SEAT NO: _____

DURATION: - 2½ hrs   733211024   MARKS:- 75

Note: - (1) All questions are compulsory.
      (2) Figures to the right indicate full marks
      (3) Answer to each question must being on a new page

Q.1) Attempt the following (Any 3)   15M

1) Explain Simplex, Half-Duplex, and Full-Duplex   CO1-U
2) Describe Bus, Star and Ring Topologies   CO1-U
3) What are the classifications of Network   CO1-R
4) Outline the OSI Model and briefly describe its layers   CO1-U
5) Compare TCP Model with OSI Model   CO1-A
6) What is NIC, Modem, Switch, Hub in network   CO1-R

Q.2) Attempt the following (Any 3)   15M

1) Define analog and digital signals. Provide examples of each.   CO2-R
2) Discuss transmission impairments   CO2-A
3) Explain the concepts of bandwidth, throughput, latency, and jitter.   CO2-U
4) Given the Frame 1110001 and the generator polynomial x^3+x+1, compute the CRC and write the transmitted frame.   CO2-A
5) Calculate the checksum for the message: 11101101, 10110100, 01011110, 10000011. Illustrate the sender and receiver side.   CO2-A
6) The following Bit stream is encoded using VRC, LRC and Even Parity. Locate it using Simple and Two Dimensional Parity Check: 10010101, 11111011, 10101101, 00000011, 00011110, 00000000, 10101010, 10000010.   CO1-A

Q.3) Attempt the following (Any 3)   15M

1) What is the role of the Network Layer in computer networks?   CO3-U
2) For the addresses 10.0.0.0/24 and 172.16.1.5/20, find the First Address, Last Address, and Total Number of Hosts.   CO3-A
3) Explain the IPv4 header format   CO3-U
4) Define fragmentation in networking   CO3-U
5) For the network address 172.20.0.0/12 and 192.168.100.10/26, find the Subnet Mask, Network Bits, Host Bits, and Total Number of Host Addresses.   CO3-A
6) Explain CIDR notation.   CO1-U

Q.4) Attempt the following (Any 3)   15M

1) Discuss the responsibilities of the Transport Layer in a network.   CO4-A
2) Explain Transport Layer Protocols   CO4-U
3) Describe the TCP 3-way handshake process.   CO4-U
4) Compare TCP and UDP.   CO4-U
5) Describe TCP header with neat labelled diagram   CO4-A
6) Explain UDP in networking   CO1-U

Q.5) Attempt the following (Any 3)   15M

1) What is the role of the Application Layer   CO5-R
2) Describe different Paradigm in Application Layer   CO5-R

3) Explain how DNS works   CO5-U

4) What is a Uniform Resource Locator (URL)? Describe its components.   CO5-U

5) Discuss the functions of Message Transfer Agent (SMTP) and Message Access Agent (POP/IMAP)   CO5-A

6) Define DHCP and its significance in networking.   CO5-A

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