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Register Number: ………………..

B.TECH DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Third Semester

INFORMATION TECHNOLOGY

ECE270**:** Principles of Communication

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1.   For Amplitude Modulation, the modulation index lies between

   a)   0 and 1   b)   1 and infinity

   c)   0 and infinity   d)   0 and 2

2.   TRF receiver is used _____ frequency applications

   a)   Only for variable   b)   Only for fixed

   c)   Fixed and variable   d)   For all range of

3.   Minimum bandwidth for angle modulated wave is equal to

   a) nf_m b) n/f_m

   c) $2nf_m$ d) $2n/f_m$

4.   For TV broadcast, the maximum frequency deviation is 50kHZ and maximum modulating

   signal frequency is 15kHz then the deviation ratio is,

   a)   4.44   b)   1.11

   c)   2.22   d)   3.33

5.   In PSK, phase shift between two binary data transmission is

   a) 90° b) 45°

   c) 180° d) 135°

6.   QPSK is an M-ary encoding technique with M=

   a)   1   b)   2

   c)   4   d)   3

7.   In DM, only _____ bit representation per sample is used

   a)   1   b)   2

   c)   3   d)   4

8. At Nyquist rate, the sampling frequency is_____

   a) $=2f_m$ b) $>2f_m$

   c) $<2f_m$ d) $=f_m$

9. CDMA requires_____ mechanism

   a) Interference   b) Synchronizing

   c) No synchronizing   d) No interference

10. In slow frequency Hopping, the symbol rate of the MFSK signal is integer multiple of

    _____ rate

    a) hop   b) bit

    c) baud   d) symbol

PART B (10 x 2 = 20 Marks)

11. What is the need for modulation?

12. For an Am DSBSC modulator, the carrier frequency fc = 100 kh_2 for a single tone modulation signal with 6 kh_2, draw the output frequency spectrum.

13. Define modulation index of FM.

14. How FM wave is generated from PM?

15. Compare BPSK and BFSK.

16. Define bit error rate.

17. Define sampling theorem.

18. A computer transmits data at a rate of 56 k bits per second. The output is transmitted using a baseband binary PAM that is designed it have a raise cosine spectrum. What is the bandwidth needed for a roll of 0.5.

19. What is spread spectrum?

20. List out the basic characterization of frequency hopping.

PART C (5 x 14 = 70 Marks)

21. a)   Draw the low level AM modulator circuit and discuss the operations in detail.

(OR)

b) (i) With neat sketch, explain about the superheterodyne receiver.

     (ii) Determine the sideband power and the total transmitted power of AM, with an un modulated carrier power Pc = 1000 W & modulation coefficient 0.2.

22. a)   Explain in detail about the Foster Seeley FM Discriminator.

(OR)

b)   Illustrate the operation of indirect FM transmitter.

23. a)   With neat phasor and constellation diagrams, discuss about the QPSK modulation technique.

(OR)

b)   Describe about the DPSK technique and compare how it is superior to PSK.

24. a)   What is the difference b/w PCM & DPCM.

(OR)

b)   With an example, illustrate the operation of adaptive delta modulation in detail.

25. a)   Exemplify the process involved in direct sequence spread spectrum.

(OR)

b)   Briefly discuss about the various multiple access techniques.

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