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Question Paper Code : 20933

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Electronics and Communication Engineering

EC 3501 – WIRELESS COMMUNICATION

(Regulations – 2021)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is frequency reuse?

2.   How the adjacent channel inference can be mitigated?

3.   What is Brewster Angle?

4.   State the difference between Coherence time and Bandwidth.

5.   What is need of Equalization in wireless communication?

6.   How the pseudo noise sequence can be generated?

7.   How the capacity of FDMA scheme is computed?

8.   In 3G cellular communication, what type of multiple access technique is used?

9.   State the difference between circuit switching and packet switching.

10. State the difference between wireless and Fixed Telephone network.

PART B — (5 × 13 = 65 marks)

11. (a) With necessary sketch, explain Handoff mechanism adopted in cellular system. Also provide your understanding on its challenges.

Or

     (b) Derive an expression to reduce co-channel interference experienced by cell edge user in a seven cell reuse cellular architecture.

12. (a) Derive free space propagation model and discuss your understanding on propagation mechanism influencing fading in wireless channel.

Or

(b) On what basis fading is classified into small and large scale? Discuss the fading effect caused due to multipath time delay spread and Doppler Spread.

13. (a) Explain the operational mechanism and transmitter and receiver implementation of GMSK.

Or

(b) Discuss your understanding on Diversity Technique. Also compare and contrast it with respect to Equalization technique.

14. (a) With relevant sketch, explain the operation of multiple access technique used in 2G cellular system. Also derive the expression to compute capacity of TDMA scheme.

Or

(b) Explain the working principle of CDMA system. Also Derive the capacity of CDMA scheme with Multiple Cells in cellular system.

15. (a) Provide your understanding on evolution of wireless networks.

Or

(b) Explain the working mechanism of Universal Mobile Telecommunication Systems.

PART C — (1 × 15 = 15 marks)

16. (a) If the transmitter power is 1W and carrier frequency is 2.4 GHz and the receiver is at a distance of 1 mile (1.60934 km) from the transmitter. Assume that the transmitter and receiver antenna gains are 1.6. Determine the received power in dBm in the free space of a signal, the path loss in dB and the transmission delay?

Or

(b) Compare and contrast various techniques employed in cellular communication to expand capacity of the system.

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