[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1730 **L**

Unique Paper Code : 2192013601

Name of the Paper : Remote Sensing and GIS

Name of the Course : **B.Sc. (Hons) Geology (NEP)**

Semester : VI

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. **All** Questions carry equal marks. Attempt any **five** questions in all.
3. Question **1** is compulsory.

Q. 1. Fill in the blanks (attempt any 9)

(a) _____ is the ratio of radiant energy reflected by target to the total incident energy.

(b) The radiation of the sun peaks in the _____ region while Earth's radiation peaks in the _____ region of the spectrum.

(c) The basic property that allows the identification of the object is called the _____ in remote sensing terminology.

(d) The _____ is defined as the surface of the Earth's equal gravity field, which is approximately the same as _____.

(e) Image _____ refers to the apparent change in the relative position of the stationary object cause by change in viewing position.

(f) In unsupervised classification, the iterative adjustment of cluster centers continues until _____ is minimized.

(g) Satellite image showing bands parallel to contours may indicate _____ beds. The ___of the strata can be determined using the V rule.

(h) The linear alignments of features on satellite images are often interpreted as _____.

(i) _____ scattering occurs when particles are approximately the same size as the wavelength of the incident radiation.

(j) An object measured 750 m on the ground will be measured _____ cm on map of 1:50.000 scale.

P.T.O.

Q. 2.

a) Explain the remote sensing process?
b) What is the electromagnetic spectrum? How do the electromagnetic radiations coming from the sun interact with the atmosphere?
c) Explain the spectral reflectance curve and highlight its significance in remote sensing.

Q. 3. Discuss how the remote sensing data can be used for the interpretation of the following:

a) Earth Surface processes
b) Geological structure
c) Lithology

Q. 4.

a) Compare the theoretical basis and decision rules of Parallelepiped and Minimum distance classifiers, highlighting their assumptions about spectral space.
b) Explain the difference between low-pass, high-pass and edge filtering methods. Which filter should be utilized to enhance lineaments or faults in satellite imagery?

Q. 5. Explain the followings:

a) Geometric distortion
b) Elements of image interpretation
c) Interpolation techniques

Q.6. Describe the various components, working principle and geological applications of the Global Navigation Satellite System (GNSS).

Q. 7.

a) Describe photogrammetry and its various applications.
b) Discuss the various applications of the Digital Elevation Models in terrain analysis.
c) Differentiate between sensor errors and atmospheric scattering errors

Q. 8. Write short notes on the followings:

a) Cylindrical map projection
b) Atmospheric windows
c) Spatial and non-spatial data
d) Digital image
e) Radiometric resolution
f) Hyperspectral sensor