

GUJARAT TECHNOLOGICAL UNIVERSITY**B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012****Subject code: 170606****Date: 28/12/2012****Subject Name: Applications of Geoinformatics in Civil Engineering****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is remote sensing? Discuss multi-concept of remote sensing and briefly discuss application of remote sensing in water pollution monitoring. **07**
- (b) Define GIS and discuss various components of GIS. **04**
- (c) What is GPS? List applications of GPS in Civil Engineering. **03**
- Q.2** (a) What is photogrammetric surveying? Discuss types of photogrammetry and types of aerial photographs. **07**
- (b) The ground length of a line AB is known to be 545 m and the elevations of A and B are respectively 500 m and 300 m above MSL. On a vertical photograph taken with a camera having focal length of 20 cm include the images *a* and *b* of these points, and their photographic co-ordinates are: ($x_a = +2.65$ cm, $y_a = +1.36$ cm); ($x_b = -1.92$ cm, $y_b = +3.65$ cm). The distance *ab* scaled directly from the photograph is 5.112 cm. Compute the flying height above MSL. **07**
- OR**
- (b) State reasons for overlaps in photogrammetry and list factors affecting selection of flying altitude. Also briefly discuss flight planning for aerial photogrammetry. **07**
- Q.3** (a) Discuss Active and Passive remote sensing system. Also discuss IRS series development for remote sensing in India. **07**
- (b) Explain energy interaction with the Earth's surface. Discuss spectral reflectance curves for vegetation, bare soil and water Land Use/Land Cover classes. **07**
- OR**
- Q.3** (a) Discuss applications and importance of High resolution and SeaWiFS sensors. **07**
- (b) Differentiate between Pixel and Mixed pixel and Explain various elements for visual image interpretation. **07**
- Q.4** (a) Explain importance of contrast enhancement and discuss Min-Max. Contrast enhancement technique for remote sensing data. **07**
- (b) Discuss any one algorithm of supervised classification from the followings : **07**
- i) Minimum Distance to Means,
 - ii) Parallelepiped and
 - iii) Maximum Likelihood Classification
- Also discuss accuracy assessment for remotely sensed image classification.
- OR**
- Q.4** (a) Discuss ISODATA clustering algorithm and differentiate between supervised and unsupervised classification. **07**
- Q.4** (b) Discuss various input data and types of output products in GIS. **07**
- Q.5** (a) Discuss spatial data structures and modeling surfaces in GIS. **07**
- (b) Discuss Network analysis and digital terrain visualization in GIS. **07**
- OR**
- Q.5** (a) Discuss the terms Land Use (LU) and Land Cover (LC) and Discuss application of Geoinformatics in LU/LC mapping. **07**
- (b) Enlists various types of Natural Disasters and state application of Geoinformatics in assessment of damage occurred due to disasters. **07**
