

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 08**

**M.Tech.(ECE) (2016 & 2017 Batch EL-II) (Sem.-2)**

# MOBILE COMMUNICATION

**Subject Code : MTEC-205D**

**M.Code : 74288**

**Time : 3 Hrs.**

**Max. Marks : 100**

**INSTRUCTIONS TO CANDIDATES :**

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries EQUAL marks.

1.
  - a) Discuss briefly
    - i) Frame structure of GSM
    - ii) Speech coding in GSM
  - b) The GSM TDMA system uses a 270.833 kbps data rate to support 8 users per frame.
    - i) What is the raw data rate provided for each user?
    - ii) If guard time, ramp-up time and synchronization bits occupy 10.1 kbps, determine the traffic efficiency for each user?
2.
  - a) Explain in detail: Capacity and coverage thresholds.
  - b) Discuss OKUMURA propagation model.
3.
  - a) Mathematically prove that an IFFT/FFT pair can be used to implement the Modulator/Demodulator in OFDM system.
  - b) Explain the significance of cyclic prefix in OFDM.
4.
  - a) ‘*Orthogonal Frequency Division Multiplexing converts frequency selective channels into frequency non selective channel*’ the above statement is true or false. Justify with reason.
  - b) Explain how IFFT generates multiple carriers.
  - c) Explain non linear amplifier problem in Orthogonal Frequency Division Multiplexing.

5.
  - a) The SNR required at the detector to achieve a reliable communication in a CDMA system is 13 dB. If the interference to signal power at the receiver is 20 dB, determine the processing gain required to achieve a reliable communication.
  - b) Explain briefly the Physical layer in WCDMA system.
6.
  - a) Explain HSUPA emphasizing its primary objective and how it achieves performance improvements over WCDMA systems.
  - b) Why does the WCDMA uses Walsh codes in forward and reverse channel to for separating the users while IS-95 CDMA does this only in the forward channel? Explain with proper diagram how IS-95 CDMA separates the users in the reverse channel.
7.
  - a) Discuss various advantages of LTE over HSPA.
  - b) Discuss in detail various radio network technologies of LTE
8. Write short note on :
  - a) IEEE 802.21 standard
  - b) Interworking of WiMAX with LTE

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**