

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2171004

Date:16/05/2019

Subject Name:Wireless Communication

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.

		MARKS
Q.1	(a) Define: (1) Control Channel (2) Mobile Switching Center (3) Full Duplex Systems	03
	(b) With figure explain Frequency Reuse concept in detail. Define cluster size and write the equation for system capacity.	04
	(c) Explain handoff scenario at cell boundary with figure.	07
Q.2	(a) Describe co channel interference and adjacent channel interference.	03
	(b) Explain the concept of trunking and grade of service .	04
	(c) Explain sectoring to improve coverage and capacity of a system.	07
	OR	
	(c) Explain :(1) Cell splitting (2) Microcell Zone concept To improve coverage and capacity of a system.	07
Q.3	(a) Explain three basic propagation mechanisms.	03
	(b) Explain the factors influencing small scale fading.	04
	(c) Explain ground reflection (Two-ray) Model with figure and derive the equation for Electric Field E_{TOTAL} .	07
	OR	
Q.3	(a) Explain Doppler Shift with equation.	03
	(b) Explain small scale fading(based on time delay spread)	04
	(c) Explain Spread spectrum channel impulse response measurement system with diagram.	07
Q.4	(a) Explain Frequency Division Multiple Access(FDMA) in wireless communication with figure.	03
	(b) Explain small scale fading(based on Doppler spread)	04
	(c) Explain direct RF channel impulse response measurement system with diagram.	07
	OR	
Q.4	(a) If a total of 33 MHz of band width is allocated to a particular FDD cellular telephone system which uses two 25 KHz simplex channels to provide full duplex voice and control channels, compute the number of channel available per cell if a system uses: (1) four cell reuse (2) seven cell reuse and (3) 12 cell reuse	03
	(b) Explain Time Division Multiple Access (TDMA) in wireless communication with figure.	04
	(c) Draw GSM system architecture and explain its working principle in detail.	07
Q.5	(a) Calculate the Brewster angle for a wave impinging on a ground having a permittivity of $\epsilon_r = 4$	03

- (b) Explain Code Division Multiple Access (CDMA) in wireless communication with figure. **04**
- (c) Consider a transmitter which radiates a sinusoidal carrier frequency of 1850 MHz. For a vehicle moving 60 mile per hour, compute the received carrier frequency if the mobile is moving (1) Directly toward the transmitter **07**
(2) directly away from the transmitter and
(3) in a direction which is perpendicular to the direction of arrival of the transmitted signal.

OR

- Q.5** (a) Explain: (1) static channel assignment strategy **03**
(2) dynamic channel assignment strategy
- (b) Write a short note on 3G W-CDMA(UMTS) **04**
- (c) With diagram explain various 2.5 G and 3G upgrade paths for the major 2G technologies. **07**

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