

M.Sc. 1st Semester Examination, 2011

REMOTE SENSING AND GIS

PAPER—RSG-102(Gr. - A + B)

(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

(*Photogrammetry Basics*)

[*Marks : 20*]

Answer any **two** questions

1. (a) Explain the procedure of colour formation using colour film with special reference to dye generation.

(Turn Over)

(b) (i) Discuss the process of FCC formation colour infrared (CIR) film.

(ii) What do you mean by radiometric resolution of a film ? 5 + 3 + 2

2. (a) State the relation between film density and film speed.

(b) Problem : Let the DN of a Blue band data is 64, Green band data is 43, and Red band data is 50. Calculate the saturation value of that particular data set.

(c) Discuss briefly the spectral sensitivity of a colour film. 3 + 3 + 4

3. (a) A film is properly exposed when lens aperture setting is $f/8$ and exposure time $1/125$ Sec-Now, if the lens aperture setting is changes to $f/4$ and the scene brightness does not change, then what should be the exposure time to yield proper film exposure.

(b) Briefly discuss on colour triangle. 4 + 6

4. (a) Define "exposure station", "optical axis", "photobase" and "isocentre".

- (b) How shape, size and association help in delineation of different linear features of airphoto ?
- (c) Discuss briefly the opposing role of shadow in image interpretation. 6 + 2 + 2

GROUP – B

[Marks : 20]

Answer any two questions

1. Classify aerial photography based on orientation of the camera axis and the film used. In aerial photography why more than 50% overlap is necessary in case of endlap. Whereas only 30% is enough for sidelap. How length of the air base can be measured from a stereopair ? 3 + 3 + 4
2. How height can be determined by parallax formula ? What are the aspects influencing parallax ? The parallax difference between top and bottom of a tree is 1.37 mm and the air base is 92.3 mm. What is the height of the tree, if the flying height above the datum plane is 12,000 ft ? 5 + 2 + 3

3. Write down the geometric aspects of the task flight planning. Develop a flight plan for a circular island with a radius of 7 km. The focal length of the camera is 152.4 mm, desired photoscale is 1 : 25,000, and nominal endlap and sidelap are 60% and 30% respectively and average terrain height is 30 m above sea level. 10
4. Define 'central perspective projection', 'X-tilt, Y-tilt and crab'; conjugate principal point and 'isocentre'. A monument 185.5 ft tall, casts shadow onto level ground that is measured 0.286 inch on the photograph. The scale of the photograph is 1: 6000. Calculate the height of a tower casting 0.173 inch shadow on the same photograph. 10