

17535

11718

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--	--

- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.

Marks

1. (A) Attempt any THREE of the following :

12

- (a) Define entropy and state its unit.
- (b) State sampling theorem & explain aliasing effect with neat diagram.
- (c) Define multiplexing & describe it's need in communication.
- (d) List the advantages of SS modulation over the fixed frequency modulation.

(B) Attempt any ONE of the following :

6

- (a) Draw the block diagram of digital communication system & explain it in detail.
- (b) Draw unipolar RZ, Polar NRZ, Polar RZ, Manchester, differential Manchester and AMT waveforms of line codes for data stream : 1101001.

2. Attempt any TWO of the following : 16

- (a) Draw the block schematic of PCM transmitter. Explain the same with waveform.
- (b) List the different types of digital modulation techniques and explain FSK modulation in detail.
- (c) Describe the basic principle involved in CDMA technology with neat sketch. State its any four advantages.

3. Attempt any FOUR of the following : 16

- (a) State limitations of DM. Explain how they overcome in ADM.
- (b) Compare digital pulse modulation with analog pulse modulation. (4 points)
- (c) Give the advantages of TDMA over FDMA. (any four)
- (d) Draw the block diagram of DPSK transmitter and state the function of each block.
- (e) Write the bandwidth requirement for ASK, FSK, BPSK and QPSK.

4. (A) Attempt any THREE of the following : 12

- (a) State the advantages and disadvantages of digital communication system.
- (b) Describe the process of quantization with neat diagram.
- (c) Define "PN sequence". Draw the pseudo random sequence generator.
- (d) Calculate CRC code for data word 100100 to be transmitted and divisor is 1101.

(B) Attempt any ONE of the following :

6

- (a) A discrete memory less source has the letters A, B, C & D with corresponding probabilities {0.08, 0.2, 0.12, 0.4}
- (i) Derive Huffman code for the above source.
 - (ii) Determine the average length of the code word.
 - (iii) Determine the coding efficiency of the Huffman code design.
- (b) Compare FHSS and DSSS system (any six points).

5. Attempt any TWO of the following :

16

- (a) Describe the North American digital multiplexing hierarchy with neat diagram.
- (b) Draw the block diagram of QAM generation system & explain it with waveform.
- (c) Describe the direct sequence spread spectrum technique with the help of block diagram.

6. Attempt any FOUR of the following :

16

- (a) Draw block schematic of DPCM transmitter and receiver.
 - (b) Compare TDM, FDM & CDM (3 points).
 - (c) Compare ASK with FSK modulation. (any four points).
 - (d) Define the following terms :
 - (i) Code Word
 - (ii) Code Rate
 - (iii) Hamming weight
 - (iv) Hamming distance related to code.
 - (e) Describe QPSK generator with waveform.
-

