314326

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.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

a) Define –

i) Bit rate

ii) Baud rate

b) State advantages of digital communication system. (Any two)

c) State sampling theorem. Define Nyquist rate.

d) List different digital modulation techniques.

e) List any two advantages of M-ary signaling over binary modulation.

f) List different multiplexing techniques.

g) State applications of spread spectrum modulation.

Marks

2. Attempt any THREE of the following : **12**

a) Draw block diagram of digital communication system. State function of source encoder and channel encoder.

b) Compare FDM and TDM (Any 4 points)

c) Describe natural sampling with circuit diagram and waveforms.

d) Draw block diagram of Direct Sequence Spread Spectrum (DSSS) transmitter and state it's applications.

3. Attempt any THREE of the following : **12**

a) Compare TDMA and CDMA on the basis of sharing of time and BW, synchronisation code word, guard band and guard time.

b) Draw PWM generator and explain it's working with waveform.

c) Describe generation of BASK with block diagram and waveform.

d) Explain with the help of block diagram spread spectrum modulation system.

4. Attempt any THREE of the following : **12**

a) Draw block diagram of QAM transmitter and state it's advantages.

b) Explain the need of M ary encoding. Draw the block diagram of M ary FSK System.

c) Compare FHSS and DSSS (any 4 points)

d) Identify the block diagram shown in Fig. No. 1. Construct and draw the output waveform for the same Assume inital data 101.

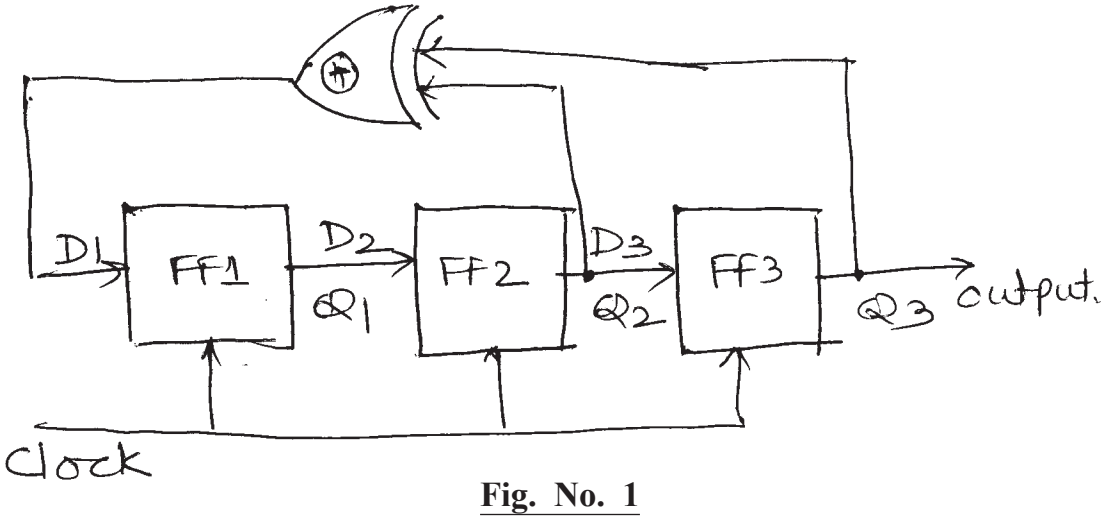

Fig. No. 1

Marks

e) Encode binary sequence 10110110 using unipolar – URZ, Polar NRZ, AMI and Polar Quaternary.

5. Attempt any TWO of the following : **12**

a) i) List different error detection Methods. (2)

ii) Generate CRC code word for data 1101101001 by using divisor 1101. (4)

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

c) i) Define Hamming weight and Hamming distance. (2)

ii) Construct Hamming code for data 1010 with odd parity.

6. Attempt any TWO of the following : **12**

a) Draw neat block diagram of PCM encoder and state it's advantages.

b) i) Explain DM modulator with the help of block diagram and waveforms.

ii) State the noise present in DM system.

c) i) State advantages of TDMA over FDMA. (2)

ii) Draw block diagram of synchronous TDM and describe the working of the same. (4)

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