

Question Paper Code : 80355

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014

Fifth Semester

Information Technology

EC 6001 — WIRELESS COMMUNICATION

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the equation for average large scale-path loss between the transmitter and receiver as a function of distance.
2. What is frequency selective fading?
3. State advantages of CDMA over FDMA.
4. Define Grade of Service.
5. Give the function of Gaussian filter in GMSK.
6. What is Cyclic prefix?
7. What are linear equalizers and non linear equalizers?
8. What is Macro diversity?
9. How does spatial multiplexing work?
10. What is ergodic capacity and outage capacity of a flat fading channel.

PART B — (3 × 16 = 48 marks)

11. (a) Explain the time variant two-path model of a wireless propagation channel. (16)

Or

- (b) (i) Explain fading effects due to multipath time delay spread and fading effects due to Doppler spread. (16)
- (ii) What are the factors influencing small scale fading? (6)

12. (a) Explain about co-channel interference and adjacent channel interference. Describe the techniques to avoid interference. (16)

Or

- (b) (i) Explain in detail how frequency is efficiently allocated in an cellular radio systems. (6)
- (ii) Explain in detail a handoff scenario at cell boundary. (10)
13. (a) What is MSK? Also derive the expression of MSK signal as a special type of FSK signal and explain its power spectral density. (16)

Or

- (b) Draw the basic arrangement of Orthogonal Frequency Division Multiplexing transceivers and discuss its overall operation. (16)
14. (a) Explain in detail the various factors to determine the algorithm for adaptive equalizer. Also derive the Least Mean Square Algorithm for adaptive equalizer. (16)

Or

- (b) With relevant diagrams explain Rake receiver. Also discuss how time diversity is achieved in a CDMA technique using Rake receiver. (16)
15. (a) (i) With a neat diagram explain the system model for multiple input multiple output systems. (8)
- (ii) Discuss in detail the classification of algorithms for MIMO based system. (8)

Or

- (b) Calculate the capacity of a MIMO system in flat fading and non fading channels. (16)
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