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Total Number of Pages: 02

IDD (B.Tech and M.Tech)
Sub_Code: CSPC2007

4th Semester Regular Examination: 2024-25

SUBJECT: Computer Networks

BRANCH(S): CE, CSE, CSIT, CST, IT

Time: 3 Hours

Max Marks: 100

Q.Code: S580

Answer Question No.1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q1 Answer the following questions: (2 x 10)

- Define ARPANET and its significance in networking.
- Differentiate between analog and digital signals.
- Name two collision-free protocols in the MAC sublayer.
- List any two transmission impairments and briefly describe them.
- What is a twisted pair cable? Mention its application.
- Explain the term CRC in error detection.
- What is meant by a simplex protocol?
- What is the significance of spanning tree bridges?
- Differentiate between a router and a switch.
- Define multiplexing and list its types.

Part-II

Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)

- Explain the OSI model layers and their responsibilities.
- Explain framing and error correction techniques in the data link layer.
- Describe the working of a stop-and-wait protocol with diagrams.
- Discuss the role of ICMP and IGMP in internetworking.
- Explain the ALOHA protocol and its variants.
- Discuss the different types of multiple access protocols.
- Compare IPv4 and IPv6 addressing schemes.
- Explain the framing techniques used in the data link layer.
- Explain the concept of congestion control in the network layer.
- What are the advantages of fiber optics over coaxial cables?
- Discuss the challenges in wireless LANs and their solutions.
- Explain various guided and unguided transmission media with diagrams.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

(16 x 2)

- Q3** Describe the architecture of the Internet, including logical addressing, IP, and supporting protocols (ARP, RARP, and DHCP). **(16)**
- Q4** Discuss all types of routing algorithms in the network layer. Compare their performance and applications. **(16)**
- Q5** An IP address is given as 192.168.10.14/28. Calculate: **(16)**
- Network address
 - Broadcast address
 - Number of valid hosts
 - First and last valid host addresses.
- Q6** A sliding window protocol is used with a window size of 7. If the sequence number field is 3 bits, is the protocol using Go-Back-N or Selective Repeat? Justify with calculations. **(16)**