Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. VIIth Semester–Examination – Nov- 2011
Subject code: 170606
Subject Name: Application of Geoinformatics in Civil Engineering

Date:29/11/2011   **Time: 10:30 am – 01:00 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)**	Explain basic concept and principle of remote sensing.	07
	(b)	Write in detail the distinguishing features of photograph and RS image.	07

Q.2	**(a)**	Explain optical and infrared sensors.	07
	(b)	What are the techniques available for 3D viewing in digital photogrammetry?	07

OR

	(b)	A vertical photograph was taken at a flying height of 5000 m above sea level using camera with a 152 mm focal length lens. Determine the photo scale at points A & B, which lie at elevations of 1200 and 1960 m.	07

Q.3	**(a)**	Write comparative analysis of the following. i) Panchromatic images ii) Multi-spectral images iii) Hyper-spectral images	07
	(b)	Write the functions of a GPS system. Write its utility in civil engineering applications.	07

OR

Q.3	**(a)**	Write brief notes on i) LISS ii) WiFS iii) SAR iv) IRS	07
	(b)	Define DEM and write its applications. Mention the importance of interpolation techniques in generation of DEM.	07

Q.4	**(a)**	Explain GIS Data types (i) Spatial data (ii) Attribute Data.	07
	(b)	Write details of the software's GeoMedia **or** ArcMap used in the field of GIS.	07

OR

Q.4	**(a)**	Explain (i) Functions of GIS (ii) Advantages of GIS.	07
	(b)	Write details of the software's ENVI **or** ERDAS used in the field of RS	07

Q.5	**(a)**	How GIS can play a role of decision support system in civil engineering?	07
	(b)	Write application of geo-informatics in disaster management.	07

OR

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Q.5 **(a)** Explain true color composites and false color composites. How it help in image analysis? **07**

(b) Carry out the raster data compression for the following raster grid (figure 1) using 'value point encoding' method. **07**

Full Raster Encoding **COLUMNS**									
Rows	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
0	A	A	A	A	A	A	A	A	A	A
1	A	A	A	A	A	A	A	A	A	A
2	A	A	A	A	B	B	B	B	B	B
3	A	A	A	B	B	B	B	B	B	B
4	D	D	D	D	B	B	B	B	B	B
5	D	D	D	D	D	B	B	B	B	B
6	D	D	D	D	C	C	C	C	C	C
7	D	D	D	D	C	C	C	C	C	C
8	D	D	D	D	C	C	C	C	C	C
9	D	D	D	D	C	C	C	C	C	C

Figure 1 Raster grid

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