

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 modulation index. Draw the sample waveforms. **10**
- 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 transmitter and receiver. **10**
- 5** a Explain Pulse code modulation and delta modulation. **10**
- b Briefly explain the frequency modulation and phase modulation with equations. Define frequency deviation sensitivity and phase deviation sensitivity **10**
- 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