Exam.Code:0935
Sub. Code: 6983

2021

B.E. (Electrical and Electronics Engineering)

Fifth Semester

EE-507: Communication Engineering

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Draw frequency spectrum of an Amplitude Modulated wave,

b) Draw power spectrum of a QPSK signal.

c) List disadvantages of a FSK system.

d) What is Companding?

e) What is Single Sideband (SSB) communication system?

f) Define Dynamic range.

g) What is the function of the local oscillator in radio receiver?

h) Define Nyquist rate.

i) Why carrier frequency is required in communication systems?

j) Define noise. (10x1)

UNIT – I

II. a) In a given FM system a 5KHz modulating signal modulates 107.8MHz carrier wave with frequency deviation of 40KHz. Determine modulation index and carrier swing in FM signal. What are the highest and lowest frequencies attained by the FM signal?

b) Discuss the working principle of a super heterodyne receiver. (2x5)

III. a) Prove that the figure-of-merit for analog DSB-SC system is unity.

b) Explain the working principle of a PLL Detector. (2x5)

IV. a) Discuss the operation of a Ratio Detector.

b) Draw and explain block diagram of Armstrong indirect FM Transmitter. (2x5)

P.T.O.

UNIT – II

V. a) Draw the block diagram and describe the operation of a delta modulator. What are its advantages and disadvantages compared to a PCM system?

b) Draw the block diagram of a QPSK modulator and explain its elements. (2x5)

VI. a) Discuss FSK modulation scheme using relevant diagram and waveforms.

b) Discuss the term Band-width consideration. Compare PAM, PWM and PPM schemes. (2x5)

VII. a) Using binary PCM, a given signal of 4.2MHz (Band-width) is transmitted over a communication channel with 512 quantization levels. Determine:-

i) Code Word length
ii) Transmission band width
iii) Final bit rate
iv) Output signal to quantization noise ratio.

b) Draw the block diagram of a FSK receiver and explain its operation. Also deduce expression for the Minimum Bandwidth. (2x5)

x-x-x