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## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## **BE - SEMESTER-VII • EXAMINATION - SUMMER 2015**

Subject Code: 171004 Subject Name: Wireless Communication Time:02.30pm-05.00pm Instructions:			Date:04/05/2015  Total Marks: 70	
		02.30pm-05.00pm Total Marks: 7		
	1 2	<ol> <li>Attempt all questions.</li> <li>Make suitable assumptions wherever necessary.</li> <li>Figures to the right indicate full marks.</li> </ol>		
Q.1	(a)	How co-channel interference and system capacity are related?	07	
	(b)	If 20 MHz of total spectrum is allocated for a duplex wireless cellular system and each simplex channel has 25 kHz RF bandwidth, find:  (i) The number of duplex channels  (ii) The total number of channels per cell site ,if N=4 cell reuse is used	07	
Q.2	(a)	If a transmitter produces 50 W of power, express the transmit power in units of (i) dBm and (ii) dBW. If 50 W is applied to a unity gain antenna with a 900 MHz carrier frequency, find the received power in dBm at a free space distance of 100 m from the antenna. What is $Pr(10 \text{ km})$ ? Assume unity gain for the receiver antenna.	07	
	<b>(b)</b>	Define and explain mean excess delay, rms delay spread and excess delay spread.	07	
	<b>(b)</b>	<b>OR</b> Explain coherence time and coherence bandwidth.	07	
Q.3		Which are various multiple access schemes used in wireless communications? Explain any one technique of small-scale multipath measurements.	07 07	
		OR		
Q.3	(a)	Briefly explain GSM logical channels.	07	
	<b>(b)</b>	With the help of timing parameters, explain frame structure for GSM.	07	
Q.4	(a)	How does GSM radio subsystem work?	07	
	<b>(b)</b>	Give differences between HLR and VLR functions.	07	
Q.4	(a)	OR Which are commonly used wireless propagation models? How do they differ?	07	
	<b>(b)</b>	How do diversity techniques help in improving SNR?	07	
Q.5	(a) (b)	Discuss the concept of spread spectrum. Explain how power control is achieved in CDMA.	07 07	

Q.5	(a)	With the help of a neat sketch, describe GPRS architecture.	07
	<b>(b)</b>	Compare Wi-Fi and Wi-MAX system parameters.	07

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