Seat No.: _____ Enrolment No._____

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%.	
		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, ii) Railway and Roadway, iii) Canal and River.	**07**
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	**PTO**
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**

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