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 AM and FM.

    b   Time division multiplexing.

    c   Inter symbol interference.

    d   Quadrature Amplitude Modulation.

    e   Generation of SSB using phase shift method.

2 a   Explain amplitude modulation with equations. Give the expression of   **10**
       modulation index. Draw the sample waveforms.

    b   Explain the generation of DSB-SC AM system using diode balanced modulator.   **10**

3 a   Explain BFSK generation and reception with block diagram and equations.   **10**

    b   For the bit sequence 10110010 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   Draw the block diagram of an offset QPSK transmitter and explain.   **10**

    b   Explain BPSK digital modulation with equations. Draw the block diagram of   **10**
       transmitter and receiver.

5 a   Explain Pulse code modulation and delta modulation.   **10**

    b   Briefly explain the frequency modulation and phase modulation with equations.   **10**
       Define frequency deviation sensitivity and phase deviation sensitivity

6   Write short notes on any FOUR   **20**

    a   Sampling theorem

    b   Duo binary coding

    c   AGC

    d   Noise factor and Noise figure

    e   Superheterodyne receiver

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