22428

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following : **5 × 2 = 10**

(a) Define :

(i) Single bit error

(ii) Burst error

(b) State aliasing effect.

(c) State BASK and BFSK bandwidth.

(d) List the types of multiplexing.

(e) List the applications of spread spectrum modulation (any two).

(f) List the characteristics of communication channel.

(g) State the applications of TDM.

2. Attempt any THREE of the following : **3 × 4 = 12**

(a) Identify the block A, B, C, D of digital communication system in the given Figure No. 1 and state function of block A, C.

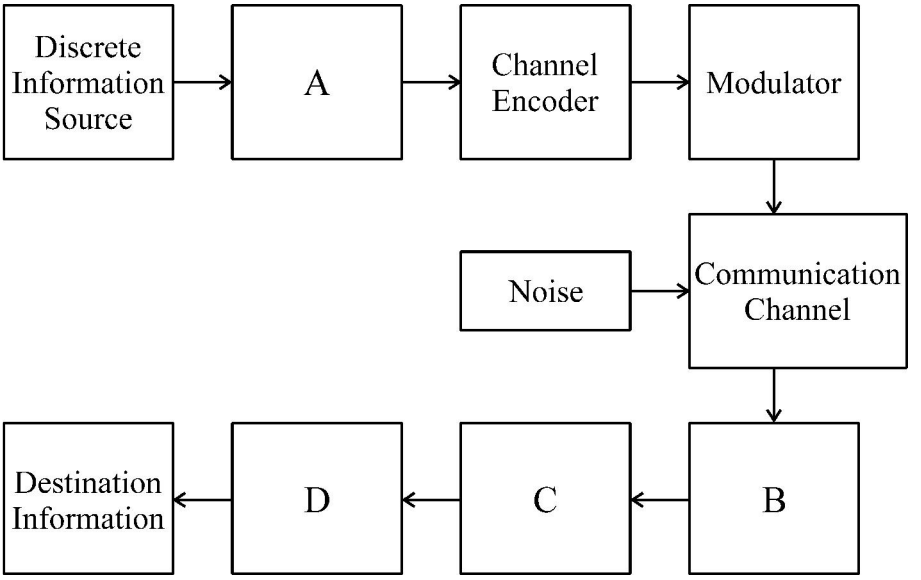

Fig. – 1

(b) With the help of neat waveform explain quantization process.

(c) State M-array encoding and its need.

(d) Compare DCM and DM w.r.to.

(i) No. of bits per symbol

(ii) Bandwidth required

(iii) Step size

(iv) Distortion

3. Attempt any THREE of the following : **3 × 4 = 12**

(a) Draw the block diagram of TDM system and explain its working.

(b) Generate Hamming code for one bit error detection with data 1011 using odd parity.

(c) Draw and explain PCM generator.

(d) Compare FDMA, TDMA and CDMA w.r. to

(i) Definition

(ii) Guard bands

(iii) Bandwidth availability

(iv) Synchronization

4. Attempt any THREE of the following : 3 × 4 = 12

(a) Explain checksum method of error detection with example.

(b) Encode binary sequence 10011100 by using line coding techniques

(i) UPRZ (ii) AMI

(iii) PRZ (iv) Manchester

(c) Explain types of Noise present in Delta modulation with waveforms.

(d) Draw the neat diagram of CCITT digital multiplexing hierarchy and explain in brief.

(e) Explain with the help of block diagram, spread spectrum modulation system.

5. Attempt any TWO of the following : 2 × 6 = 12

(a) Generate CRC code for data 1010110101 by the generator polynomial as $x^3 + x + 1$.

(b) Describe the block diagram of ADM transmitter and illustrate its working with waveform.

(c) State BW required for BASK, BFSK and BPSK. Also draw waveforms for binary data 10110010 in ASK, FSK, PSK modulation.

6. Attempt any TWO of the following : **2 × 6 = 12**

(a) Draw the constellation diagram of 8-QAM and draw 8-QAM waveform for bit stream 110001011010.

(b) Generate the P-N sequence using 3 flip-flop with initial state as 101 for the given Fig. 2.

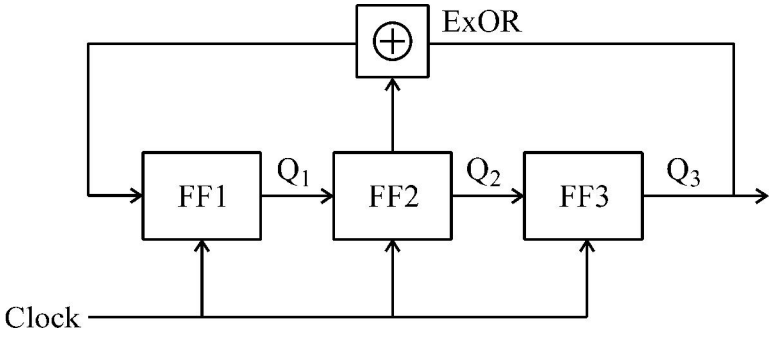

Fig. – 2

(c) Draw the neat block diagram of DPSK and explain it with waveform.