

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

Subject code: 2714401**Date: 07-01-2015****Subject Name: Wireless Communication Theory****Time: 02:30 pm - 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.

- Q.1** (a) If SIR of 15dB is required for satisfactory forward channel performance of a cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if the pathloss exponent is (a) $n=4$ (b) $n=3$? Assume that there are six co channel cells in the first tier and all of them are at same distance from the mobile. **07**
- (b) Explain all the subsystems of GSM architecture. **07**
- Q.2** (a) Explain briefly: (1) Soft handoff (2) Dwell time (3) RSSI (4) Adjacent channel Interference (5) Cell dragging (6) MAHO (7) WLL **07**
- (b) Explain channel assignment strategies in detail. **07**
- OR**
- (b) Explain co-channel interference and derive the equation of Signal to Interference Ratio (SIR) for hexagonal geometry with $N=7$. **07**
- Q.3** (a) Define control channel. Give its classification in GSM and explain each of them. **07**
- (b) Define multiple access technique. Compare TDMA, FDMA and CDMA. **07**
- OR**
- Q.3** (a) Draw frame format for a normal burst in GSM. Explain burst, frame, multiframe, hyperframe, superframe. **07**
- (b) Compare GSM technique with CDMA technique for mobile communication. **07**
- Q.4** (a) Explain UMTS in detail. **07**
- (b) What is meant by LMDS and MMDS? Explain any one with block diagram. **07**
- OR**
- Q.4** (a) Explain CDMA 2000 Cellular Technology **07**
- (b) Explain GPRS Technology **07**
- Q.5** (a) Explain Mobility Management in mobile Adhoc network. **07**
- (b) Explain security aspects in Wireless Networks **07**
- OR**
- Q.5** (a) Explain IEEE 802.11 WLAN Technology. **07**
- (b) Explain IEEE 802.15 WPAN Technology. **07**
