　　a)　Shortest Path　　　　　b)　Fastest Path
　　　　c)　Optimal Path　　　　　d)　Source Destination path

　　5)　_____ is a high-level computational language used for performing cartographic spatial analysis using raster data.
　　　　a)　C　　　　　　　　　　b)　CPP
　　　　c)　map algebra　　　　　　d)　All of above

　　6)　Larger NNI value represented by _____.
　　　　a)　Random Pattern　　　　b)　Clustered Pattern
　　　　c)　Scattered Pattern　　　d)　None of these

　　7)　MAT stands for _____.
　　　　a)　Medial Axis Transformation
　　　　b)　Mean Axis transition
　　　　c)　Mode Axis Transformation
　　　　d)　Median Axis Transmitter

　　8)　_____ operations are procedures, which correspond to queries and alterations of data that operate on a single data layer.
　　　　a)　Multiple Layer　　　　　b)　Overlay
　　　　c)　Single Layers　　　　　d)　None of these

B) Fill in the blanks OR Write True/False. 04
1) Classification - identify a set of characteristics to group together objects.
2) Digital Elevation Models a sample of elevation data for a study area represented as evenly-spaced points or raster cells.
3) Network connectivity can be examined by constructing a matrix set called D matrix.
4) Number of point feature occurring on the map means density.

Q.2 Answer the following. (Any Six) 12
a) IDW
b) Raster Calculator
c) Zonal operation
d) Georeferencing
e) Erase tool
f) Proximity analysis
g) Spatial join
h) TIN

Q.3 Answer the following. (Any Three) 12
a) Raster and vector data structure
b) Hillshade analysis using DEM data
c) C matrix
d) Explain Union and intersection tool.

Q.4 Answer the following. (Any Two) 12
a) Describe Interpolation techniques.
b) Explain optimal path and proximity search in network analysis.
c) Explain complex spatial query.

Q.5 Answer the following. (Any Two) 12
a) Describe predictive and normative model.
b) Discuss the alpha and gamma index in network analysis.
c) Significance of spatial analysis

Seat No.

Set P

M.Sc. (Geoinformatics) (Semester - II) (New) (NEP CBCS)
Examination: October/November – 2025
Introduction to Cartography (2331209)

Day & Date: Saturday, 01-11-2025   Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)   **08**
1) Which concept is related to the Earth's curvature?
a) Geoid   b) Vertical datum
c) Azimuth   d) Declination

2) Geographical coordinates use: _____.
a) Latitude and longitude   b) UTM zones
c) Cartesian coordinates   d) Grid references

3) Which is NOT a type of general map?
a) Topographic map   b) Road map
c) Weather map   d) Population density map

4) Slope analysis in mapping is useful for: _____.
a) Climate studies   b) Road construction
c) Seismic surveys   d) Astronomy

5) A thematic map focuses on: _____.
a) General features like roads and rivers
b) A specific theme or subject
c) Political boundaries
d) Natural disasters

6) The Stereographic Polar Zenithal projection is used for: _____.
a) Equatorial regions   b) Polar regions
c) Mid-latitudes   d) Global maps

7) The choice of scale affects: _____.
a) Map details   b) Map coverage area
c) Map accuracy   d) All of the above

8) Which of the following is a type of scale?
a) Vertical scale   b) Linear scale
c) Barometric scale   d) Digital scale

B) **Fill in the blanks OR Write True/False.** 04
   a) Slope analysis is not related to map preparation or interpretation.
      a) True   b) False
   b) Thematic maps focus on specific topics like population, rainfall, or vegetation.
      a) True   b) False
   c) Topographic maps are classified under thematic maps.
      a) True   b) False
   d) Horizontal datums define a coordinate system for locating points on the Earth's surface.
      a) True   b) False

Q.2 **Answer the following. (Any Six)** 12
   a) Define geodesy.
   b) Define slope.
   c) Define Toposheet.
   d) Define scale.
   e) Define coordinate system.
   f) Define geoid.
   g) What is map projection?
   h) What is WGS?

Q.3 **Answer the following. (Any Three)** 12
   a) What is a topographic survey?
   b) What are the main components of the Earth's geodetic system?
   c) What are the different types of map scales?
   d) Note on map design.

Q.4 **Answer the following. (Any Two)** 12
   a) Types of thematic maps.
   b) History of cartography.
   c) Classification of map projections.

Q.5 **Answer the following. (Any Two)** 12
   a) Importance of sign & symbols.
   b) Cultural maps.
   c) Nature of cartography.

Seat No.

M.Sc. (Geoinformatics) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Advanced Techniques In Remote Sensing (2331301)

Day & Date: Wednesday, 29-10-2025   Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

1) The most important source of electromagnetic energy is ____.
   a) Earth b) Moon
   c) Atmosphere d) Sun

2) L band-Radar wavelength region ranges from ____.
   a) 15 to 30 cm b) 0.8 to 1.1 cm
   c) 1 to 10 cm d) 20 to 40 cm

3) Stefan-Boltzman law states that the total radiation emitted from blackbody is proportional to the Fourth power of the ____.
   a) Wavelength b) Frequency
   c) Surface temperature d) Absolute temperature

4) SONAR stands for ____.
   a) Shadow navigation range
   b) Sound navigation ranging
   c) Sound detection and ranging
   d) Signal navigation ranging

5) ____ are capable of penetrate the atmosphere under almost all condition.
   a) Microwave b) Visible wave
   c) X-ray d) None of these

6) The ____ technology uses area matching techniques to find corresponding points within a stereo pair.
   a) Photo scale
   b) Flying height measuring
   c) Automatic Terrain Measurement
   d) Triangular Irregular network

7) The visible wavelengths cover a range from approximately ____.
   a) 0.4 to 0.7 mm b) 0.7 to 3mm
   c) 3 to 7 mm d) 7 to 14mm

8) The emissivity value of clear water ____.
   a) 0.98-0.99   b) 1.3-1.9
   c) 0.50-0.60   d) 0.75-0.85

B) Write True/ False.   **04**
   a) The Earth's ozone (O_3) layer absorbs much of the thermal energy exiting the terrain in an absorption band from approximately 9-10 mm.
   b) Oceansat-2 is ISRO's second in the series of Indian Remote Sensing satellites dedicated to ocean research.
   c) The displacement of an object caused by a change in the point of observation is called parallax.
   d) Primary basic elements of a SAR image are tone and color.

Q.2 Answer the following. (Any Six)   **12**
   a) Define parallax.
   b) Define photogrammetry.
   c) Define relief displacement.
   d) Define radiant flux.
   e) Look angle
   f) Depression angle
   g) Emissivity
   h) Azimuth angle

Q.3 Answer the following. (Any Three)   **12**
   a) Rain mapping radar
   b) Spatial resolution of radar
   c) SLAR
   d) Altimeter and radiometer

Q.4 Answer the following. (Any Two)   **12**
   a) Kirchhoff's radiation law
   b) Applications of RADAR
   c) Advantages and disadvantages of Radar

Q.5 Answer the following. (Any Two)   **12**
   a) System properties of radar.
   b) Influenced factors of emissivity.
   c) Steffens Boltzmann radiation law.

Seat No.		Set	P

M.Sc. (Geoinformatics) (Semester - III) (New) (NEP CBCS)
Examination: October/November - 2025
Advanced Techniques in GIS (2331302)

Day & Date: Friday, 31-10-2025   Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ) 08

1) In the AHP (Analytical Hierarchy Process), what is the scale range used for pairwise comparison?
   a) 1 to 10   b) 1 to 5
   c) 1 to 9   d) 0 to 1

2) Which of the following is an example of probabilistic uncertainty in decision-making?
   a) Incomplete data   b) Data processing errors
   c) Fuzzy logic   d) Chance-based outcomes

3) Which method is used to test the robustness of a decision model in MCA?
   a) Fuzzy logic   b) Sensitivity analysis
   c) Utility function approach d) Linear transformation

4) In MCA, what does MODM stand for?
   a) Multi-Option Decision Making
   b) Multi-Objective Decision Making
   c) Multi-Operational Data Model
   d) Multi-Oriented Decision Model

5) Which of the following methods is used to standardize the evaluation criteria in MCA?
   a) Fuzzy logic
   b) Pairwise comparison
   c) Linear scale transformation
   d) Rating method

6) In Triangulated Irregular Networks (TIN), what method is used to connect points?
   a) Rasterization   b) Delaunay triangulation
   c) Polygon intersection   d) Voronoi diagram

7) What does slope analysis in DEM represent?
   a) The direction of slope
   b) The steepness or gradient of the terrain
   c) The total elevation change
   d) The area covered by vegetation

8) What is a Digital Elevation Model (DEM)?
   a) A model representing geological data
   b) A digital representation of the continuous variation of relief over space
   c) A 2D representation of population density
   d) A model of transportation networks

B) Fill in the blanks: 04
   1) _____ is a GIS technique that overlays multiple layers to find the most suitable locations based on weighted criteria.
   2) In ranking methods for MCA, criteria are assigned weights based on their _____.
   3) A _____ map is used in MCA to evaluate alternatives based on spatial criteria.
   4) The three steps in decision-making using MCA are _____, _____, and _____.

Q.2 Answer the following. (Any Six) 12
   a) Define Multi-Criteria Analysis (MCA) and how to use in GIS-based decision-making.
   b) What are the key differences between MADM (Multi-Attribute Decision Making) and MODM (Multi-Objective Decision Making)?
   c) Discuss the role of criteria weightage in Multi-Criteria Decision Making.
   d) Describe the process ranking method.
   e) Explain the concept of a Digital Elevation Model (DEM) and its importance in spatial analysis.
   f) What is a Triangulated Irregular Network (TIN), and how does it differ from DEM?
   g) Describe the process of rating method.

Q.3 Answer the following. (Any Three) 12
   a) How does GIS-based Multi-Criteria Decision Analysis (MCDA) work? Explain with an example.
   b) Discuss the applications of DEM in civil engineering and military projects.
   c) Explain how fuzzy logic is used in Multi-Criteria Analysis for standardizing evaluation criteria.
   d) Describe the steps involved in conducting a Multi-Criteria Decision Analysis.

Q.4 **Answer the following. (Any Two)** **12**
    a) Explain the Analytical Hierarchy Process (AHP) in detail as a method of pairwise comparison in MCDA.
    b) What are the methods used for criteria standardization in MCDA? Discuss their advantages and limitations.
    c) Explain the difference between line of sight and viewshed analysis in spatial analysis.

Q.5 **Answer the following. (Any Two)** **12**
    a) Describe the applications of MCDA in real-world scenarios. Provide examples from fields like urban planning, environmental management, and disaster management.
    b) What are the major challenges and limitations of MCDA in decision-making processes?
    c) What are hill shades, and how do they help in terrain visualization.

Seat No.

Set P

M.Sc. (Geoinformatics) (Semester - III) (New) (NEP CBCS) Examination: October/November - 2025
Web GIS and Mobile GIS (2331306)

Day & Date: Monday, 03-11-2025   Max. Marks: 60
Time: 11:00 AM To 01:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)   **08**

1) Who created the first DBMS?
  a) Edgar Frank Codd   b) Charles Bachman
  c) Charles Babbage   d) Sharon B. Codd

2) The ability to query data, as well as insert, delete, and alter tuples, is offered by _____.
  a) TCL (Transaction Control Language)
  b) DCL (Data Control Language)
  c) DDL (Data Definition Language)
  d) DML (Data Manipulation Language)

3) Mobile GIS can be beneficial in which of the following fields?
  a) Environmental monitoring   b) Urban planning
  c) Emergency response   d) All of the above

4) What is the primary purpose of Web GIS?
  a) To store large datasets
  b) To facilitate the sharing and visualization of geospatial data
  c) To perform complex mathematical calculations
  d) To create video games

5) Which of the following is an example of a Web Map Service (WMS)?
  a) QGIS   b) ArcGIS Pro
  c) Google Maps   d) Excel Online

6) Which protocol is commonly used to serve geospatial data over the web?
  a) FTP   b) SMTP
  c) WMS   d) HTTP

7) GIS represents Y-coordinate in_____direction.
  a) Horizontal   b) Vertical
  c) Tangentially   d) None of the above

8) Modem GIS technology uses _____ type of information.
  a) Analog   b) Digital
  c) Both a and b   d) None of the above

B) **Fill in the blanks OR Write True/False.** 04
1) Father of web ____.
2) Write the full form of UDP.
3) A DBMS provides a high-level, 'declaration query language'
   a) True   b) False
4) A VPN (Virtual Private Network) helps protect your privacy online.
   a) True   b) False

Q.2 **Answer the following. (Any Six)** 12
a) GML.
b) Web Server.
c) Ajax.
d) Operating System.
e) Define WMS.
f) IP address.
g) Mobile GIS.
h) Write the definition of HTTP.

Q.3 **Answer the following. (Any Three)** 12
a) Write the applications of Data ware housing indexing.
b) Advantages of Web GIS.
c) Explain Data Mining.
d) Describe in detail Network Communication Models.

Q.4 **Answer the following. (Any Two)** 12
a) Explain in detail GEE.
b) Write the applications of Mobile GIS.
c) Distributed GIS in Data sharing and data warehousing.

Q.5 **Answer the following. (Any Two)** 12
a) Write the applications of Web GIS technology.
b) Describe in detail WMS.
c) Define Protocol and its various types.

Seat No.		Set	P

M.Sc. (Geoinformatics) (Semester - IV) (New) (NEP CBCS)
Examination: October/November – 2025
Natural Resource Management (2331401)

Day & Date: Tuesday, 28-10-2025   Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
                          2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)   08

1) Which of the following is a raster data model in GIS?
   a) Shapefile   b) Coverage
   c) Grid   d) CAD

2) Which index is primarily used for vegetation health monitoring?
   a) NDWI   b) NDVI
   c) SAVI   d) TWI

3) Which satellite sensor is commonly used for vegetation mapping?
   a) MODIS   b) LIDAR
   c) SAR   d) SRTM

4) Bathymetric data is used to map ____.
   a) Soil types   b) Forest cover
   c) Ocean depth   d) Land surface temperature

5) Remote sensing data helps in identifying salinity by detecting ____.
   a) Surface roughness
   b) Temperature gradients
   c) Spectral reflectance of salt-affected soils
   d) Precipitation changes

6) In wildlife studies, NDVI is useful to assess ____.
   a) Animal population   b) Vegetation density
   c) Soil quality   d) Rainfall pattern

7) Ocean Colour Monitoring (OCM) satellite is launched by ____.
   a) NASA   b) ESA
   c) ISRO   d) JAXA

8) Which software is commonly used for satellite image classification?
   a) MS Excel   b) ERDAS Imagine
   c) AutoCAD   d) Google Chrome

B) Fill in the blanks OR Write True/False. 04
1) Remote sensing can be used to detect groundwater directly.
    a) True   b) False
2) GIS allows integration of spatial and non-spatial data.
    a) True   b) False
3) NDVI values range from -1 to +1.
    a) True   b) False
4) Forest canopy cover cannot be estimated using satellite data.
    a) True   b) False

Q.2 Answer the following. (Any Six) 12
a) What is NDVI? How it is calculated?
b) Write note on NDWI and give its uses.
c) What is watershed management?
d) Explain what is coastal bathymetry and its essentialness for users.
e) Which factors affects spectral reflectance of water and why?
f) How to differentiate healthy plants and unhealthy plants or plants are in stress?
g) Give different vegetation indices with their formulas.
h) Give different types of soil according to soil texture.

Q.3 Answer the following. (Any Three) 12
a) What is Sea Surface Temperature?
b) What is salinity? Why there is difference in salinity in different areas?
c) Give different techniques used for sampling.
d) Write a note on formation of soil.

Q.4 Answer the following. (Any Two) 12
a) Explain different types of Soil.
b) What is potential fishing Zone? How it is mapped using RS and GIS?
c) Draw hydrological cycle and explain different parts and processes involved in it.

Q.5 Answer the following. (Any Two) 12
a) Give classification of forest.
b) Explain concepts of water resources.
c) Explain RS and GIS techniques for Sea Surface Temperature mapping.

Seat No.

M.Sc. (Geoinformatics) (Semester - IV) (New) (NEP CBCS)
Examination: October/November - 2025
Application of Rs and GIS in Disaster Management (2331402)

Day & Date: Thursday, 30-10-2025　　　　　　　　　　Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
　　　　　　　　2) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)　　　　　　　　　　　08

1) Which of the following is NOT a primary use of GIS in disaster management?
   - a) Hazard zonation mapping
   - b) Early warning systems
   - c) On-site medical treatment
   - d) Damage assessment

2) Remote sensing is particularly useful for monitoring which type of disaster?
   - a) Earthquakes
   - b) Landslides
   - c) Industrial accidents
   - d) All of the above

3) The Normalized Difference Vegetation Index (NDVI) is most commonly used to assess: _____.
   - a) Earthquake intensity
   - b) Drought conditions
   - c) Volcanic activity
   - d) Flood water depth

4) Which satellite data would be most appropriate for monitoring volcanic ash clouds?
   - a) Thermal infrared
   - b) Microwave
   - c) Gravimetric
   - d) Sonar

5) GIS-based flood modeling typically incorporates all EXCEPT: _____.
   - a) Topographic data
   - b) Land use patterns
   - c) Rainfall intensity
   - d) Soil mineral composition

6) Which of the following is NOT a type of disaster?
   - a) Earthquake
   - b) Volcano
   - c) Migration
   - d) Flood

7) The vegetation index is used to assess: _____.
   - a) Urbanization
   - b) Deforestation
   - c) Drought conditions
   - d) Mining impact

8) GIS-based parameters are essential in flood analysis because: _____.
   a) They predict rain
   b) They map population
   c) They integrate land use and topography
   d) They measure temperature

B) Fill in the blanks OR Write True/False.   **04**
   1) The process of dividing an area into zones of similar hazard potential is called _____.
   2) _____ satellites are particularly useful for disaster monitoring due to their frequent revisit capability.
   3) The _____ Index is commonly used in remote sensing to monitor drought conditions.
   4) GIS helps in identifying _____ zones for proactive disaster management.

Q.2 Answer the following. (Any Six)   **12**
   a) Write a short note on the causes and effects of landslides.
   b) Explain the application of GIS in cyclone damage assessment.
   c) Describe the impact of volcanic hazards with an example.
   d) Briefly explain coastal zone management strategies.
   e) How is GIS used in delimiting drought-prone areas?
   f) Explain how GIS can be used for earthquake vulnerability assessment.
   g) How can GIS assist in evacuation planning for cyclone-prone areas?

Q.3 Answer the following. (Any Three)   **12**
   a) Discuss the application of remote sensing and GIS in landslide hazard zonation, including the parameters used and methods of analysis.
   b) Explain how space-time integration in GIS helps in flood forecasting and management. Provide examples of relevant data layers.
   c) Discuss the different types of drought and factors influencing them.
   d) Write a comparative analysis of earthquake zones in India and the world.

Q.4 Answer the following. (Any Two)   **12**
   a) Describe the methodology of flood risk assessment using GIS.
   b) Discuss this statement with reference to recent technological advancements in remote sensing and spatial analysis.
   c) Write a detailed note on how GIS case studies have contributed to our understanding of disaster patterns and improved management strategies, with reference to at least three different types of disasters.

Q.5 Answer the following. (Any Two)   **12**
   a) Discuss in detail the application of Remote Sensing and GIS in managing drought and desertification.
   b) Discuss the implications of global warming and sea level rise as atmospheric disasters, and the role of GIS in their mitigation.

c) Critically analyze the role of geospatial technologies in all phases of disaster management (preparedness, response, recovery, and mitigation) with appropriate case studies.

Seat No.

M.Sc. (Geoinformatics) (Semester - IV) (New) (NEP CBCS)
Examination: October/November – 2025
Application in Hydrology and Agriculture (2331407)

Day & Date: Saturday, 01-11-2025 Max. Marks: 60
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Q.1 A) Multiple Choice Questions. 08

1) Which practice helps to recharge groundwater in a watershed?
   a) Paving roads
   b) Planting trees
   c) Building impermeable surfaces
   d) Excavating soil

2) ____ type of vegetation is most effective at stabilizing soil and preventing erosion'?
   a) Grass b) Shrubs
   c) Trees d) Cacti

3) What reason is the conservation of natural resources important?
   a) Existing the biological species
   b) Disruption of quality of the environment
   c) Maintaining the ecological process
   d) Disturbing the ecological balance

4) Which of the following is a key factor in designing a watershed management strategy?
   a) Local climate conditions b) Number of urban areas
   c) Number of industries d) Population density

5) What are the species called whose number of individuals is greatly reduced to a critical level?
   a) Indeterminate b) Rare
   c) Vulnerable d) Endangered

6) Water of Bhakra Nangal Project is being used mainly for: ____.
   a) Hydel power and irrigation b) fish breeding & navigation
   c) Industrial use d) flood control

7) ____ percent of the total oxygen in the Earth's atmosphere is released by the Amazon forest?
   a) 50 b) 40
   c) 20 d) 10

8) Hirakud Dam is constructed on the river: _____.
   a) Ganga
   b) Saraswati
   c) Manas
   d) Mahanadi

B) True/False: **04**
   a) A coral reef teeming with various fish species and marine life ecosystem is an example of high biodiversity?
   b) Clearing forests for agriculture and urbanization activity contributes to habitat destruction and loss of biodiversity?
   c) Plantation practice is commonly used to prevent soil erosion in a watershed.
   d) Industrial discharge of the following is an example of a non-point source of pollution in a watershed?

Q.2 Answer the following. (Any Six)   **12**
   a) Spectral signature.
   b) Soil moisture index.
   c) Ground water.
   d) Infiltration ratio.
   e) Runoff.
   f) Biomass.
   g) TIN.
   h) Biodiversity.

Q.3 Answer the following. (Any Three)   **12**
   a) Uses of DEM data
   b) Explain Triangular Irregular Network
   c) Uses of A Wifs and AVHRR
   d) Use of Landsat 8 data.

Q.4 Answer the following. (Any Two)   **12**
   a) Types of forest.
   b) Sea surface temperature.
   c) Advantages of Shore line mapping.

Q.5 Answer the following. (Any Two)   **12**
   a) Biological properties of soil.
   b) Types of Soil.
   c) Development of Water resource.

Seat No.

M.Sc. (Geoinformatics) (Semester - IV) (New/Old) (CBCS)
Examination: October/November – 2025
Geoinformatics Approach for Natural Resource Management
(MSC017401)

Day & Date: Tuesday, 28-10-2025   Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos 1 and 2 are compulsory.
             2) Attempt any three questions from Q. No. 3 to Q. No. 7.
             3) Figures to the right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)   **10**

1) This is an example of non-polluting renewable type of energy.
     a) Tidal   b) Wind
     c) Solar   d) All of these

2) Most of the energy used on earth today originally came from which of these sources?
     a) The sun   b) The Moon
     c) Oceans   d) Soil

3) Which of the following is a disadvantage of renewable energy?
     a) High pollution   b) Available only in few places
     c) High running cost   d) Unreliable supply

4) Which one of the following is a branch of forestry?
     a) Protection Forestry   b) Deforestation
     c) Forest Management   d) Restricted Forestry

5) The type of forests grown in the Himalayan Mountain region is called _____.
     a) Broad-leaved forests   b) Coniferous forests
     c) Deciduous forests   d) None of the above

6) Which is not a source of fresh water?
     a) Glaciers and ice sheets   b) Groundwater
     c) Surface run off   d) Oceans

7) The major source of fresh water in India is _____.
     a) Rainfall   b) Ground water
     c) Atmospheric water   d) Ocean water

8) Afforestation is necessary for _____.
     a) Soil conservation   b) Soil erosion
     c) Well control   d) Low humidity

9) _____ is the macronutrients are included in a so called "complete fertilizer".
   a) N, P, Ca   b) N, P, K
   c) P, K, S   d) All of the above

10) _____ organic fraction not soluble both acid and alkali.
   a) Fulvic   b) Humic
   c) Humin   d) All of these

B) Write True/False: 06
   1) Biogas is a renewable resource.
   2) The relation of reservation is directly connected with the demand of resources.
   3) ASTER data provides Cloud data.
   4) Spatial resolution of LISS - I is 5.8mt.
   5) All living things depend on natural resources.
   6) Soil is renewed through the processes of weathering.

Q.2 Answer the following.   16
   a) Surface temperature mapping
   b) Sampling techniques
   c) Marine ecology
   d) Deforestation

Q.3 Answer the following.   16
   a) Groundwater resources
   b) Importance of soil

Q.4 Answer the following.   16
   a) Importance of field survey
   b) Drainage characteristics

Q.5 Answer the following.   16
   a) Marine ecosystem
   b) Water pollution detection

Q.6 Answer the following.   16
   a) Soil texture and soil density
   b) Potential fishing zone mapping

Q.7 Answer the following.   16
   a) Wildlife habitat suitability mapping
   b) Bio resources

Seat No.

M.Sc. (Geoinformatics) (Semester - IV) (New/Old) (CBCS)
Examination: October/November – 2025
Applications of Global Positioning System (MSC017403)

Day & Date: Saturday, 01-11-2025　　　　　　　　　　Max. Marks: 80
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos. 1 and 2 are compulsory.
　　　　　　　　2) Attempt any three questions from Q. No.3 to Q. No.7.
　　　　　　　　3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)　　　　　　　　　　10

1) Which of the following is most suitable for real-time surveying applications?
   a) Static GPS　　　　　　　b) Rapid static
   c) Differential GPS (DGPS)　d) Stop-and-go technique

2) What does the navigation message include?
   a) Satellite clock error and health status
   b) User positions
   c) Base station data
   d) Atmospheric corrections

3) Which organization developed the GPS system?
   a) NASA
   b) U.S. Department of Defense
   c) European Space Agency
   d) Russian Federal Space Agency

4) Which GPS mode is best suited for long-duration, high-accuracy projects?
   a) Rapid static positioning　b) Stop-and-go technique
   c) Static positioning　　　　d) Kinematic positioning

5) What is the key application of GPS in mobile computing?
   a) Synchronizing devices
   b) Enabling navigation in real-time
   c) Managing network connections
   d) None of the above

6) Which GPS system provides regional coverage in India?
   a) GLONASS　　　　　　　b) NAVSTAR
   c) IRNSS　　　　　　　　d) Galileo

7) The GPS operated by Indians is _____.
   a) Compass　　　　　　　b) GLONASS
   c) Galileo　　　　　　　　d) NavIC

8) The mathematical principle involved in GPS is ____.
   a) Graphical Resection   b) Analytical Resection
   c) Trilateration   d) Triangulation

9) A device altitude can be measured using ____ satellite.
   a) Second   b) First
   c) Fourth   d) Third

10) Which positioning method is most suitable for tracking a moving vehicle?
   a) Static positioning   b) Stop-and-go technique
   c) Kinematic positioning   d) Rapid static positioning

B) Fill in the blanks OR write true/false   **06**
1) The components partitioned in GPS are known as ____.
2) WAAS, which enhances GPS accuracy, stands for ____.
3) RTK surveying provides real-time centimeter-level accuracy.
4) a) True   b) False
5) The first GPS satellite was launched in ____.
6) The accuracy of GPS can be improved by using ____.
7) Stop & Go GPS surveying collects data while the rover is continuously moving.
   a) True   b) False

Q.2 Answer the following.   **16**
  a) Note on: IRNSS&NAVSTTAR GPS.
  b) How is GPS used in mobile computing?
  c) Describe WAAS system.
  d) Describe Control segment.

Q.3 Answer the following.   **16**
  a) Define GPS and give its applications in detail.
  b) Describe in detail History of GPS.

Q.4 Answer the following.   **16**
  a) How is GPS used in siting and routing for infrastructure planning?
  b) Describe Geo positioning.

Q.5 Answer the following.   **16**
  a) Describe in detail military applications.
  b) What are the key benefits of GPS in precision farming?

Q.6 Answer the following.   **16**
  a) Space segment of GPS.
  b) Describe in detail vehicle tracking.

Q.7 Answer the following.   **16**
  a) Describe in detail navigational application.
  b) Differential GPS surveying vs static GPS surveying.