

24152

B. Tech. 4th Semester (ECE) F. Scheme

Examination, May-2014

COMMUNICATION SYSTEM

Paper-EE-206-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Question number 1 is compulsory, and attempt one question from each of the four sections. All questions carry equal marks.

1. (a) What is the need of modulation in communication system ? 2
- (b) Which one is better in terms of Bandwidth saving : AM, DSBSC, SSB and VSB ? 3
- (c) Define Modulation index. 2
- (d) What do you mean by Quantization ? 2
- (e) Explain the term Noise temperature. 3
- (f) State the advantages of FM over AM. 3
- (g) What is super heterodyne receiver ? 3
- (h) Define SNR. 2

Section-A

2. (a) Draw the block diagram of a communication system and explain the function of each block. 8
- (b) What do you mean by Communication Channel ? Also classify different types of communication channel present. 12

3. (a) Classify the different type of signals present in communication system. 8
- (b) Explain Power Spectral Density and state all its properties. 12

Section-B

4. (a) A given broadcast station transmits power of 50KW when the carrier is modulated by a sinusoidal signal with a modulation index of 0.707. Compute the
- (i) Carrier power
- (ii) Upper Sideband Power
- (iii) Transmission efficiency $3 \times 5 = 15$
- (b) Define image frequency. 5
5. (a) Explain pre-emphasis and de-emphasis. 5
- (b) Explain the Foster Seeley Discriminator method for detection of FM waves. 15

Section-C

6. (a) Calculate the rate of information for an analog signal having 4 kHz bandwidth sampled at 1.5 times the Nyquist rate, and each sample is quantized into 32 equally likely levels. 10
- (b) What is multiplexing ? List the advantages and disadvantages of FDM and TDM. 10

7. (a) With the help of neat block diagram, explain the working of pulse code modulation system. Explain importance of anti-aliasing filter. 10
- (b) Compare the performances of PCM, DM, ADM and DPCM on different parameters. 10

Section-D

8. (a) In a radio receiver an RF amplifier and a mixer are connected in cascade. The amplifier has a noise figure of 10dB and the power gain of 15dB. The noise figure of the mixer stage is 20dB. Calculate the overall noise figure referred to the input. 12
- (b) Explain advantages of digital communication. 8
9. (a) What is noise ? List various sources of noise. Discuss thermal noise. 8
- (b) With the help of neat diagrams, explain the generation and reception of Binary phase shift Keying (BPSK) 12