

Duration: 3hrs

[Max Marks: 80]

- N.B.:** (1) Question No 1 is Compulsory.  
 (2) Attempt any three questions out of the remaining five.  
 (3) All questions carry equal marks.  
 (4) Assume suitable data, if required and state it clearly.

- 1 Briefly explain any FOUR [20]  
 a Comparison of Different AM scheme with spectrum and power Equations.  
 b Define noise factor and noise figure.  
 c State and Prove Sampling theorem for Low pass signal.  
 d Briefly explain sampling theorem.  
 e Draw and Explain Block diagram of Analog Communication System.
- 2 a Derive and mathematics expression for AM waves with AM spectrum. Give the expression of modulation index. Draw the sample waveforms. 10  
 b Discuss the theory of analog frequency modulation with equations and waveforms. Define the modulation index. 10
- 3 a Explain offset QPSK generation and reception with block diagram and equations. 10  
 b For the bit sequence 110010110 draw the following waveforms 10  
 1) Unipolar RZ                      2) Polar RZ                      3) AMI. 4) AMI RZ  
 5) split phase Manchester                      6) M-ary waveform(M=4)
- 4 a Explain Time division multiplexing. Discuss the signal hierarchy in T1 digital carrier systems. 10  
 b Differentiate between BASK, BPSK and BFSK. Draw the block diagram of BPSK transmitter and receiver. 10
- 5 a Explain and Analyze EYE diagram with diagram. What is the significance of it? 10  
 b Explain BFSK modulation with a block diagram and a signal space diagram. 10
- 6 Write short notes on any FOUR 20  
 a Linear equalizer.  
 b Duo binary coding.  
 c Write a short note on Quadrature Amplitude Modulation with diagram.  
 d Minimum Shift Keying (MSK).  
 e Explain Types of Noise in Communication Syatem.

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