

Register Number:.....

B.E., DEGREE EXAMINATIONS MAY/JUNE 2013

Seventh Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

ECE118: Wireless Communications

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. The free space propagation model is used to predict _____ in an unobstructed line-of-sight path between transmitter and receiver.
 - a. Received signal strength
 - b. Transmitted signal strength
 - c. Both a and b
 - d. None of the above
2. Path loss is defined as
 - a. Sum of transmitted and received power and may or may not include effect of antenna gains.
 - b. Difference between transmitted and received power and may or may not include effect of antenna gains.
 - c. Difference between tx and rx power
 - d. None of the above
3. The number of basis signals required to represent the complete modulation signal set is called _____.
 - a. Frequency of vector space
 - b. Dimension of vector space
 - c. Both a and b
 - d. None of the above
4. The bandwidth of a channel used in the hopset is called _____.
 - a. Hopping bandwidth
 - b. Hopset bandwidth
 - c. Instantaneous bandwidth
 - d. None of the above
5. The popular decoder for convolutional codes is _____.
 - a. Stack algorithm
 - b. Viterbi algorithm
 - c. Both a and b
 - d. None of the above
6. Rayleigh fading environment is 'slow fading' _____.
 - a. When mobile unit is moving very slowly relative to transmission bit rate
 - b. When mobile unit is moving very fastly relative to transmission bit rate

- c. When mobile unit is static relative to transmission bit rate
 d. All of the above
7. Equalization is used to compensate _____
 a. motion b. ISI c. multiuser in reference d. fading
8. The best estimate of the received signal is obtained through _____
 a. maximal ratio combining b. selection diversity
 c. equal gain diversity d. feedback diversity
9. _____ satellite are visible from earth only for ten minutes.
 a. GEO b. LEO c. MEO d. HEO
10. DECT operates at a frequency band of
 a. 600 – 780 MHz b. 1220 – 1440 MHz
 c. 1680 – 1800 MHz d. 1880 – 1900 MHz

PART B (10 x 2 = 20 Marks)

11. Differentiate between large scale and small scale propagation models.
 12. Calculate the Brewster angle for a wave impinging on ground having a permittivity of 4 at the frequency of 100 MHz.
 13. How do you obtain quadrature amplitude modulation?
 14. State any two popular linear modulation techniques.
 15. List any four interleavers.
 16. What is systematic code?
 17. What is the main disadvantage of recursive least square algorithm?
 18. What is meant by antenna diversity?
 19. State the advantages of GEO satellite system.
 20. What is the purpose of CT2 system?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain the three basic propagation mechanisms with suitable diagrams. (6)
 (ii) Obtain the expression for received power in free space propagation model. (8)
- (OR)**
- b) (i) With neat diagrams explain any three outdoor propagation models. (12)
 (ii) What is multipath fading (2)

22. a) (i) What is linear modulation technique? State its characteristics. (4)
(ii) Explain QPSK with suitable diagrams. (10)

(OR)

- b) (i) Describe the spread spectrum modulation techniques. (10)
(ii) Compare FSK and PSK. (4)

23. a) (i) Explain how the (7,4) Hamming code is generated with a generator matrix of your choice. (8)
(ii) Define WER, FAR and BER. (6)

(OR)

- b) Explain the viterbi decoding algorithm with an example.

24. a) (i) Explain the adaptive equalization method. (8)
(ii) Write a short note on diversity techniques. (6)

(OR)

- b) (i) With a neat diagram explain decision feedback equalization. (8)
(ii) Explain how an improvement is obtained using selection diversity. (6)

25. a) (i) Explain the principle of cellular communication. (8)
(ii) Write a short note on:
WLL and WiMax (6)

(OR)

- b) Give a detailed description on features, architecture and functioning of DECT standard with neat diagrams.
