GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (Old) EXAMINATION – WINTER 2019

Subject Code: 171004   **Date: 03/12/2019**

Subject Name: Wireless Communication

Time: 10:30 AM TO 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)**	Define following: (A)Control Channel (B)GOS (C) MAHO (D)Reverse Channel (E)Cluster (F)Page (G)FDD	**07**
	(b)	Explain the concept of Cell splitting and clustering with figure.	**07**
Q.2	**(a)**	Differentiate between cell splitting and sectoring. Prove that the co-channel reuse ratio is given by , where $N = i^2 + ij + j^2$	**07**
	(b)	With respect to mobile networks, explain co channel and adjacent channel interference.	**07**

OR

	(b)	Explain the three basic propagation mechanisms which impact the propagation of signal in a mobile environment.	**07**
Q.3	**(a)**	Compare the S/I ratio for a mobile radio for the following cases of cellular system with frequency reuse factor of 7 for (i) Omni directional antenna (ii) 120^0 Directional antennas.	**07**
	(b)	Derive an expression for the received power for a two-ray reflection point to point mobile communication propagation model. Assume path loss exponent n=4.	**07**

OR

Q.3	**(a)**	For a regular cellular structure with equal size hexagonal cells, show that D/R= $(21)^{½}$, Where D is the minimum distance between the centers of adjacent cells and R is the radius of each cell. Assume 7-cell reuse pattern.	**07**
	(b)	Explain in detail the types of small scale fading (including time delay and Doppler spread).	**07**
Q.4	**(a)**	Discuss in detail the signal processing in GSM including speech coding, channel coding (data & control channels).	**07**
	(b)	What is soft handoff? Explain in detail RAKE receiver with neat diagram.	**07**

OR

Q.4	**(a)**	Explain in detail the impulse response model of a multipath channel.	**07**
	(b)	Compare HSCSD and GPRS. Explain briefly GPRS.	**07**
Q.5	**(a)**	Briefly Describe the functions of the following for GSM Systems.(i) MSC (ii)VLR (iii)HLR (iv)AUC (v) EIR.	**07**
	(b)	Comparison of TDMA and CDMA multiple Access Techniques in detail.	**07**

OR

Q.5	**(a)**	Discuss in details about architecture of UWB radio and its applications.	**07**
	(b)	Describe the wireless Ad-Hoc network with neat diagram.	**07**

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