Brief Answer Questions **(10×1=10)**

1. What is the basic structure of a network protocol?
2. What do you understand by Data Communication Network?
3. What are the basic components of wired LAN?
4. Define Computer Network & list its components.
5. Define "de facto" standard.
6. Define "de juro" standard.
7. Differentiate half-duplex and full duplex communication.
8. Define the concept of peer-to-peer architecture.
9. What do you understand by the capacity of the circuit?
10. What do you mean by distortion?
11. What is the function of MAC address in LAN?
12. List any two functions of network layer.
13. Define the term NIC.
14. List any four key considerations to enhance network performance.
15. Differentiate analog and digital signal.
16. Define application layer. List some basic functions of application layer?
17. What is the significance of cladding in an optical fiber?
18. List any two techniques of error prevention.
19. What is the use of IP address?
20. List any two functions of transport layer.
21. What are the three major steps in current network design?
22. What is the purpose of data communication standard?
23. Differentiate between the protocols HTTP & HTTPS.
24. Define full-duplex communication with example.
25. What is the significance of twisting in twisted pair cable?
26. How do you understand the term attenuation?
27. What are different types of addresses used in a network?
28. Define subnetting?
29. List any two functions of NOS.
30. What is network management?

Group "B"

Short Answer Questions **(5×3=15)**

1. How does different layers of network model contribute in transferring message from source to destination?
2. Define multiplexing. Explain TDM in detail.
3. Define Multiplexing. Explain FDM in detail.
4. Define Multiplexing. Explain WDM in detail.

5. Differentiate the Go-Back-N-ARQ Protocol with selective-Repeat ARQ Protocol?
6. Encode the data 10011101 using NRZ, differential Manchester & Bipolar encoding.
7. Explain how TCP establish connection using three-way handshaking mechanism.
8. What are the principal organizations responsible for internet governance & what do they do?
9. Define IoT. Explain some application areas of IoT.
10. Explain Instant Messaging with its working procedure.
11. Encode the data 10011101 using RZ, Manchester & FSK encoding technique.
12. What do you understand by PCM? Explain how PCM works?
13. In accessing the media which is better, a controlled access or the contention? Explain.
14. Explain how FTTH works?
15. Explain any five factors that you will consider in selection of communication media.
16. Encode the data 10011101 using ASK, FSK & PSK.
17. Explain how telephone transmit voice data?
18. Explain SONET indetail.
19. Explain T-carrier service in detail.
20. Show how TCP provides reliable communication between the source and destination.
21. Explain how Wimax works.
22. Differentiate between packet-switched networks & dedicated-circuit networks?

Group "C"

Long Answer Questions **(3×5=15)**

1. Explain the design procedure of e-commerce edge & its purpose in LAN Planning?
2. How does DHCP contribute the concept of Dynamic Addressing? Explain.
3. Explain IPV6 datagram format in detail.
4. Define error detection. Describe the checksum method of error detection with example.
5. Explain the design procedure of data-center & its purpose in LAN planning.
6. What do you understand by email? Explain the working process of email.
7. Define error detection. A bit stream 10110101011 is transmitted using the standard CRC method. The generator polynomial is x^3+x+1. Calculate the transmitted frame. During transmission the 5^{th} bit from left is interchange, also show the error is detected on the receiver side.
8. Explain IPV4 datagram format in detail.
9. Explain the term network hub, switches and access points.
10. What are the principal organizations responsible for internet governance & what do they do?
11. Define WWW. Explain the working mechanism of WWW.
12. Define error detection. A bit stream 10110101011 is transmitted using the standard CRC method. The generator polynomial is x^4+x+1. Calculate the transmitted frame. During

transmission the 3rd bit from left is interchange, also show the error is detected on the receiver side.

13. Define routing protocols. Compare and contrast OSPF & BGP?

Group "D"

Comprehensive Questions **(2×10=20)**

1. What is the purpose of subnetting? Suppose you are the network administrator of ABC Company and ABC Company uses 215.10.0.0/19 network. Perform subnetting and calculate subnet mask, network address, usable host address range and broadcast address of each subnet.
2. Suppose you are network administrator of WXYZ organization, the organization has four departments, W (28 hosts) X (23 hosts) Y (16 hosts) and Z (13 hosts). You need to subnet the IP address 202.70.64.0/24 among departments with less IP wastages, now perform the subnetting using a suitable technique.
3. Suppose you are a network designer of an ABC organization & you need to design network for 120 computers. Which topology, network model, protocol, devices, cables and IP addresses do you prefer? Justify your answer.
4. Under what circumstances you use VLAN backbone. Explain the working procedure of VLAN. Also what are the benefits of using VLAN?
5. How VPN services differ from common carrier services? Explain VPN with is types, benefits and illustrate how VPN works.
6. The given IP address is 200.100.10.130/26, answer the following questions?
    a. Is this a host, network, or broadcast address?
    b. What is the subnet mask in dotted decimal format?
    c. What is the network address?
    d. What is the broadcast address?
    e. What is the first usable host address?
    f. What is the last usable host address?
    g. How many usable hosts are in the network?
    h. What is the next available network address?