1078
B.E. (Electrical and Electronics Engineering)
Seventh Semester
EE-710: Analog and Digital Communication

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) Find the percentage of power saved in SSB when compared with AM system?

b) What are the advantages of PCM over PAM?

c) Compare binary QPSK with OQPSK?

d) Find the hamming distance between the following code words C1={1000111} and C2 = {0001 011}?

e) What are the different factors considered for a link design of a satellite system?

(5x2)

UNIT – I

II. a) In angle modulation, explain frequency deviation, percent modulation and phase deviation and modulation index with suitable example.

b) A carrier wave of frequency 10 MHz and peak value of 10 V is amplitude modulated by a 5 KHz sine wave of amplitude 6 V. Determine the modulation index and draw the one sided spectrum of modulated wave ?

(5,5)

III. a) Explain in detail about the operation of PCM transmitter and receiver? Obtain the expression for the signal to quantization noise ratio in PCM system?

b) Explain how adaptive delta modulation performs better than gains more SNR than delta modulation?

(5,5)

IV. a) Derive the relationship between the voltage amplitudes of the side band frequencies and the carrier and draw the frequency spectrum.

b) For an FM modulator with a peak frequency deviation Δf= 20 kHz, a modulating signal frequency f_m = 10 kHz. Find the bandwith using Carson's rule. (5,5)

P.T.O.

(2)

UNIT – II

V.   a) Describe with neat diagram, the operation of a FSK modulator. Draw its phasor and constellation diagram.

b) Explain the generation and detection of a coherent binary PSK signal and derive the power spectral density of binary PSK signal and plot it.   (5,5)

VI. a) Examine that the generator polynomial of a (7,4) cyclic code is $1+X+X^3$. Discover the correct code word transmitted if the received code word is
   (i)   1011011 and
   (ii)   1101 111

b) Write short note on:-
   i) Shannon Fano coding
   ii) Mutual Information   (5,5)

VII. a) Explain Kepler's three law of planetary motion? Also explain various types of orbital perturbations affecting the system?

b) What are step index and graded index fibers? Why do we prefer step index single mode fiber for long distance communication?   (5,5)

x-x-x