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Fourth Semester M.C.A Degree Examination, January/February 2004

Master of Computer Applications

Wireless & Mobile Communication

[Max.Marks : 100]

Time: 3 hrs.]

Note: 1. Answer any FIVE full questions.
2. All questions carry equal marks.

1. (a) Explain how a cellular telephone call is made? (8 Marks)
- (b) List and explain the components in the handset of a cellular telephone. (6 Marks)
- (c) Explain the concept of cellular frequency reuse. Illustrate with an example. (6 Marks)
2. (a) Explain the factors that influence the choice of digital modulation. (5 Marks)
- (b) Explain the following terms : (10 Marks)
 - i) Transceiver ii) Hand off iii) Control channel iv) Mobile station
 Full duplex system.
- (c) Determine the theoretical maximum data rate that can be supported in a channel. Calculate the same for a 600kHz channel for signal to noise ratio of 20db. (5 Marks)
3. (a) Explain the channel assignment strategies. (8 Marks)
- (b) Define the following terms : (6 Marks)
 - i) Blocked call ii) Grade of service iii) Request rate.
- (c) Explain the two types of system generated cell interference. (6 Marks)
4. (a) If a signal to interference ratio of 15db is required for satisfactory forward channel performance of a cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent is i) $n=4$ ii) $n=3$? Assume that there are 6 cochannel cells in the first tier, and all of them are at the same distance from the mobile. Use suitable approximations. (12 Marks)
- (b) Explain $\pi/4$ QPSK transmission and detection technique with neat block diagram. (8 Marks)
5. (a) Explain FDMA and TDMA techniques. (8 Marks)
- (b) Explain IS-95 CDMA standard. (6 Marks)
- (c) Describe the handshaking signals between the cell phone subscriber and PSTN. (6 Marks)
6. (a) Describe the GSM system architecture. (10 Marks)
- (b) Explain the call handling in the AMPS system. (10 Marks)

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7. (a) Explain the salient features of CDMA cellular systems. (10 Marks)

(b) Explain the salient features of various mobile radio standards around the globe. (10 Marks)

8. Write short notes on :

- i) Mobile IP-TCP
- ii) Internet over wireless
- iii) paging system
- iv) Trunking theory.

(5×4=20 Marks)

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