22481

22223

3 Hours / 70 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.

(7) 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) State advantages of digital communication system.

b) Define coherent and non coherent detection.

c) Define switching. List its types.

d) State any two drawbacks of parity checking for error detection.

e) Specify the bandwidth requirement of BPSK and QPSK.

f) State applications of SS modulation.

g) Define flow control and error control.

Marks

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

a) Compare ASK modulation and FSK modulation.

b) Draw the block diagram of DPSK transmitter and state its bandwidth.

c) Explain datagram approach for packet switching.

d) Construct odd parity hamming code for data 1011.

e) State the advantages of CDMA over FDMA and TDMA.

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

a) Explain ASK generator with block diagram and waveforms.

b) Explain working of circuit switching with diagram.

c) Calculate the baud rate for the given bit rate and type of modulation

i) 5000 bps, ASK

ii) 4000 bps, FSK

d) Explain the process of checksum with example.

e) Explain the TDM multiplexing technique with block diagram.

f) Differentiate between circuit switching and packet switching.

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

a) Five channels each with 200 KHz bandwidth are multiplexed using FDM. Find minimum bandwidth of the link if guard band of 10 KHz is used.

b) Draw and explain BPSK generator with waveforms.

c) Define following terms

i) Entropy

ii) Information rate

iii) Channel capacity

iv) Repeater distance

d) Draw the block diagram of data communication and state its characteristics.

e) Explain LRC and VRC for error detection with suitable example.

Marks

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

a) Draw and explain the block diagram of digital communication system.

b) Explain GoBack N ARQ flow and error control technique with diagram.

c) Generate CRC code for data word 110010 and divisor is 101.

d) In a digital medium with data rate of 12 mbps how many 64 kbps voice channels can be carried if DSSS is used with barker sequence?

e) Explain the concept of virtual circuit switching with neat diagram.

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

a) Draw following line coding formats for the data 10110101.

i) Unipolar Rz

ii) NRz - L

iii) Polar - NRz

iv) AMI

v) Differential manchester

vi) Polar - Rz

b) Explain QAM generator and receiver with block diagram. State it's advantages over QPSK.

c) An FHSS system uses a 4bit PN sequence. If the bit rate of PN is 64 bits per second. Answer the following questions.

i) Find out the total number of possible HOPS.

ii) Find out the total time needed to complete the PN cycle.