Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME- SEMESTER II– EXAMINATION – SUMMER 2015

Subject Code: 2722706 **Date: 28/05/2015**

Subject Name: Wireless Signal Propagation & Fading

Time: 2:30 PM – 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)**	Explain Okumura and Hata propagation path loss model in details.	**07**
	(b)	Explain time varying channel impulse response with necessary equations.	**07**
Q.2	**(a)**	Explain signal fading statistics with lognormal distribution.	**07**
	(b)	Explain level crossing rate and average duration of fades.	**07**
		OR	
	(b)	Explain power delay profile and coherence bandwidth with required equations.	**07**
Q.3	**(a)**	Explain capacity of flat-fading channels with channel distribution information (CDI) and receiver channel side information (CSI).	**07**
	(b)	Explain capacity of a time-invariant frequency-selective fading channel in details.	**07**
		OR	
Q.3	**(a)**	Explain capacity of a time-varying frequency-selective fading channel in details.	**07**
	(b)	Explain variable rate-variable power modulation using MQAM signal constellation.	**07**
Q.4	**(a)**	Explain diversity system model and realization of independent fading paths.	**07**
	(b)	Explain linear equalizers in details.	**07**
		OR	
Q.4	**(a)**	Classified the equalizer types. Also explain folded spectrum and ISI free transmission.	**07**
	(b)	Explain OFDM in details.	**07**
Q.5	**(a)**	Explain discrete implementation of OFDM and fading across subcarriers.	**07**
	(b)	Explain channel capacity, beamforming and diversity gain of the MIMO channel.	**07**
		OR	
Q.5	**(a)**	Discuss challenges in multicarrier modulation.	**07**
	(b)	Explain adaptive equalizers in details.	**07**

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