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Register Number: ……..

B.E., DEGREE EXAMINATIONS: APRIL 2015

(Regulation 2009)

Seventh Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

ECE118: Wireless Communications

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. When Electromagnetic waves travel in free space it suffers from ----------.

a) absorption b) refraction c) attenuation d)super- refraction

2 Free space path loss between isotropic antennas is given by

a) $(4\pi d/\lambda)^2$ b) $(\lambda/4\pi d)^2$

c) $4\pi\lambda d^2$ d) $4\lambda d^2$

3. Increasing the number of subcarriers in OFDM leads to

a) Increase in the data rate and decrease in the ISI b) decrease in the data rate and increase in the ISI

c) Increase in the data rate and increase in the ISI d) decrease in the data rate and decrease in the ISI

4. Which of the following modulation schemes is the most bandwidth efficient?

a)256 PSK b) 8PSK

c)16PSK d) QPSK

5. The hamming distance between 2 code words 1001101 and 1000110

a) 2 b) 3

c) 5 d) 4

6. Which of the following is an error detection scheme?

a) RS coding b) Convolutional coding

c) Cyclic coding d) Hamming code

7. If there are 10 delay elements in an equalizer, there will be ---------- number of taps

a) 8 b) 9

c) 11 d) 12

8. Which of the following diversity techniques is employed in microwave LOS links

a) Space b) Selection

c) Polarization d) Frequency

9. Physical layer of DECT uses ----------

a) FDMA/TDMA b) CDMA c) OFDMA d) CDMA/TDD

10. The wi-fi technology is specified in

a) IEEE 802.11 WLAN standard . b) IEEE 802.11a WLAN standard.

c) IEEE 802.11b WLAN standard. d) IEEE 802.11g WLAN standard.

PART B (10x2=20 Marks)

11. Define EIRP. How it is related to transmitter power and antenna gain?
12. What is meant by cell splitting?
13. What is need for synchronization in spread spectrum communication?
14. Differentiate between Constant and non- constant Envelope modulation techniques.
15. Define word error rate & false alarm rate.
16. State the need for error control coding.
17. State the various factors that determine the performance of algorithm for adaptive equalization.
18. Compare microscopic & microscopic schemes of diversity techniques.
19. List the advantages of WMAN over WLAN.
20. Distinguish between BSS and ESS.

PART C (5x14=70 Marks)

21. a) (i) Explain the diffraction mechanism & its models. (8)

(ii) Explain the effects that characterize the multipath fading. (6)

(OR)

b) Explain the 2-ray ground reflection model for path loss prediction.

22. a) Derive the expression for average probability of error of QPSK modulation scheme.

(OR)

b) (i) Explain the concept of GMSK and mention its advantages. (7)

(ii) Discuss the principle of OFDM modulation scheme. (7)

23. a) (i) Explain Linear block code techniques. (7)

(ii) For the data 1101, find out the hamming code to detect the single bit errors. (7)

(OR)

b) (i) Design encoder and decoder for (7,4) cyclic code for the message sequence 1100 (7)

(ii) Explain RS codes (7)

24. a) (i) Explain linear equalization technique? (8)

(ii) Write short note on Nonlinear equalization techniques. (6)

(OR)

b) (i) Write the principle of working of RAKE receiver? (7)

(ii) Explain Polarization & frequency diversity technique. (7)

25. a) Explain i) cellular communication ii) satellite communication

(OR)

b) With the help of diagram discuss the Wi-MAX network reference model.

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