*Seat No.: _____* *Enrolment No._____*

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M. E. - SEMESTER – I • EXAMINATION – SUMMER • 2014**

**Subject code: 710601N** **Date: 24-06-2014**

**Subject Name: Wireless and Mobile Communication**

**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.**

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|---|---|---|---|
| **Q.1** | **(a)** | Draw the block diagram of GSM network Architecture indicating main subsystems and its components and explain in Detail. | **07** |
| | **(b)** | Prove that the Co Channel Interference is a function of D/R. Where D is the distance between centres of nearest Co Channel Cells and R is the centre to Vertex Distance in Hexagonal Cell Geometry. | **07** |
| **Q.2** | **(a)** | Describe the various types of Channels used in GSM. | **07** |
| | **(b)** | Explain a typical Call Flow sequence in GSM. | **07** |
| | | **OR** | |
| | **(b)** | Discuss the different upgrade paths for Evolution of 2.5 G GSM standards. | **07** |
| **Q.3** | **(a)** | What is Cellular concept? How it is utilized to improve the capacity of Mobile Communication System? | **07** |
| | **(b)** | Discuss the advantages of CDMA technology. Why orthogonal codes are used in CDMA mobile? | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Compare soft handoff with hard handoff. | **07** |
| | **(b)** | What is Bluetooth? Discuss Bluetooth Standard. | **07** |
| **Q.4** | **(a)** | Explain briefly BPSK modulation with neat sketch. | **07** |
| | **(b)** | What is spread spectrum system? What are the criteria for spread spectrum system? Draw and explain block diagram of direct sequence spread spectrum (DSSS) system. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Describe the QPSK Transmission and Detection Techniques. What is the advantage of Offset QPSK (OQPSK) over QPSK. | **07** |
| | **(b)** | Explain in detail the Authentication and Encryption process in GSM. | **07** |
| **Q.5** | **(a)** | What is MSK? How one achieves GMSK? Explain why GMSK is used in GSM | **07** |
| | **(b)** | What are the different types of Small Scale Fading mechanisms? Explain each type with necessary equations. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain in detail the Authentication and Encryption process in GSM. | **07** |
| | **(b)** | Describe the propagation path loss for a mobile-radio environment over smooth terrain and derive the expression for Er the Reflected Electric Field in terms of the incident field. | **07** |

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