

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0022

Roll No.

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**B.Tech.**

(SEM. IV ) THEORY EXAMINATION 2010-11

**GEOINFORMATICS**

Time : 3 Hours

Total Marks : 100

**Note :** Attempt **all** questions.

1. Attempt any **four** parts of the following : **(5×4=20)**

(a) Define and explain following terms in a vertical photograph :

(i) Exposure station

(ii) Principle point

(iii) Isocenter

(iv) Principal line

(b) Explain with reference to aerial photographs, what is meant by end overlap and side overlap and why they are provided ?

(c) A tower was photographed from an elevation of 800 m above m.s.l. The radial distance of the top and bottom of the towers from the principal point is 121.3 mm and 90.7 mm respectively. If the bottom of tower has elevation of 280 m. Determine the height of the tower above its bottom.

- (d) The scale of an aerial photograph is  $Km = 90$  m. The photograph size is  $20\text{ cm} \times 20\text{ cm}$ . Determine the number of photographs required to cover an area of  $7.4\text{ Km} \times 12.5\text{ Km}$ , if the longitudinal overlap is 60% and the side lap is 30%.
- (e) Explain the principle of stereoscopic depth perception.
- (f) Determine overage scale and detum scale for a vertical photograph of an area where terrain elevations vary from 200 m to 500 m. The flying height above mean sea level is 4500 m and focal length of the camera is 150 mm.

2. Attempt any **two** parts of the following : (2×10=20)

- (a) Draw a neat diagram of electromagnetic spectrum showing its various regions of particular interest in remote sensing.
- (b) Differentiate the following :
- (i) Geostationary and sun-synchronous satellites
  - (ii) Ideal and Real remote sensing systems.
- (c) Explain multiconcept in remote sensing.

3. Attempt any **two** parts of the following : (2×10=20)

- (a) What do you mean by image enhancement ? Explain Linear Contrast enhancement in detail.
- (b) Describe in brief the radiometric and geometric corrections which are required for rectification of satellite image.

- (c) A satellite image of 2000 pixels is classified and the results are as follows :

Actual Class	Predicated Class			
	Urban	Crop	Water	Forest
Urban	520	20	4	0
Crop	12	623	0	25
Water	3	5	129	0
Forest	15	33	10	740

Determine overall accuracy, error of omission and error of commission for each class.

4. Attempt any **two** parts of the following : **(2×10=20)**
- What is GIS and its components ? Explain.
  - What are three basic spatial entities and how are these used to portray geographical features on paper maps and is GIS ?
  - Describe advantages and disadvantages of vector data structure and Raster data structure.
5. Write short notes on any **two** parts of the following : **(2×10=20)**
- Differential G.P.S. and its advantages
  - Working of G.P.S.
  - Applications of G.P.S.