Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2013

Subject code: 732701 Date: 28-11-2013

Subject Name: Smart Antennas for Wireless Communication

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)**	Draw basic component of smart antenna system and explain drawback and cost factor for designing of smart antenna.	**06**
	(b)	Find the beam area (exact and approximate) if the antenna has a field pattern given by : $E(\theta)= \cos^2 \theta$ for $0^\circ < \theta < 90^\circ$. Also draw the field pattern.	**08**
Q.2	**(a)**	Define the term smart Antenna ? How can we define level of intelligence for smart antenna ?	**07**
	(b)	Explain different types of polarization with neat diagram.	**07**
		OR	
	(b)	Explain reciprocity theorem for an antenna.	**07**
Q.3	**(a)**	Compare switched beam forming and fixed beam forming for smart antenna system	**07**
	(b)	Write short note on RAKE Receiver.	**07**
		OR	
Q.3	**(a)**	Explain adaptive array system with neat sketch.	**07**
	(b)	Explain Reverse Channel Performance of Multi-cell Systems with Spatial Filtering at the Base Station.	**07**
Q.4	**(a)**	Explain the increasing of range and capacity using smart antenna.	**07**
	(b)	Explain Cross correlation method for TDOA Estimation.	**07**
		OR	
Q.4	**(a)**	Draw architecture of coherent combining array Receiver for CDMA system and Explain it.	**07**
	(b)	Explain General Model for TDOA Estimation.	**07**
Q.5	**(a)**	Explain: (i) True ranging PL Systems, (ii) Elliptical PL Systems.	**07**
	(b)	Explain Spatial Diversity Combining and Sectoring for Smart Antennas.	**07**
		OR	
Q.5	**(a)**	Explain: (i) Hyperbolic PL Systems, (ii) Direction finding PL System.	**07**
	(b)	Write short note on Wideband Smart antenna System.	**07**

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