

1129
B. E. (Information Technology)
Third Semester
ITE-372: 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. Explain the following:-

- a) Modulation
- b) Frequency Modulation
- c) SSB signal
- d) Carrier
- e) Expanding
- f) Amplitude Modulation
- g) Modem
- h) Analog Signal
- i) Digital Technology
- j) QPSK

(10x1)

UNIT - I

II. a) Draw the block diagram of a phase cancellation SSB generator.

b) Explain how the carrier and the unwanted sidebands are suppressed. What change is necessary to suppress the other sideband? (3,7)

III. a) Explain why PCM, is more noise-resistant than the other forms of pulse modulation.

b) What is *companding*? Why is it preferable to quantizing with tapered steps? Illustrate your answer with a sketch of typical companding curves. (2x5)

IV. a) Define and describe pulse-position modulation, and explain with waveforms how it is derived from PWM.

b) A 2-KHz channel has a signal-to- noise ratio of 24dB.(a) Calculate the maximum capacity of this channel.(b) Assuming constant transmitting power, calculate the maximum capacity when the channel bandwidth is(i) halved, (ii) reduced to a quarter of the original value. (2x5)

P.T.O.

(2)

UNIT - II

- V. a) Explain baud rate and describe how it may differ from information bit rate?
b) What are line coding schemes, explain each one in detail. (2x5)
- VI. a) Why typically, is digital modulation not enough for radio transmission? What are general goals for digital modulation?
b) Explain error calculations for ASK, PSK, FSK. (2x5)
- VII. a) Explain Signal-to-Noise ratio and its significance in Digital Modulation?
b) Write short notes on:
i) Modem classification
ii) MSK (2x5)

x-x-x

Time
NOT