# **GUJARAT TECHNOLOGICAL UNIVERSITY**

## **BE - SEMESTER-VII • EXAMINATION - WINTER 2013**

Subject Code: 170606

Date: 03/12/2013

Subject Name: Applications of Geo-informatics in Civil Engineering Time: 10:30 TO 01:00 **Total Marks: 70** 

**Instructions:** 

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Define: Remote sensing. Differentiate between active and passive remote Q.1 **(a)** 07 sensing. List the applications of multi date remote sensing images. 07
  - Write benefits of GIS and Discuss 4Ms of GIS. **(b)**
- Q.2 (a) Discuss types of photogrammetry and types of aerial photographs.
  - What is the scale of a vertical aerial photograph on which a section line 07 **(b)** measure 150.62 mm? The length of the section line on the map of the area is 10.69 cm and scale of the map is 1/15000.

### OR

(b) The scale of an aerial photograph is 1 cm = 100 m and photograph size is 15 cm x 15 cm. Determine the number of photographs required to cover an area of 15 km x 15 km if longitudinal lap is 60% and side lap is 30%.

### OR

- (a) Which wavelength regions are useful for remote sensing? Why? Specify 07 **Q.3** different type of remote sensing carried out in different wavelength regions.
  - What is spectral reflectance curve and what are its utilities in remote sensing. **(b)** 07 Draw spectral reflectance curves for vegetation, water and bare soil.

#### OR

- (a) Discuss any one high resolution sensor with its data products and applications. Q.3 07
  - Give order of elements of photo interpretation. State possible use of photo 07 **(b)** interpretation keys to differentiate between the following objects in the photographic products: i) Cloud and Snow,

ii) Railway and Roadway, iii) Canal and River.

- (a) Discuss procedure and importance of training data selection and explain **Q.4** 07 Maximum Likelihood Classification (MLC) for remote sensing data.
  - **(b**) Discuss Contrast enhancement and Principal component analysis for remote 07 sensing images.

#### OR

- Enlist various spatial and attribute data that need to be collected for GIS 07 0.4 **(a)** analysis for Disaster assessment. Explain how each parameter useful in doing the disaster assessment.
  - (b) List open source and commercially available GIS software's. List major 07 software components and its sub-components.
- What do you understand by spatial, thematic and temporal dimension of 07 0.5 (a) thematic data? What are the things can be represented by point, line and polygon in GIS.
  - (b) What do you understand by geospatial analysis? Why is it required? Give 07 classification of geospatial analysis.

OR

РТО

07

- (a) Discuss: Differential GPS. Explain why higher accuracy in positioning is Q.5 07 achieved in DGPS.
  - (b) Explain applications of Network Tracing, Network Routing and Network 07 Allocation in Transportation studies using GIS.

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