Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 714102N **Date: 02-12-2014**

Subject Name: Modern Digital and 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)**	State the theoretical properties of probability distribution function and briefly explain Poisson distribution.	**07**
	(b)	Write short note on Differential Pulse Code Modulation.	**07**
Q.2	**(a)**		
	1.	Briefly explain the concept of time division multiplexing with reference to communication systems.	**04**
	2.	State the comparisons between circuit switching network and packet switching network with reference to communication systems.	**03**
	(b)	Write short note on 3G standards with reference to cellular communication systems.	**07**
		OR	
	(b)	Write short note on Wireless Personal Area Networking (WPAN) standards.	**07**
Q.3	**(a)**	If 50W is applied to unity gain antenna with 900MHz carrier frequency, find the received power in dBm at a free space distance of 100m from the antenna, Assume unity gain for transmitting/ receiver antenna.	**07**
	(b)	Briefly explain small scale fading in wireless communication system.	**07**
		OR	
Q.3	**(a)**	Write short note on Walfisch-Ikegami (WI)Model.	**07**
	(b)	Briefly explain various diversity techniques with reference to wireless communication systems.	**07**
Q.4	**(a)**	Briefly explain the terms (1) Power efficiency (2) Bandwidth efficiency with reference to digital modulation schemes.	**07**
	(b)	Write short note on QPSK digital modulation technique.	**07**
		OR	
Q.4	**(a)**		
	1.	State the desirable properties of efficient digital modulation schemes.	**04**
	2.	State the advantages of digital modulation scheme over analog modulation scheme.	**03**
	(b)	Write short note on GMSK modulation technique.	**07**
Q.5	**(a)**	Briefly explain systematic cyclic codes with suitable example.	**07**
	(b)	Write short note on Direct sequence spread spectrum(DS-SS) system	**07**
		OR	
Q.5	**(a)**	Briefly explain Huffman coding with suitable example.	**07**
	(b)	Write short note on Frequency hopped spread spectrum (FH-SS) system.	**07**