Register No: ……

B.E DEGREE EXAMINATIONS: APRIL/MAY 2011

Fourth Semester

COMPUTER SCIENCE AND ENGINEERING

U07EC409: Analog and Digital Communication

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

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. A broadcast radio transmitter radiates 5 KW power when the modulation percentage is 60%, how much is the carrier power

   a) 4.2 KW b) 4.2 W c) 42 W d) 42 KW

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

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

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. The carrier frequency of an FM broadcast transmitter is 100 MHZ and max. Frequency deviation is 75 KHZ. If the highest audio frequency modulating carrier is 15 KHZ. What is the approximate bandwidth of the signal?

   a) 180 KHZ b) 1.8 KHZ c) 180 MHZ d) 1180 HZ

5. Define sampling rate

   a) fs >= fa b) fs >= 2 fa c) fs <= fa d) fs <= 2fa

6. 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

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

   a) Modulation signal increases rapidly b) pulse rate decreases

   c) Modulation signal remains constant d) pulse amplitude decreases

8. Frequency shift keying is used mostly in

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

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

   a) Larger b) medium c) smaller d) Zero

10. How many stages of flip-flops are required to generate PN sequence of length 31?

a) 5 b) 4 c) 6 d) 3

PART B (10 x 2 = 20 Marks)

11. Justify why power is not a constant factor in AM modulation techniques?
12. What is the difference between high level and low level modulation?
13. Differentiate between narrow band and wide band FM
14. Why Armstrong method is superior to reactance modulator?
15. Write down the equation for FM and PM?
16. Does the synchronous pulse is used to overcome the intersymbol interference? If so Justify
17. Define Shannon's theorem. Is it is related to the channel capacity.
18. For an Input stream of 1 1 0 1 0 0 0 1 1 what is the encoded and transmitted sequence When DPSK is used
19. Distinguish the concept behind TDMA and CDMA?
20. What do you mean by processing gain?

PART C (5 x 14 = 70 Marks)

21. a) Obtain the expression of power and efficiency for DSB-SC and SSB-SC. Also draw its corresponding phase diagram

[OR]

b) Explain

(i) Super heterodyne receiver. (7)

(ii) Double conversion AM receivers (7)

22. a) Draw the circuit diagram of Foster-Seelay discriminator and explain its Working

[OR]

b) What is angle modulation? Derive the equations for waveforms, phase deviation, Modulation index and frequency deviation

23. a) (i) What is EYE pattern . What are the interpretations obtained from it (7)

(ii) Write notes on ISI (7)

[OR]

b) (i) With an example explain how hamming code is used to detect two errors and correct one error (7)

(ii) Explain the architecture of a modem, also brief its types (7)

24. a) (i) Sketch the ASK , FSK, BPSK, QPSK waveforms for the sequence

1 1 0 0 1 0 1 0 1 0 1 1 1 (7)

(ii) Explain differentially encoded PSK system with necessary diagram (7)

[OR]

b) Explain the generation of QAM, also discuss its corresponding Constellations and the QAM waveform for the sequence 1 0 10 1 0 0 0 1 1 0

25. a) Explain with neat diagram DS-SS with coherent binary PSK . What are the Performance measures of it?

[OR]

b) Explain the two common multiple access technique for wireless communication.

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