Register Number: ……

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2010

Third Semester

INFORMATION TECHNOLOGY

U07IT301: Principles of Communication

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

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. If the carrier of a 100 percent modulated AM wave is suppressed, the percentage power saving will be

   a) 100 b) 50 c) 150 d) 66.67

2. The modulating index of an AM is changed from 0 to 1. The transmitted power is

   a) Halved b) doubled c) unchanged d) Increased by 50 percent

3. Pre-emphasis in FM systems involves _____ of the modulating signal

   a) compression

   b) expansion

   c) amplification of high frequency components

   d) Amplification of low frequency components

4. If a signal is band limited to f_m is sampled at a rate less than 2 f_m, the constructed signal will be

   a) distortion less b) small in amplitude

   c) having higher frequencies suppressed d) distorted

5. Frequency shift keying is used mostly in

   a) radio transmission b) telegraphy c) telephony d) none of these

6. MSK is basically

   a) QPSK b) FSK c) ASK d) DPSK

7. The signal to quantization noise ratio in a PCM system depends upon

   a) Sampling rate b) number of quantization levels c) message signal BW d) None of these

8. In a Delta modulation system, the quantization noise occurs when the

   a) Modulation signal increases rapidly b) pulse rate decreases

   c) Modulating signal remains constant d) pulse amplitude decreases

9. The spread spectrum signal occupies a _____ bandwidth than that of a normal signal

a) larger b) medium c) smaller d) none of these

10. The maximum length of the PN sequence will be

a) 2^m b) 2^m-1 c) 2^n-1 d) None of these

PART B (10 x 2 = 30 Marks)

11. Define neutralization.
12. What is meant by the repetition rate of the AM envelope?
13. How can a pulse modulator be converted to a frequency modulator?
14. Define Coincidence detector.
15. How can you compare various digital modulation techniques?
16. What advantage does OQPSK have over conventional QPSK?
17. Define Slope-overload distortion.
18. What are the two statements of the sampling theorem for band limited signals?
19. Define Pseudo-noise sequence.
20. What do you mean by processing gain?

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain the circuit operation of AM modulator. (7)
(ii) Explain the block diagram of low level AM transmitter. (7)

(OR)

b) (i) Draw and explain the block diagram of tuned radio frequency receiver. (7)
(ii) Explain the operation of a double-conversion AM receiver. (7)

22. a) (i) Explain the Direct PM modulators with relevant diagrams. (7)
(ii) With the aid of block diagram, how you would design Armstrong indirect FM transmitter. (7)

(OR)

b) (i) Explain in detail about Foster-Seeley discriminator. (7)
(ii) Discuss Amplitude limiters and FM Thresholding. (7)

23. a) Explain the block diagram of Quaternary phase shift keying transmitter and receiver.

(OR)

b) Explain QASK transmitter and receiver with neat diagrams.

24. a) Explain the various signal processing operations involved in pulse code modulation.

(OR)

b) (i) Describe the reconstruction of band pass signal from its samples. (7)
(ii) Describe the bound on Aliasing error. (7)

25. a) Explain the Frequency division and Time division multiplexing with relevant diagrams.

(OR)

b) Explain the two characterization of frequency-hop spread spectrum.

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