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06EC81

Eighth Semester B.E. Degree Examination, June 2012

Wireless Communication

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least 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. Compare 1G, 2G and 3G cellular systems. **(06 Marks)**
b. Explain the different steps involved in AMPS mobile-originated call. **(10 Marks)**
c. What are the basic characteristics of 4G cellular systems? **(04 Marks)**

2 a. Describe the home location register (HLP) implementation and its operation. **(06 Marks)**
b. With a neat sketch, explain the hardware view of a cellular network. **(08 Marks)**
c. Explain mobile station ISDN (MSISDN) Identification Number. Give an example. **(06 Marks)**

3 a. Explain the capacity expansion techniques: cell splitting and cell sectoring. **(08 Marks)**
b. What is mobility management? Explain location management of a mobile station. **(08 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. **(04 Marks)**

4 a. With a neat sketch, explain GSM network architecture. **(10 Marks)**
b. Describe the GSM TDMA time slot. **(04 Marks)**
c. Contrast the GSM hyper frame, super frame, multi frame and TDMA frame. **(06 Marks)**

PART – B

5 a. With a neat sketch, explain the detailed steps required for radio resource connection establishment in GSM cellular systems. **(10 Marks)**
b. What is the basic difference between intra-BSC handover and inter-BSC handover? **(06 Marks)**
c. Why is a modified version of LAPD necessary for the Um interface? **(04 Marks)**

6 a. Explain the network nodes found in a 'Cdma 2000' wireless system. **(08 Marks)**
b. Describe the CDMA mobile operation known as access channel probing. **(06 Marks)**
c. Explain the following briefly in case of CDMA systems:
i) Soft handoff ii) Softer handoff
iii) Soft softer handoff iv) Hard handoff **(06 Marks)**

7 a. Explain the error detection and correction codes used for wireless telecommunications. **(08 Marks)**
b. Describe an OFDM modulation system. **(08 Marks)**
c. What is the received power in dBm for a signal in free space with a transmitting power of 10 Watts, frequency of 1900 MHz and distance from the receiver of 2 km if the transmitting antenna and receiving antenna have the same gain of approximately 1.6? What is the path loss in dB? **(04 Marks)**

8 a. What are the basic goals of the IEEE 802.11 wireless LAN standards? **(06 Marks)**
b. Explain the components of the Bluetooth architecture. **(08 Marks)**
c. How is system capacity typically increased for a wireless MAN? **(06 Marks)**

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