# 22634

**23242**

**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) Define following terms :

i) Bit rate

ii) Baud rate

b) Classify networks on the basis of physical size or scale.

c) State two functions of transport layer in TCP/IP reference model.

d) Name the layer of OSI model at which encryption and compression are done.

e) State two limitations of co-axial cable.

f) List four network connecting devices.

g) List the protocols supported by application layer.

**Marks**

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

a) Enlist the elements of data communication system and explain the function of each block.

b) Compare serial transmission with parallel transmission on the basis of

i) Definition

ii) Speed

iii) Cost

iv) Applications

c) State the functions performed by the data link layer and application layer in a TCP/IP protocol.

d) In a particular data transmission system the data received was 1011011. Using 7 bit even parity hamming code, determine the correct code.

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

a) State the names of the layers that perform the following functions :

i) Data Encoding

ii) Data De-cryption

iii) Multiplexing

iv) Files Transfer

b) Calculate CRC for the frame 110101111 and the generator polynomial is $X^3 + X^2 + X + 1$. Generate the codeword for the transmitted frame.

c) On which layer of the OSI model do the following devices work

i) Router

ii) Switch

iii) Gateway

iv) Bridge

d) Compare IPv4 with IPv6 on the basis of

i) Address length

ii) Packet size

iii) Configuration

iv) IP security

**Marks**

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

a) Explain the working principle of WDM with suitable diagram.

b) Describe Go-Back-N ARQ with suitable diagram under damaged frame.

c) Draw the constructional diagram of co-axial cable and explain functions of its various parts.

d) Draw a diagram to establish a network for a computer laboratory with 6 computers having internet facility using the following devices :

i) Switch

ii) Router

e) Explain the concept of datagram packet switching with neat diagram.

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

a) With a suitable diagram, describe the following topologies

i) Tree topology

ii) Ring topology

b) Draw a neat diagram of OSI reference model. State the function of various layers.

c) Classify modems. State two features of each type of modem.

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

a) Suggest the topology for military application with justification. Give advantages and disadvantages of that topology.

b) i) Draw frame format of PPP.

ii) Draw transition phases of PPP and describe it.

c) Draw the block diagram of symmetric key cryptography and state the function of various components. Also state it's advantages and disadvantages.

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