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10EC81

Eighth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Wireless Communication

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART – A

- 1 a. Compare 1G and 2G cellular system. (04 Marks)
- b. Explain the different steps involved in AMPS-Mobile originated call. (08 Marks)
- c. With a neat diagram, explain the network elements of the SS7 system. (08 Marks)
- 2 a. With a block diagram, explain the MSC subsystem. (06 Marks)
- b. Explain the functions of HLR, VLR and MSC. (06 Marks)
- c. Explain with necessary diagrams the formats of MSISDN number, IMSI number, IMEI number and LAI number. (08 Marks)
- 3 a. Explain capacity expansion techniques. (06 Marks)
- (i) Cell splitting (ii) Cell sectoring (06 Marks)
- b. Explain the different power saving schemes. (06 Marks)
- c. For a particular radio transmission technology, a minimum S/I ratio of 15 dB is needed for proper operation. What is the minimum required cluster size? If the path loss exponent is $\alpha = 4$? Assume that there are six-co-channel cells in the first tier and all of them are at the same distance from the mobile. (05 Marks)
- c. Determine the frequency reuse distance for a cell radius of two kilometers and a cluster size of 4. (03 Marks)
- 4 a. Explain the various logical channels used in GSM. (10 Marks)
- b. Describe GSM protocols and signalling model with a neat diagram. (10 Marks)

PART – B

- 5 a. List out the ten operations in call setup in GSM system. Explain in detail authentication and ciphering mode operation. (12 Marks)
- b. Explain the intra-BSC-handover operation in GSM. (08 Marks)
- 6 a. Explain the basic spread spreading operation in CDMA. (06 Marks)
- b. Explain the different types of soft and hard handoffs supported by CDMA system. (06 Marks)
- c. Explain the generation of CDMA paging channels. (08 Marks)
- 7 a. Explain the path loss model for free space propagation. (06 Marks)
- b. With a neat block diagram, explain the RAKE receiver. (06 Marks)
- c. What is the received power in dBm for a signal in free space with a transmitting power of 50 W, frequency of 900 MHz and distance from the receiver of 100 meters if the transmitting antenna and receiving antennas have a gain of 1? What is P_r at 10 km? (08 Marks)
- 8 a. Explain with a neat figure the Bluetooth protocol stack. (08 Marks)
- b. Discuss the design issues of IEEE 802.11 and also provide the working of BSS, DS and ESS networks. (08 Marks)
- c. Describe the basic wireless MAN. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.