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BT–6/M09   9734
Digital Communication
Paper : ECE-308E

Time : Three Hours]   [Maximum Marks : 100

Note :—Attempt **FIVE** questions in all selecting at least **ONE** question from each of the four units.

UNIT—I

1. (a) Explain Sampling Process and its importance in pulse modulation. 5

   (b) Discuss the operating principle of PAM. How is this generated and recovered ? 10

   (c) What is the channel-bandwidth requirement for a PAM signal with N-independent baseband signals, each band limited to f_m ? Discuss. 5

2. (a) Draw the block diagram of a PCM communication system and explain the function of each block. 15

   (b) What is slope-over load error ? Explain in brief. 5

UNIT—II

3. (a) Define Matched Filter. Also show its impulsive response. 7

   (b) Discuss probability of error in data transmission employing a matched filter. 7

   (c) What is Inter symbol interference ? How is its effect reduced ? 6

4. (a) Describe ideal Nyquist channel raised cosine spectrum in detail. 10

   (b) Explain in detail adaptive equalization. 10

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UNIT—III

5. (a) Illustrate geometric interpretation of signals. 5

   (b) How will you detect known signal in noise ? Explain. 10

   (c) Give the mathematical representation of transmitted signal in BPSK method. 5

6. (a) With the help of proper block diagram, explain the working of an offset QPSK transmitter. 10

   (b) The bit stream d(t) is to be transmitted using DPSK. If d(t) is 001010011010, determine b(t). Show that b(t) b(t – T_b) yields the original data.

   Where b(t) is the baseband signal used as modulating waveform. 10

UNIT—IV

7. (a) What is spread spectrum technique ? Also mention its advantages and applications. 5

   (b) Define Pseudo-random noise sequence. What are its characteristics ? 7

   (c) Draw the block diagram of direct sequence spread spectrum with coherent BPSK system and explain its operating principle in brief. 8

8. Write short notes on the following :—

   (a) Signal space dimensionality and Processing gain. 10

   (b) Frequency Hopping spread spectrum. 10