

Register Number:

B.E DEGREE EXAMINATIONS: APRIL/MAY 2014

(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. Major mobile Radio standard is
 - a) Blue tooth
 - b) Zigbee
 - c) Wifi
 - d) GSM
2. The commonly used distribution in mobile radio channels is
 - a) Rayleigh fading distribution
 - b) Binomial distribution
 - c) Poissons distribution
 - d) Normal distribution
3. In Binary frequency shift keying (BFSK), the frequency of a constant amplitude carrier signal is switched between
 - a) Four values according to the two possible messages
 - b) six values according to the two possible messages
 - c) two values according to the two possible messages
 - d) one values according to the two possible messages
4. In spread spectrum modulation the bandwidth is
 - a) small
 - b) medium
 - c) wide
 - d) Very small.
5. The following code is used for channel coding
 - a) Excess three code
 - b) Gray code
 - c) Binary code
 - d) golay codes
6. Convolution codes are decoded using
 - a) Viterbi algorithm
 - b) Zero forcing algorithm
 - c) Recursive least square algorithm
 - d) LMS algorithm
7. Lattice filter is a
 - a) Non linear equaliser
 - b) Linear equalizer
 - c) Decision feedback equaliser
 - d) Tapped delay line filter
8. Equal gain diversity is a classification of

- a) Frequency diversity
 - b) Polarisation diversity
 - c) Space diversity
 - d) Time diversity
9. CDMA digital cellular standard is
- a) IS95
 - b) CT2
 - c) DECT
 - d) WLL
10. Blue tooth and Home RF wireless technologies have adopted
- a) Frequency division multiple access
 - b) Frequency hopped multiple access
 - c) Orthogonal frequency division multiple access
 - d) Time division multiple access

PART B (10 x 2 = 20 Marks)

11. What are the advantages of the 2 ray ground reflection model in the analyses of path loss?
12. What is Doppler shift?
13. Find the 3 – db bandwidth for Gaussian low pass filter used to produce 0.25 GMSK with a channel Data rate of $R_b = 270$ kbps.
14. What is offset QPSK? Explain with suitable diagram.
15. Write the principle behind Hamming codes
16. What are Low Density Parity check codes.
17. What is a Rake receiver?
18. Draw the generalized block diagram of space diversity and label its parts.
19. What are the advantages and disadvantages of WLL.
20. Mention the features of WiMax.

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain how the diffraction affects the signal propagation using Knife edge diffraction model (7)
(ii) Explain the propagation of signal in out door using Durkin's Model. (7)
- (OR)**
- b) What are the types of small scale fading explain each fading effects in detail.
22. a) (i) Explain the generation and detection of Gaussian MSK signal (7)
(ii) Explain the factors that influence the choice of digital modulations. (7)

(OR)

- b) (i) Draw the block diagrams of a DPSK transmitter and receiver and explain the differential encoding process. (9)
- (ii) Draw the constellation of QPSK. Explain why QPSK is preferred in the modern communication systems. (5)
23. a) (i) Explain the features of cyclic codes. For a (7,4) cyclic code the generator polynomial is given as $g(x) = 1+x+x^3$. How many errors can be corrected by this code? (8)
- (ii) Determine the generator matrix G (in the systematic form) for this code. (6)
- (OR)**
- b) (i) Compare block code, Cyclic code and Convolution code. (10)
- (ii) Show a generic circuit and explain the steps to decode the block codes. (4)
24. a) (i) With the relevant diagram, explain Decision Feedback Equalization technique. (7)
- (ii) Explain briefly about adaptive equalization for data transmission. (7)
- (OR)**
- b) Explain what is meant by Diversity reception? What are the different types? What are its advantages in wireless communication?
25. a) Using suitable block diagram explain the architecture of GSM system and explain its channels
- (OR)**
- b) (i) Discuss Blue tooth with a neat diagram. (7)
- (ii) Draw the functional block diagram of DECT system and explain its working principle. (7)
