

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.

- Q.1** (a) Define: Remote sensing. Differentiate between active and passive remote sensing. List the applications of multi date remote sensing images. **07**
- (b) Write benefits of GIS and Discuss 4Ms of GIS. **07**
- Q.2** (a) Discuss types of photogrammetry and types of aerial photographs. **07**
- (b) What is the scale of a vertical aerial photograph on which a section line 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. **07**
- 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%. **07**
- OR**
- Q.3** (a) Which wavelength regions are useful for remote sensing? Why? Specify different type of remote sensing carried out in different wavelength regions. **07**
- (b) What is spectral reflectance curve and what are its utilities in remote sensing. Draw spectral reflectance curves for vegetation, water and bare soil. **07**
- OR**
- Q.3** (a) Discuss any one high resolution sensor with its data products and applications. **07**
- (b) Give order of elements of photo interpretation. State possible use of photo interpretation keys to differentiate between the following objects in the photographic products: i) Cloud and Snow, **07**
- ii) Railway and Roadway, iii) Canal and River.
- Q.4** (a) Discuss procedure and importance of training data selection and explain Maximum Likelihood Classification (MLC) for remote sensing data. **07**
- (b) Discuss Contrast enhancement and Principal component analysis for remote sensing images. **07**
- OR**
- Q.4** (a) Enlist various spatial and attribute data that need to be collected for GIS analysis for Disaster assessment. Explain how each parameter useful in doing the disaster assessment. **07**
- (b) List open source and commercially available GIS software's. List major software components and its sub-components. **07**
- Q.5** (a) What do you understand by spatial, thematic and temporal dimension of thematic data? What are the things can be represented by point, line and polygon in GIS. **07**
- (b) What do you understand by geospatial analysis? Why is it required? Give classification of geospatial analysis. **07**
- OR**
- Q.5** (a) Discuss: Differential GPS. Explain why higher accuracy in positioning is achieved in DGPS. **07**
- (b) Explain applications of Network Tracing, Network Routing and Network Allocation in Transportation studies using GIS. **07**
- PTO**
