

B 1211

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Eighth Semester

Electronics and Communication Engineering

EC 047 — CELLULAR MOBILE COMMUNICATION

Time : Three hours

Maximum : 100 marks

Answer ALL the questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between Cordless and Cellular mobile systems.
2. Compare the merits and demerits of Wired and Wireless LANs.
3. Define trunking efficiency and Grade of Service.
4. Show that, for a particular coverage area, a decrease in cluster size results in an increase in the cellular system capacity.
5. What are the loss producing mechanisms in a wireless channel?
6. What are the features of a smart antenna system?
7. What is the necessity for Equalizers in Mobile communication systems?
8. Highlight the motivation behind the evolution of Space-Time processing.
9. What is the need for power control in CDMA based systems?
10. What do you understand by 'Roaming'?

PART B — (5 × 16 = 80 marks)

11. Explain with suitable timing diagram, how a cellular telephone call is set up. (16)
12. (a) Discuss the 'channel assignment' and 'handoff' strategies employed in the design of a mobile communication system. (8 + 8)

Or

- (b) Discuss the methods that may be used for improving the capacity in cellular systems. (16)
13. (a) Explain the time dispersion and frequency dispersion parameters of a mobile multipath channel. How do you classify mobile channels based on these parameters? (8 + 8)

Or

- (b) What do you understand by large scale fading? Explain the 2-ray ground reflection model for path loss prediction. (4 + 12)
14. (a) Bring out the salient features of the MSK modulation scheme. Explain the MSK transmitter and receiver implementation with suitable diagrams. Highlight the significance of achieving the minimum frequency shift. (4 + 8 + 4)

Or

- (b) What are the characteristics of speech that enable speech coding? Discuss the criteria used for choosing speech codecs for a mobile communication system. Differentiate between Waveform Coders and Vocoders with examples. (6 + 4 + 6)
15. (a) (i) Discuss the salient features of FDMA and TDMA techniques. (12)
- (ii) If a normal GSM time slot consists of 6 trailing bits, 8.25 guard bits, 26 training bits and 2 traffic bursts of 58 bits of data, find the frame efficiency. (4)

Or

- (b) Discuss some of the reservation based multiple access protocols for wireless networks, with suitable illustrations. (16)