2124
M. E. (Information Technology)
First Semester
MEIT-1204: Advanced Wireless Technologies

Time allowed: 3 Hours   Max. Marks: 50

NOTE: *Attempt* **five** *questions in all, including Question No. I which is compulsory and selecting two questions from each Part.*

x-x-x

Q.1

    a. How is 4G better than 3G? Give 2 points.

    b. What are the constituent blocks of a typical CDMA architecture in Mobile Communication?

    c. Name the algorithms used in GSM security.

    d. What is a pico-net in Bluetooth technology?

    e. What are Cognitive Radio Networks?

    (2x5)

PART A

Q.2 a. Explain the features of Intelligent Networks in Mobile Communication.

    b. How did Mobile Communication generations evolve over time?

    (5, 5)

Q.3 a. How does cell splitting improve the cell capacity in cellular systems?

    b. If for a cellular system a S/I ratio of 15dB is essential, path loss exponent n is 3 and there are 6 co-channel cells in the first tier and equidistant from the mobile. Then for maximum capacity find

      i. The frequency reuse factor

      ii. Cluster size

    (4, 3,3)

Q.4 a. What are the various GSM channel types? Explain.

    b. In an Omni-directional CDMA cellular system $E_b/N_o = 20$ dB is required for each user. If 100 users, each with baseband data rate of 13kbps are to be accommodated, determine the minimum channel rate of the spread spectrum chip sequence. Ignore voice activity considerations.

    (5,5)

PART B

Q.5 a. Compare the TDMA and FDMA Schemes.

    b. Compare the two main types of SSMA Schemes.

    (5, 5)

Q.6 What are the technical specifications and main characteristics of the

    a. Bluetooth Wireless Standard

    b. WiMax Standard

    (5, 5)

Q.7 What are the applications of

    a. Wireless Sensor Networks

    b. Internet of Things

    (5,5)

x-x-x