Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER III (NEW) – EXAMINATION – WINTER-2016

Subject Code: 2734401 **Date:25/10/2016**

Subject Name: Software Radio Design

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)**	Justify the statement: "For software defined radio the dynamic range is a principle challenge of receiver design".	**07**
	(b)	Define Software Radio. Explain basic model of Software Radio.	**07**
Q.2	**(a)**	For software defined radio what is SFDR? What it signifies? How it can be improved	**07**
	(b)	Describe various hardware and software associated with software radio design.	**07**
		OR	
	(b)	Discuss cognitive radio with its application in communication.	**07**
Q.3	**(a)**	Write a short note on CIC filters.	**07**
	(b)	Explain the decimation process with necessary sketches and derivations.	**07**
		OR	
Q.3	**(a)**	How the sample rate conversion with arbitrary factor is obtained in digital down conversion?	**07**
	(b)	Discuss diversity combining techniques with respect to smart antenna algorithms.	**07**
Q.4	**(a)**	Describe the pulsed output approach for direct digital synthesis. What are its disadvantages?	**07**
	(b)	With reference to direct digital synthesis, discuss Sine-Phase Difference algorithm approach.	**07**
		OR	
Q.4	**(a)**	List and explain various benefits of smart antenna.	**07**
	(b)	Describe structures for beam forming systems.	**07**
Q.5	**(a)**	List various applications of direct digital synthesis. Discuss one of them.	**07**
	(b)	Discuss the role of DSP, ASIC and FPGA platform, specific to software radio design.	**07**
		OR	
Q.5	**(a)**	As a case study of Software Defined Radio, write a short note on "SPEAKeasy Phase-II".	**07**
	(b)	Write a short note on 'Wireless Information Transfer System'	**07**

****