Code: DE66   **Subject: WIRELESS & MOBILE COMMUNICATIONS**

DipIETE – ET

Time: 3 Hours | **JUNE 2014** | **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.
- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**

a. _____ is the multiple access scheme used in GSM technology.

    (A) FDMA/TDMA   (B) CDMA
    (C) OFDMA   (D) None of these

b. The core concept used in Cellular technology is

    (A) TDM   (B) Frequency Reuse
    (C) Code reuse   (D) None of these

c. The cell having the same number in the adjacent cluster using the same set of RF channels are termed as

    (A) Adjacent cell   (B) Co-channel cell
    (C) Macro cell   (D) Selective cell

d. The technique adopted to increase the system capacity and reduce co-channel interference is

    (A) High power BTS
    (B) By installing the omnidirectional antenna
    (C) Sectorisation
    (D) All of these

e. Which of these are Digital Cellular Technologies?

    (A) IS: 54 / IS-136   (B) GSM
    (C) IS-95   (D) All of these

f. Viterbi decoding is one of the most commonly used technique in modern systems that is used to decode the data encoded by _____

    (A) block coding   (B) Hamming coding
    (C) convolutional coding (D) CRC coding

g. IEEE has defined the specifications for a wireless LAN, called _____, which covers the physical and data link layers.

(A) IEEE 802.3   **(B)** IEEE 802.5
(C) IEEE 802.11   **(D)** IEEE 802.2

h. The modulation scheme used in mobile communication

(A) MSK   **(B)** GMSK
(C) ASK   **(D)** PSK

i. In a LAN network every system is identified by

(A) Name   **(B)** MAC address
(C) IP Address   **(D)** Serial number

j. MAC is the abbreviation for:

(A) Multimedia access control   **(B)** Media access control
(C) Mobile access control   **(D)** Master access point control

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Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. What do you mean by ad hoc networks? How is an ad hoc network different from cellular network?   **(8)**

  b. Draw and explain the block diagram of satellite communication system.   **(8)**

Q.3 a. Explain free space propagation model.   **(8)**

  b. Explain in detail the fading effects in wireless channel.   **(8)**

Q.4 a. Explain in detail the ALOHA random access protocols used in wireless systems. Derive expression of its throughput and efficiency.   **(8)**

  b. Describe the concept of frequency reuse and explain why the cells having hexagonal pattern.   **(8)**

Q.5 a. Give the comparison between fixed channel allocation and dynamic channel allocation.   **(8)**

  b. Compare FDMA, TDMA, CDMA and SDMA.   **(8)**

Q.6 a. Draw the satellite system architecture and explain the process of call setup. **(8)**

  b. Explain multicasting in mobile communication systems.   **(8)**

Q.7 a. Explain GSM architecture in detail.   **(10)**

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    b. Explain the Power Control mechanism in IS-95.   **(6)**

Q.8 a. Enlist the characteristics and application of mobile Ad hoc networks (MANET).   **(8)**

    b. Explain wireless sensor networks and enlist the advantages of wireless sensor network over wired ones.   **(8)**

Q.9 a. Write short note on the Ultrawideband technology.   **(8)**

    b. Compare Wireless LAN and Wired LAN in detail.   **(8)**