Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 734401 **Date: 28-11-2013**

Subject Name: Software Radio Design

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 model of "Practical Software Radio". Explain characteristics and benefits of "Software Radio"	**07**
	(b)	What are the characteristics of RF Receiver Front End topologies? Explain any one topology in detail with necessary sketch.	**07**
Q.2	**(a)**	Explain the "Noise and Distortion" as a limiting factor in the RF circuit Performance with necessary equations.	**07**
	(b)	What is "Multi Rate Signal Processing"? Explain the process of "Decimation" with necessary equations.	**07**
		OR	
	(b)	With suitable diagrams and necessary equations explain the process of "Poly phase Decimation and Interpolations"	**07**
Q.3	**(a)**	Compare "Direct Digital Synthesis with Analog Signal Synthesis"	**07**
	(b)	Write Short note on: Beam forming.	**07**
		OR	
Q.3	**(a)**	Explain "Hybrid DDS-PLL" Systems.	**07**
	(b)	Write Short note on: Fully Adaptive Array.	**07**
Q.4	**(a)**	What is Principal feature of "Harvard Architecture"? Explain it with Timing Diagram. How it is differ from Non-Harvard Architecture.	**07**
	(b)	Explain Case Study in Software Radio Design: SPEAKeasy I	**07**
		OR	
Q.4	**(a)**	What do you understand by the term "Pipelining" and explain "Three stage Pipelining with timing diagram.	**07**
	(b)	Explain Case Study in Software Radio Design: SPEAKeasy II	**07**
Q.5	**(a)**	Explain "Sources of Spurious signals" in DDS system with necessary diagram.	**07**
	(b)	Write Short note on: "Timing Recovery in First Generation Digital Receiver".	**07**
		OR	
Q.5	**(a)**	Write Short note on: Diversity and Space-Time Equalization.	**07**
	(b)	Compare: DSPs, FPGAs and ASICs.	**07**

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