Seat No.: _____ Enrolment No._____

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 : i) Minimum Distance to Means, ii) Parallelepiped and iii) Maximum Likelihood Classification Also discuss accuracy assessment for remotely sensed image classification.	**07**
		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**

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