ANNA UNIVERSITY OF TECHNOLOGY, COIMBATORE

B.E. / B.TECH. DEGREE EXAMINATIONS : NOV / DEC 2010

REGULATIONS : 2008

THIRD SEMESTER : CSE

080230008 - ANALOG AND DIGITAL COMMUNICATION

TIME: 3 Hours Max. Marks: 100

PART – A

(20 x 2 = 40 MARKS)

ANSWER ALL QUESTIONS

1. State the significant usage of modulation index and also state why its value is restricted between 0 and 1.
2. Justify why power is not a constant factor in AM modulation techniques.
3. In FM, does the bandwidth directly related to the sidebands? If so justify.
4. Draw the phasor diagram of Narrow band and Wideband FM.
5. Differentiate bit rate from baud rate.
6. Define Shannon's theorem. Is it is related to the channel capacity?
7. Compare ASK and FSK modulation techniques in term of bandwidth, bit rate, baud rate and via practical applications.
8. Does the costas receiver require carrier recovery scheme at the receiving end? If so state the usage of recovered carrier.
9. State the Sampling theorem.
10. What do you observe from EYE pattern?
11. What is the concept behind DPCM?
12. When and in which modulation techniques hunting occurs?
13. Does the sync pulse is used to overcome the intersymbol interference? If so justify.
14. Mention some of the error control and error correcting codes.
15. Distinguish between asynchronous and synchronous modems.

16. Compute the checksum for the following data.

    1010100100111001
17. Brief the methods to improve the speed of the modems.
18. What is the concept behind spread spectrum technique?
19. Brief how pseudo noise is generated.
20. Distinguish the concept behind TDMA and CDMA.

PART - B

(5 x 12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Obtain the expression of power and η for DSB-SC and SSB-SC. Also draw its corresponding phasor diagrams.

22. (a) Sketch the ASK, FSK, BPSK, QPSK waveform for the sequence 1100101010111. (6)

    (b) Explain the generation of QAM, also discuss its corresponding constellations and the QAM waveform for the sequence 10101000110. (6)

23. With a neat diagram, explain the concept of Delta modulation technique. State its drawback. And also state and explain the technique how the above drawback is resolved.

24. (a) Derive an expression for Narrow band and Wideband FM and also draw its corresponding frequency spectra. (9)

    (b) State the relation between FM and PM. (3)

25. For an increasing exponential waveform, explain the steps to obtain PCM modulation, let the step size be 2 volt, $V_H = 4$, $V_L = -4$. And also state how it is demodulated.

26. (a) With an example, explain how hamming code is used to detect two errors and correct one error. (6)

(b) Explain the architecture of a modem, also brief its types. (6)

27. Explain the concept of

(i) Direct Sequence Spread Spectrum with coherent BPSK (6)

(ii) Fast frequency hop spread spectrum (6)

28. (a) Write short notes on intersymbol interference. (6)

(b) With the neat diagram explain the concept behind DPCM. (6)

*****THE END*****