Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 170606 **Date: 29/04/2017**

Subject Name: Application of Geoinformatics in Civil Engineering (Department Elective-I)

Time: 02:30 PM to 05:00 PM **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)**	What is remote sensing? Show diagrammatically and discuss an ideal remote sensing system.	**07**
	(b)	What is a Geographical Information System? Explain the various components of a Geographical Information System.	**07**
Q.2	**(a)**	The ground length of line AB is known to be 545 m and the elevations of A and B are 500 m and 300 m above MSL respectively. 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 photogrammetric co-ordinates are: (Xa = +2.65 cm, Ya = + 1.36 cm); (Xb = -1.92 cm, Yb = +3.65 cm). The distance ab scaled directly from the photograph is 5.112 cm. Compute the flying height above MSL.	**07**
	(b)	Discuss types of photogrammetry and types of aerial photographs.	**07**
		OR	
	(b)	Discuss flight planning for Aerial photogrammetry.	**07**
Q.3	**(a)**	Discuss multi concept of remote sensing.	**07**
	(b)	Discuss energy interaction with the earth's surface and also discuss spectral reflectance curves for vegetation, water and bare soil.	**07**
		OR	
Q.3	**(a)**	Discuss remote sensing data products.	**07**
	(b)	Discuss spatial, spectral, temporal and radiometric resolutions in remote sensing.	**07**
Q.4	**(a)**	List various contrast enhancement and filtering techniques. Discuss any one contrast enhancement and filtering technique.	**07**
	(b)	List various Unsupervised image classification techniques used in remote sensing and discuss any one in detail.	**07**
		OR	
Q.4	**(a)**	List various Supervised image classification techniques used in remote sensing and discuss any one in detail.	**07**
	(b)	Discuss various input data and types of output products in GIS.	**07**
Q.5	**(a)**	Differentiate between vector based and raster based GIS with suitable examples.	**07**
	(b)	List the commercially available and open source GIS sofwares and explain any one in detail.	**07**

OR

Q.5	**(a)**	What is GPS? Discuss three segments of GPS.	**07**
	(b)	What is buffering and overlay analysis in GIS? Discuss use of buffering and/or overlay analysis in flood plain mapping and transportation studies.	**07**

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