M.Sc. ENVIRONMENTAL SCIENCE
Third Semester
GEO-INFORMATICS
(MEV – 303)

Duration: 3Hrs.   **Full Marks: 70**

Part-A (Objective) =20
Part-B (Descriptive) =50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.   **Marks: 50**

Answer any *four* from *Question no.* 2 to 8
Question no. 1 is compulsory.

1. What is visual image interpretation? What are the processes involved in it? What are the keys of visual interpretation?   (2+2+6=10)

2. What is a sensor? Explain the different resolutions involved with a sensor.
                                                       (2+8=10)

3. What do you mean by spectral signature? How does it help in feature identification? Explain the physics of remote sensing with suitable diagrams.   (2+3+5=10)

4. Define photogrammatry. Discuss the history and generations of photogrammatry.
                                                       (2+8=10)

5. What are the types of aerial photography? What are the sources of geometric distortions in an aerial photograph? How can it be corrected?   (3+4+3=10)

6. What are the components of GIS? Explain the basic data structures in GIS.
                                                       (5+5=10)

7. Write short notes on (*any two*):
   a. Indian remote sensing   b. Co-ordinate systems
   c. Map design and layout   d. GAGAN

8. What do you mean by GPS? What are the segments of GPS? Write a brief note on GNSS and applications of GPS. $(1+4+5=10)$

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Duration: 20 minutes   **Marks – 20**

(PART A - Objective Type)

I. Choose the correct answer: **1×10=10**

1. The area imaged by a satellite sensor on the ground is known as
   a. Radiometry
   b. Swath
   c. Spatial Resolution
   d. Spectral Resolution

2. Healthy vegetation has the highest reflectance in
   a. Green band
   b. Red band
   c. Near Infrared band
   d. Mid Infrared band

3. The Chinese equivalent of IRNSS is
   a. GNSS
   b. GLONASS
   c. BEIDOU
   d. GALILEO

4. GLONASS is referenced to which datum?
   a. PZ-90
   b. GTRF
   c. Everest
   d. JGS

5. MODIS is a _____ resolution satellite sensor.
   a. Coarse
   b. Medium
   c. High
   d. Very high

6. LISS III is a sensor aboard the _____ satellite.
   a. Landsat
   b. IRS-P4
   c. Resourcesat
   d. RISAT

7. 8 bit data represents _____ number of image gray levels.
   a. 8
   b. 2×8
   c. 2^8
   d. None of the above

8. A minimum of _____ number of GPS satellites is required to estimate the location of a user.
   a. 3
   b. 4
   c. 5
   d. 6

9. QuantumGIS is a type of _____ software.
   a. Free
   b. Open source
   c. Proprietary
   d. Image processing

10. Which of these is not a source of input data for GIS?
    a. Plans and maps
    b. Satellite images
    c. GPS data
    d. None of the above

II. Fill in the blanks: 1×5=5

1. ....refers to the relative brightness or colour of an image.

2. Continuous grid data representing elevation information are known as.................................

3. ....involves estimating the three-dimensional coordinates of points on an object employing measurements made in two or more photographic images taken from different positions.

4. The universal datum used for remote sensing applications is............................... and projection system used is..

III. Write true or false: 1×5=5

1. Point is the basic spatial unit for a vector file.

2. Raster data usually takes up very little storage space.

3. The first India remote sensing satellite is Aryabhatta.

4. GPS accuracy increases with more number of satellites.

5. A grid is composed of rows and columns of pixels.

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