Register Number……

B.TECH. DEGREE EXAMINATIONS: APRIL / MAY 2010

Third Semester

INFORMATION TECHNOLOGY

U07IT301: Principles of Communication

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

Answer ALL the Questions:-

PART A (10 x 1 = 10 Marks)

1. The ability of the receiver to pick up weak signals and amplify them is called as _____.

   (a) Selectivity (b) Sensitivity (c) Fidelity (d) Image Frequency rejection.

2. _____ is also called angle modulation.

   (a) Amplitude modulation (b) Frequency Modulation

   (c) Phase modulation (d) Frequency and phase.

3. If the modulation index is higher than 10, _____.

   (a) Bandwidth FM (b) DPCM (c) Wideband FM (d) PCM.

4. State carson's rule of FM hand width

   (a) $Bw = 2(\delta * f_m(\max))$ (b) $Bw = 2(\delta + f_m(\max))$

   (c) $Bw = (\delta - f_m(\max))$ (d) $Bw = \delta + f_m(\max)$.

5. FSK technique is coherent or non coherent

   (a) Coherent (b) Non Coherent

   (c) Coherent and non coherent (d) None of the above.

6. Bandwidth of FSK signal

   (a) $Bw = 3f_b$ (b) $Bw = 6f_b$ (c) $Bw = 2f_b$ (d) $Bw = 4f_b$.

7. If v = 3 bits, then total number of quantized levels will be _____.

   (a) q = 8 (b) q = 3 (c) q = 9 (d) q = 4.

8. The Nyquist rate is equal to

   (a) $f_s > 2w$ (b) $f_s = 2w$ (c) $f_s \geq 2w$ (d) $f_s < 2w$.

9. Time as well as band width is shared is called as _____.

   (a) FDMA (b) TDMA (c) CDMA (d) DS-SS.

10. What is the relationship between chip duration and bit duration?

    (a) $T_b = N/T_c$ (b) $T_b = N + T_c$ (c) $T_b = N - T_c$ (d) $T_b = N.T_c$.

PART B (10 x 2 = 20 Marks)

11. What is super heterodyne Receiver?
12. The carrier amplitude after amplitude modulation various between 4v and 1v. Calculate depth of modulation.
13. What are the advantages of FM over AM?
14. Why Armstrong method of FM is superior to reactance modulator?
15. State two important advantages of digital modulation.
16. What is DPSK?
17. How quantization error can be reduced?
18. What is the relationship between signaling rate and Bandwidth?
19. Define FDMA and TDMA.
20. What are the properties of PN sequences?

PART C (5 x 14 = 70 Marks)

21. a) What are the types of AM receivers? Explain each with block diagrams.

(OR)

b) Explain the following performance measures of radio receivers.

(i) Selectivity (ii) Sensitivity
(iii) Fidelity (iv) Image frequency rejection.

22. a) (i) Draw the circuit diagram of FET reactance modulator and explain its operation. (7)

(ii) Consider an angle modulated signal

$$x(t) = 20 \cos\left[10^6 \pi + 10 \sin 2\pi(10^3)t\right]$$

Find the maximum phase deviation and maximum frequency deviation. (7)

(OR)

b) Explain the Indirect FM generation by Armstrong method.

23. a) Explain ASK, FSK, PSK with mathematical equations, waveforms and applications .

(OR)

b) Compare the different types of PSK.

24. a) Explain the generation of PCM signal in detail.

(OR)

b) Explain Delta modulation with necessary diagrams.

25. a) Explain frequency lopping spread spectrum method.

(OR)

b) Explain the direct sequence spread spectrum with coherent BPSK.

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