

11-5-19

B.E (FULL TIME) END SEMESTER EXAMINATIONS, MAY 2019
ELECTRONICS AND COMMUNICATION ENGINEERING

SEMESTER: VII

EC 8702 – WIRELESS COMMUNICATION

(REGULATIONS: 2012)

TIME: 3 HOURS

ANSWER ALL QUESTIONS

MAX.MARKS: 100

PART-A (10X2=20 MARKS)

1. Distinguish fast fading and slow fading.
2. Define Coherence bandwidth and Coherence time.
3. Differentiate hard hand off and soft hand off.
4. Consider the advanced mobile phone system in which an S/I ratio of 15 dB is required for the accepted voice quality. What should be the reuse factor for the system? Assume path loss exponent is 4.
5. Compare the spectral efficiency and power efficiency of BPSK and QPSK.
6. What are the advantages and disadvantages of multicarrier modulation schemes?
7. Differentiate spatial diversity and spatial multiplexing.
8. Compare the features of linear and nonlinear equalizers.
9. Why beam-forming is important for wireless systems?
10. What is meant by water-filling power allocation?



Part-B (5x16=80 Marks)

11. (i) Explain the following Architectural methods for capacity expansion: Cell splitting, Cell Sectoring and Lee's Micro cell method.
12. a. Derive the expression of the received power for the two-ray ground reflection model.
(OR)
12. b. (i) Enumerate and explain the various types of small scale fading. (8)
(ii) Derive and explain the impulse response model of a multipath channel. (8)
13. a. With neat diagram, explain the MSK modulator and demodulator. Compare the features of M-ary PSK and M-ary FSK.

(OR)

13. b. With suitable diagram, explain the OFDM transmitter and receiver. What is meant by PAPR? Suggest any two techniques to reduce PAPR.

14. a. With neat diagram, explain the adaptive equalizer and derive the expression for the minimum mean square error. Also explain the LMS algorithm.

(OR)

14. b. Explain the diversity combining strategies and derive the average probability of bit error for BPSK under MRC with i.i.d. Rayleigh fading.

15. a. (i) With neat diagram, explain the system model of MIMO transceiver. Explain parallel decomposition of the MIMO channel. (8)

(i) Explain the transmit beamforming, receive beamforming and opportunistic beamforming. (8)

(OR)

15. b. Derive the expression for the capacity in fading and non-fading channels of a MIMO system.

