Printed Pages—3   **CE402**

(Following Paper ID and Roll No. to be filled in your Answer Book)
PAPER ID : 100402 **Roll No.** [ ][ ][ ][ ][ ][ ][ ][ ][ ]

B.Tech.

(SEM. IV) THEORY EXAMINATION 2013-14

GEOINFORMATICS

Time : 3 Hours   *Total Marks : 100*

Note :– Attempt **all** Sections.

SECTION–A

1. Attempt **all** parts.   **(10×2=20)**

    (a) What do you mean by Relief Displacement ?

    (b) What is Photogrammetry ?

    (c) List various Indian Satellites.

    (d) What is an ideal remote sensing system ?

    (e) What is an image histogram ?

    (f) What are the different satellite image formats ?

    (g) What do you mean by raster and vector data formats ?

    (h) What are components of GIS ?

    (i) What do you mean by GPS ?

    (j) What is the minimum numbers of satellites requried for obtaining a GPS signal ? Why ?

SECTION–B

2. Attempt any **five** out of the following :   (5×6=30)

    (a) What do you mean by tilt distortion ? Derive an expression for scale of a tilted photograph.

    (b) What are the different sensors present on any of the Indian Remote Sensing Satellites ? Explain in brief.

    (c) What do you mean by image classification ? How accuracy assessment of a classified image is done ?

    (d) Explain spatial data modelling and data output in a GIS database.

    (e) Explain GPS space, control and user segment.

    (f) An image of a hill top is 87.5 mm from the centre of a photograph. The elevation of the hill is 665 m and the flight attitude is 4660 m from the same datum. How much is the image displaced due to elevation of the hill ?

SECTION–C

Note :– Attempt any **five** out of the following :   (5×10=50)

3. The following data is given for flight planning :

    (i)   Format = 18 × 18 cm

    (ii)   Focal length = 21 cm

    (iii) Scale = 1 : 12,000

    (iv)   Longitudinal overlap = 60%

    (v)   Lateral overlap = 30%

    (vi)   East-West terrain length = 450 km

    (vii) North-South terrain width = 360 km

    (viii) Flight direction = East to West

    (ix)   Ground speed of aircraft = 285 km/hr.

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Calculate the following :

(1) Elevation of the aircraft

(2) Exposure interval

(3) Number of photographs.

4. What are spectral reflectance curves ? Describe the EMR interaction with water, soil and vegetable.

5. Enumerate the uses of Remote Sensing in Civil Engineering (specifically in Water Resources and Urban Planning).

6. What do you understand by the term GIS ? Describe the concept of GIS in detail. How basic entities are represented in raster and vector data models.

7. Explain in brief GPS satellite signals and recievers.

8. Explain various geometric and radiometric corrections to satellite data :

9. Following photo coordinates are given :

Ground Point	Image Point	Photo Coordinates	
		Left photo, x (cm)	Right photo, x' (cm)
A	a	+7.025	−1.945
B	b	+10.287	+1.109
C	c	−0.260	−8.965
D	d	+5.215	−3.299

(a) Calculate parallaxes of points A, B, C and D.

(b) Calculate the elevations of points A, B, C and D. If the camera focal length is 20 cm, flying height above datum is 4000 m and their air base is 2000 m.

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