ANNA UNIVERSITY – 2006
B.E/B.TECH III SEMESTER DEGREE EXAMINATION
PRINCIPLES OF COMMUNICATION
(INFORMATION TECHNOLOGY)

TIME-3HOUR
MARK-100

ANSWER ALL QUESTIONS

PART A (10 * 2 = 20)

1. Determine the Fourier Series representation of x(t)=Cos4pt + sin 8pt.

2. What is the relation between the autocorrelation and power spectral density of a random signal? Explain.

3. Calculate the transmission bandwidths required when voice signal having a bandwidth of 4KHZ is transmitted using amplitude modulation and frequency modulation. Assume b=5.

4. What do you understand by FM threshold? Explain.

5. State and explain sampling theorem for band limited signals.

6. What are the causes of Inter Symbol Interface(ISI)?. Explain how eye pattern is used to measure ISI.

7. Differentiate between coherent and non-coherent demodulation.

8. Compare the performances of M-ary PSK and M-ary PSK modulation schemes.

9. List the properties of Pseudo Noise Sequence used in direct sequence spread spectrum system.

10. What are the advantage of cyclic block codes over linear block codes?

PART B (5 * 16 = 80)

11. Consider an amplitude modulated signal S(t)=5 (1+0.5 cos 2000pt +0.5 cos 4000pt+cos 6000pt) cos 25,000pt.

a. Sketch the frequency of spectrum of S(t)

b. Find the total power , the sideband power and power efficiency

c. Find the modulation index.

12a. i) State the Dirichlet condition to be satisfied for Fourier Series and Transform representation .

ii) Find the Fourier co-efficient of a periodic pulse train of period T0.

(OR)

12b. Explain direct method FM signals generation and slope detector for demodulation.

13a. i) Draw the block diagram of Pulse code Modulator and explain.

ii) Differentiate between granular noise and slope overload noise and slope overload noise in delta modulation.

(OR)

13b. Derive an expression for the impulse response of a matched filter working under white noise and hence show that it is equivalent to the time. correlate

14a. Explain Binary PSK and Binary FSK modulation and demodulation with the help of block diagrams.

(OR)

14b. Derive an expression for bit error probability for quadrate PSK receiver and draw the block diagrams for the

modulator and demodulator.

15a. Draw the block diagrams of Direct Sequence and Frequency Hopping spread spectrum transmitters and explain.

(OR)

15b. Write notes on the following

i. Cyclic codes

ii. Adaptive Delta Modulation.