CRASH COURSE

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10TE73

Seventh Semester B.E. Degree Examination, May 2017
Wireless Communication

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

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.

PART – A

1 a. Bring out a comparison between various types of 1G analog cellular system. **(08 Marks)**
b. List out the characteristics of 3G cellular system. **(08 Marks)**
c. Explain AMPS network operations for a mobile terminated call operation. **(04 Marks)**

2 a. Explain how subscriber device identification is done in cellular network components usage. **(06 Marks)**
b. Explain the 3G mobile originated call operation from the PSTN. **(08 Marks)**
c. A certain mobile subscriber is registered to a certain RBS in a cell that is located in an area that uses six BSCs to control the RBSs in that area. Show how the MSC directs an incoming call to the mobile subscriber if the MS's RBS is controlled by BSC#4. **(06 Marks)**

3 a. The service provider is licensed with 5 MHz bandwidth. Each system subscriber requires 10 kHz of bandwidth when using the system. If service provider was to provide coverage area from one transmitter site, what is the possible simultaneous users? If the service provider implements a cellular system with 35 transmitter sites, determine the new system capacity. (Use cluster size of 7). **(06 Marks)**
b. For a mobile system cluster size of 7 determine the frequency reuse distance if the cell radius is 25 kms. Repeat the calculation for a cluster size of 4. **(06 Marks)**
c. Describe the process of power control used by cellular systems in terms of power saving schemes. **(08 Marks)**

4 a. With a neat sketch, explain GSM network architecture. **(10 Marks)**
b. With a neat sketch, explain the GSM channel concept. **(10 Marks)**

PART – B

5 a. With a neat diagram, explain the GSM operations of the Inter-MSC handover. **(10 Marks)**
b. Bring out a comparison between various types of NA-TDMA channels. **(06 Marks)**
c. Briefly explain, what is the bandwidth requirement of AMPS, GSM and NA-TDMA. **(04 Marks)**

6 a. Explain with a neat diagram, the network nodes found in a CDMA 2000 wireless system. **(08 Marks)**
b. With a neat block diagram, explain the generation of the CDMA synchronization channel signal. **(08 Marks)**
c. With a neat flow chart diagram, explain CDMA mobile station initialization state. **(04 Marks)**

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7 a. What is the received power in dBm for a signal in free space with a transmitting power of 1W, frequency of 1900 MHz, and distance from the receiver of 1000 meters if the transmitting antenna and receiving antennas both use dipole antennas with gain of 1.6? What is path loss in dB? **(06 Marks)**

b. With a neat diagram, explain the typical RBS transceiver unit. **(08 Marks)**

c. With a neat block diagram, explain space and polarization diversity antenna schemes. **(06 Marks)**

8 a. Write a brief note on IEEE 802.11 standard technologies and its evolution. **(08 Marks)**

b. Explain the details of Bluetooth protocol stack with a neat diagram. **(06 Marks)**

c. With the aid of flowchart, explain the IEEE 802.16 subscriber station automatic network entry and initialization operations. **(06 Marks)**

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