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B.E./B.Tech. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2013  
ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH

SEVENTH SEMESTER

EC 471 – WIRELESS AND MOBILE COMMUNICATION

(REGULATIONS 2004)

59

Duration: 3 Hours

Max.marks: 100

Answer ALL questions

PART-A

(10x2=20 Marks)

- 1.What is the trade-off involved in the selection of hand-off margin in cellular systems?
- 2.What is meant by Grade of Service ?
- 3.What is meant by coherence time?
- 4.Distinguish between large scale fading and small scale fading.
- 5.Compare SIMO and MISO.
- 6.Mention the importance of cyclic prefix in OFDM system.
- 7.Define interleaving.
- 8.Differentiate spatial diversity and spatial multiplexing.
- 9.Classify the forward and reverse logical channels used in GSM.
- 10.Define frame efficiency.

PART-B

(5x16=80 Marks)

11. (i) Explain the various capacity expansion techniques. (8)  
(ii) Draw a suitable figure illustrating 3-cell reuse and 60 degree sectoring and show how interference reduction is achieved. (8)
- 12.(a) (i)Derive and explain the impulse response model of multipath channel. (12)  
(ii)Distinguish flat fading and frequency selective fading. (4)
- OR
- 12.(b) Explain the terms coherence bandwidth, RMS delay spread, Doppler spread, level crossing rate and average fade duration for a mobile multipath channel. Explain how each of these parameters affects communication system for wireless design. (16)
- 13.(a)(i)Derive the expression for the capacity in fading and non-fading channels of a MIMO system. (8)  
(ii)Illustrate a 4 x 4 Multiple Input Multiple Output channel and give the mathematical model for the same. (8)
- OR
- 13.(b)Explain with suitable diagrams the different blocks present in an OFDM transceiver and explain the significance of each block. Show the impact of increasing the number of subcarriers on the power spectral characteristics of the OFDM signal. (16)
- 14.(a) Explain the various diversity techniques. (16)
- OR
- 14.(b)(i)With neat block diagram, explain the rake receiver. (12)  
(ii)List the factors used to analyse the performance of adaptive-equalization algorithms. (4)
- 15.(a)(i) With suitable example, compare the features of TDMA,FDMA and CDMA. (8)  
(ii) Explain the necessity for power control in CDMA systems. (8)
- OR
- 15.(b)With a neat diagram, explain the reference architecture of GPRS. (16)

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