M.Sc. 1st Semester Examination, 2013

REMOTE SENSING AND GIS

PAPER–RSG-102 (Gr.-A + B)

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. Briefly discuss the spectral sensitivity of a colour film. State the importance of spectral filter in colour film processing. What do you mean by the film resolution? 5 + 3 + 2

2. Discuss the processing of colour IR film. What do you mean by the HIS space in colorimetry ? What is film radiometric resolution? 5 + 3 + 2

3. How does the geometry of characteristic curve affect the film contrast ?A film in a camera with 40 mm focal length lens is properly exposed with a lens opening diameter of 5 mm and an exposure time of 1/125 sec. If the lens opening is increased to 10 mm and the scene brightness does not changed. What exposure time should be used to maintain proper exposure ? What is *f*-stop ? 3 + 5 + 2

4. Elaborate the basic components of conventional aerial camera with suitable sketch and with special reference to altitude. 10

GROUP – B

[*Marks* : 20]

Answer any *two* questions

1. How scale of an aerial photograph is related with flying height and focal length of the camera ? In aerial photography why more than 50% overlap is necessary in case of end lap, where as 30% is sufficient for side lap. How length of the airbase can be measured from a stereopair ? 5 + 2 + 3

2. Define photogrammetry ? What are the various requirements for stereoscopic vision ? With neat diagram, derive the parallax height equation on a level terrain. 1 + 2 + 7

3. Illustrate the relief displacement of a tower in a vertical photograph and show how it is related to (*i*) flying height of the aircraft (*ii*) radial distance from the principal point (*iii*) actual height of the tower.
Solve the numerical problem :
A tower has been photographed two times over the same principal point with flying height difference of 100 m. In first photograph (P_1) $d = 2{\cdot}13$ mm and $r = 63{\cdot}43$ mm and in the second photograph (P_2) $d = 1{\cdot}987$ mm. Considering both the photographs are of same scale, find out the height of the tower.
[d = displacement of the top of the tower from its base and r = radial distance of the top of the tower from principle point of the photograph]. 6 + 4

4. Define Orthophoto. What is differential rectification ? What is the end result of such process ? 2 + 3 + 5
