

END SEMESTER EXAMINATION NOV/DEC 2012
ELECTRONICS AND COMMUNICATION ENGINEERING
EC 371 COMMUNICATION THEORY AND SYSTEMS

V SEMESTER

R2004

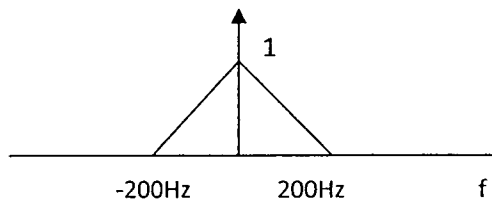
Time 3 hr

Max Marks 100

Answer All Questions

PART A(10x2=20)

1. Draw the spectrum of DSB-SC and SSB-SC modulated signal .Where the carrier signal is 1MHz sinusoidal signal and the spectrum of modulating signal is given below.



2. From the time domain representation of FM signal, prove that its transmission power is independent of the modulation index.
3. What is the modulation scheme used for broadcast radio? Why?
4. How is frequency modulated signal converted into phase modulated signal?
5. Define the term noise equivalent temperature.
6. Determine the output power of an amplifier with noise figure 10dB, when the input power is 17.5 dB.
7. State the low pass sampling theorem. Determine the minimum sampling frequency required to sample the signal of band width 3.4 kHz.
8. What is the condition to be satisfied in order to overcome the slope overload noise in Delta Modulation?
9. Why is sub band coding preferred for speech signal?
10. Briefly explain the characteristic human voice mechanism that enables the use of LPC in coding.

PART B(5X16=80)

- 11.i) Briefly explain the concept of vector quantization and method of code book generation. (10)
- ii) Obtain the signal to noise ratio of a uniform quantizer for sinusoidal input signal. (6)

12. i) Explain the operation of an envelope detector and the condition for the selection of circuit components. (8)

ii) Draw the block diagram of frequency division multiplexing and explain. (8)

OR

12.b.i). List the advantages of using a super heterodyne receiver over a single tuned receiver. (4)

ii). With the neat block diagram, explain the operation of a super heterodyne receiver. (12)

13 .a. Describe the operation of a slope detector as an FM demodulator. How are the drawbacks associated with it removed by a balanced slope detector?

OR

13.b. Show that a wide band FM signal occupies a finite bandwidth and explain the method of calculation of practical bandwidth required for FM transmission.

14.a.i) Explain the need for pre emphasis and de emphasis in an FM system. (6)

ii) Derive the figure of merit of an AM receiver when the carrier to noise power ratio is high. (10)

OR

14.b.i) The available output power from an amplifier is 68 mW. The available power gain of the amplifier is 40 dB and the equivalent noise bandwidth is 25 MHz. Calculate the noise figure of it. (4)

ii. Derive the expression for the figure of merit of an FM receiver and comment on its noise performance. (12)

15.a. Explain the block diagram of a PCM system in detail.

OR

15.b. Explain the differential pulse code modulation scheme used for speech processing. Show the SNR improvement over the PCM system. Discuss how it is made adaptive.
