M.Sc. 3rd Semester Examination, 2011

REMOTE SENSING AND GIS

(*Geoinformatics in Earth Sciences*)

PAPER—RSG-304(Gr.- A + B)

Option – 4

(Theory)

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

GROUP – A

[*Marks* : 20]

Answer any **two** questions

1. (*a*) What are earthquakes ?

(*b*) Why do earthquake occur ?

(*c*) Where do earthquakes occur ?

(*d*) How do we record earthquakes ?

(*e*) Can we predict earthquakes ? 2×5

2. Discuss very briefly the salient expression of sandstone, shale and limestone in the image and photo. $3 + 4 + 3$

3. (*a*) How does the scale of satellite image influence the visual interpretation of the image ?

(*b*) How vegetation pattern may reflect structural condition or lithological character of rock types ? $5 + 5$

4. Explain the use of aerial photographs and satellite images in lithological and structural mapping with suitable examples. 10

GROUP – B

[*Marks* : 20]

Answer any **two** questions

1. (*a*) Define disaster.

(*b*) How remote sensing could be applied in mitigation of disaster ? 3 + 7

2. (*a*) What is Convolution Filtering ?

(*b*) What do you expect when first order derivative filter is applied on an image ? Explain with diagram.

(*c*) How the DN value of center pixel will be modified when you apply Mean and Median filters on the given 3 × 3 DN value matrix ? What effect will you observe when Mean filter is applied on an image ? 2 + 4 + 4

8	9	7
1	2	5
12	15	13

3. (*a*) Name six major triggers of landslides.

(*b*) What controls the level of ground shaking due to earthquake ?

(*c*) 'Seismicity map shows that India can be divided into two broad seismic zones' – name them.

(*d*) What is the average rate of convergence of Indian and Eurasian plates derived from systematic DGPS observations ?

(*e*) Name ten interpretation elements to recognize certain object in imagery. 2 + 2 + 2 + 2 + 2

4. (*a*) What is natural events and how does it differ from natural hazards ?

(*b*) Discuss briefly about the preparation of hazard zonation maps using Remote Sensing and GIS. 2 + 2 + 6