

ANNA UNIVERSITY COIMBATORE

B.E./B.TECH. DEGREE EXAMINATIONS: MAY/JUNE 2010

REGULATION: 2008

FOURTH SEMESTER – ECE

080290020- COMMUNICATION THEORY

TIME: 3Hours

Max.Mark:100

PART A

(20*2=40 MARKS)

ANSWER ALL QUESTIONS

1. What is amplitude Modulation?
2. Sketch the spectrum of AM wave?
3. Mention the two major limitations of AM?
4. What is Donald Duck voice effect?
5. Find the value of modulation index if the total Transmitted power is 150W and carrier power is 100 W in AM?
6. Differentiate FM & PM?
7. What is frequency deviation?
8. A certain FM signal is represented by $v(t) = 10 \sin(10^8 t + 15 \sin 2000 t)$ volt, where t is in seconds. Find the Carrier frequency and modulation index?
9. Define random process?
10. What is white noise?
11. Define noise temperature?
12. What is the basic principle of working of super heterodyne receiver?
13. Define AM threshold effect.
14. What are the methods used to achieve FM threshold reduction?
15. What is the need for pre-emphasis and de-emphasis in FM?
16. State source coding theorem?
17. Mention the properties of entropy?

18. Define information capacity.
19. What is rate distortion theory?
20. Calculate the entropy of the source with symbol probabilities of 0.25, 0.25 and 0.5?

PART B

(5*12 = 60 MARKS)

ANSWER ANY FIVE QUESTIONS

21. Explain the transmission of television signals using modulations? (12)
- 22 (a). Write short notes on FDM. (6)
- (b). Explain the Demodulation of SSb signals? (6)
- 23 (a). Discuss WBFM in detail and derive an expression for FM signal using Bessel function? (10)
- (b). Why frequency modulation is said to be non-linear modulation method. (2)
24. Explain Armstrong method of FM generation in detail with a neat block diagram? (12)
- 25 (a). Write short notes on Shot noise. (6)
- (b) Write short notes on Thermal noise. (6)
26. Discuss the noise performance in AM system using envelope detection? (12)
27. Define mutual information. Find the relation between mutual information and joint probability of the channel input and channel output? (12)
- 28.(a) Explain Huffman coding in detail with an example. (8)
- (b) Discuss the significance of channel capacity theorem. (4)

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