Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER– II(New course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 2724407 **Date: 11/12/2015**

Subject Name: VLSI in Wireless Communication Systems

Time:2:30 pm to 5:00 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 heterodyne architecture of RF receiver and also explain the functions of Band selection filter, Image rejection filter and channel filter	**07**
	(b)	For noisy two port networks of K- stages, each with noise derive equation for Noise figure	**07**
Q.2	**(a)**	Write short note on types of circuit noise and also mention the effect of these noise on over all wireless communication channel.	**07**
	(b)	Explain the operations of BPSK modulator and demodulator with block diagrams.	**07**
		OR	
	(b)	Explain the operations of QPSK modulator and demodulator with block diagrams.	**07**
Q.3	**(a)**	Derive the equation of path loss for wireless communication channel.	**07**
	(b)	Explain the multipath fading in details	**07**
		OR	
Q.3	**(a)**	Describe short note on additive white Gaussian noise	**07**
	(b)	Discuss for receiver design, the effects of non idealities into the corresponding design parameters.	**07**
Q.4	**(a)**	Describe the operation of Ring oscillator using circuit diagram	**07**
	(b)	Draw input bias scheme for Wideband LNA & explain in detail	**07**
		OR	
Q.4	**(a)**	Explain with circuit diagram PLL based frequency synthesizer.	**07**
	(b)	Compare wide band LNA and Narrow band LNA	**07**

Q.5	**(a)**	Draw generalized LNA topology and its equivalent lumped parameters of an amplifier and explain its working	**07**
	(b)	Mention in detail : Design steps of Sigma Delta Modulator	**07**

OR

Q.5	**(a)**	Draw the circuit employed to match the load with signal source in an LNA and derive the expression for Zin and comment on it.	**07**
	(b)	Explain the operations of FSK modulator and demodulator with block diagrams.	**07**

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