

Registration Number :

B.E. / B.Tech.DEGREE (FULL TIME) ARREAR EXAMINATION – NOVEMBER 2011
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH
SEVENTH SEMESTER – (REGULATIONS R 2004)
EC471 – WIRELESS AND MOBILE COMMUNICATION

44

Duration : 3 Hours

Max. Marks = 100

Answer ALL the questions.

PART- A (10 x 2 = 20 marks)

1. Bring out the differences between cordless systems and cellular systems.
2. Show that, for a given coverage area, a decrease in cluster size results in an increase in the cellular system capacity.
3. What are the loss producing mechanisms in a wireless channel?
4. What is the impact of Doppler spread on the channel response.
5. Justify the selection of an optimum length of the Cyclic Prefix in OFDM systems.
6. Space Time Block Coding is generally preferred over Space Time Trellis Coding. Why ?
7. What is the difference between linear and non-linear Equalizers.
8. What do you understand by space diversity ? What is the condition to be satisfied for the diverse channels to be independent.
9. What is the need for power control in CDMA based systems ?
10. How many channels/users are defined in 25 MHz bandwidth for the GSM standard.

PART – B (5 x 16 = 80 marks)

11. What are the sources of interference in a Cellular mobile communication system? How are they related to the system capacity ? How are these interferences taken care of in these wireless systems ?
- 12a. Explain the time dispersion and frequency dispersion parameters of a mobile multipath channel. How do you classify mobile channels based on these parameters for a particular application ?

'OR'

- 12b. What do you understand by large scale fading? Derive the path loss for the 2 - ray ground reflection model and compare it with the free space path loss.
- 13a. Explain with suitable diagrams the different blocks present in an OFDM transceiver and explain the significance of each block.

'OR'

- 13b. Give the mathematical model of a Multiple Input Multiple Output (MIMO) channel with a suitable figure. How is the Space Time Block Coding implemented using Alamouti's Coding scheme and what are the requirements on the channel response.
- 14a. What are the advantages of diversity techniques over equalization techniques. Mathematically show the benefit of using Maximal Ratio Combining of the diverse path signals in improving the receiver SNR.

'OR'

- 14b. Explain the concept of a RAKE receiver for a wireless channel with suitable diagrams. Also explain its applications in CDMA based systems for multipath mitigation and handoff.
- 15a. Discuss the salient features of FDMA and TDMA techniques and compare the network capacities provided by them.

'OR'

- 15b. (i) Discuss in detail about the GSM channel classification . (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)
