

22634

24225

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer 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) Draw block diagram of data communication.
 - b) Compare serial and parallel transmission on the basis of –
 - i) No. of bits transmitted per clock pulse.
 - ii) Speed of data transfer.
 - c) List the functions of transport layer of OSI model.
 - d) Name the layers of OSI model at which following functions are performed –
 - i) Data encryption
 - ii) File transfer.
 - e) Classify transmission media.

P.T.O.

- f) Give the names of the layer where following protocols are related to –
 - i) UDP
 - ii) FTP
- g) Classify routing methods in network layer.

2. Attempt any THREE of the following: 12

- a) Define protocol. State and explain important key elements of Data Communication.
- b) Compare Peer-to-peer and client server architecture on the basis of –
 - i) Cost
 - ii) Performance
 - iii) Data storage
 - iv) Security.
- c) Draw ISO-OSI reference model and explain the functions of – Physical layer and data link layer.
- d) In a particular data transmission system, the data received was 1011010. Using 7-bit odd parity Hamming code, determine the correct code.

3. Attempt any THREE of the following: 12

- a) State the names of the layers at which following addresses are given –
 - i) Physical address
 - ii) Port address
 - iii) Logical address
 - iv) Specific address.
- b) Explain the transition phase of PPP (point-to-point protocol).
- c) Compare bridge and hub on the basis of –
 - i) Layer of operation
 - ii) Intelligence
 - iii) Function
 - iv) Cost.
- d) Describe concept of FTP with neat sketch.

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

- a) i) State the need of multiplexing.
ii) Explain the working of synchronous TDM with neat sketch.
- b) Calculate CRC code word for the data 11010011 and divisor is 1011. Generate the CRC code word for the given data.
- c) Compare ADSL, HDSL and VDSL scheme on the basis of –
 - i) Mode - Symmetric/Asymmetric
 - ii) No. of twisted pair copper wires
 - iii) Upstream and downstream data rate
 - iv) Modulation technique.
- d) i) State the need for IP V6.
ii) Compare IPV4 and IPV6 on the basis of –
 - 1) Address length
 - 2) Packet size
 - 3) Addressing scheme
 - 4) Type of notation.
- e) Explain circuit switched networks.

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

- a) With suitable diagram, explain the following topologies :–
 - i) Star and
 - ii) Mesh
- b) i) Draw constructional diagram of fiber optic cable. State function of each parts.
ii) State two advantages of fiber optic cable.
- c) Explain the types of addresses in TCP/IP.

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

- a) i) Classify networks based on scale and Transmission Technology.
 - ii) Compare LAN and WAN on the basis of following parameter—
 - 1) Geographical area
 - 2) Speed
 - 3) Installation cost
 - 4) Communication medium.
 - b) Explain stop-and-wait ARQ protocol with neat diagram and example.
 - c) Draw the block diagram of Asymmetric key cryptography and state function of various components.
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