Unit 1: Introduction to Data Communications
3 Marks Questions:

1. List the 5 components of data communication.
2. Differentiate between LAN and WAN.
3. Name any three layers of the OSI model with their functions.

5 Marks Questions:
4. Explain the TCP/IP model with a diagram.
5. Compare circuit switching and packet switching.
6. Discuss the importance of network standards with examples.

10 Marks Questions:
7. Explain the OSI reference model with layer functions and protocols.
8. Discuss future trends in networking (IoT, BYOD, Cloud Computing).

Unit 2: Application Layer
3 Marks Questions:

1. List three HTTP methods and their purposes.
2. Differentiate between POP3 and IMAP.
3. Name three application architectures.

5 Marks Questions:
4. Explain the working of SMTP with a diagram.
5. Compare client-server and P2P architectures.
6. Describe REST architecture principles.

10 Marks Questions:
7. Explain the working of WWW with HTTP request/response cycle.
8. Discuss cloud computing service models with examples.

Unit 3: Physical Layer
3 Marks Questions:

1. List three types of guided media.
2. Differentiate between FDM and TDM.
3. Name three wireless communication technologies.

5 Marks Questions:
4. Explain digital transmission with line coding techniques.
5. Compare twisted pair and fiber optic cables.
6. Describe the working of DSL technology.

10 Marks Questions:
7. Explain multiplexing techniques with diagrams.
8. Discuss analog and digital transmission of data.

Unit 4: Data Link Layer
3 Marks Questions:

1. List three error detection methods.
2. Differentiate between CSMA/CD and CSMA/CA.
3. Name three data link layer protocols.

5 Marks Questions:
4. Explain the sliding window protocol.

5. Compare synchronous and asynchronous transmission.
6. Describe VLAN operation and benefits.

10 Marks Questions:
7. Explain error control mechanisms in DLL.
8. Discuss media access control methods in detail.

Unit 5: Network & Transport Layers
3 Marks Questions:

1. List three routing protocols.
2. Differentiate between TCP and UDP.
3. Name three fields in IP header.

5 Marks Questions:
4. Explain the TCP 3-way handshake process.
5. Compare distance vector and link state routing.
6. Describe NAT with its types.

10 Marks Questions:
7. Explain IP addressing and subnetting with examples.
8. Discuss TCP congestion control mechanisms.

Unit 6: Wired & Wireless LANs
3 Marks Questions:

1. List three WiFi standards.
2. Differentiate between hub and switch.
3. Name three wireless security protocols.

5 Marks Questions:
4. Explain CSMA/CA working mechanism.
5. Compare wired and wireless LAN characteristics.
6. Describe VLAN implementation benefits.

10 Marks Questions:
7. Explain WiFi frame structure in detail.
8. Discuss enterprise LAN design best practices.

Unit 7: Backbone Networks
3 Marks Questions:

1. List three backbone devices.
2. Differentiate between switched and routed backbones.
3. Name three VLAN benefits.

5 Marks Questions:
4. Explain STP operation in backbone networks.
5. Compare collapsed and distributed backbones.
6. Describe MPLS working principle.

10 Marks Questions:
7. Explain hierarchical network design model.
8. Discuss backbone performance optimization techniques.

Unit 8: WAN Technologies
3 Marks Questions:

1. List three WAN connection types.
2. Differentiate between Frame Relay and ATM.
3. Name three VPN types.

5 Marks Questions:

4. Explain PPP authentication methods.
5. Compare leased lines and packet-switched WANs.
6. Describe IPsec VPN components.

10 Marks Questions:

7. Explain MPLS architecture with labels.
8. Discuss WAN design considerations.

Unit 9: The Internet

3 Marks Questions:

1. List three Internet access technologies.
2. Differentiate between DSL and cable modem.
3. Name three Internet governance organizations.

5 Marks Questions:

4. Explain DNS hierarchy with examples.
5. Compare IPv4 and IPv6 headers.
6. Describe BGP routing basics.

10 Marks Questions:

7. Explain Internet architecture with ISPs and IXPs.
8. Discuss emerging Internet technologies.

Unit 10: Network Management

3 Marks Questions:

1. List three FCAPS management areas.
2. Differentiate between IDS and IPS.
3. Name three network monitoring tools.

5 Marks Questions:

4. Explain SNMP architecture components.
5. Compare reactive and proactive network management.
6. Describe change management process.

10 Marks Questions:

7. Explain network documentation best practices.
8. Discuss network performance optimization techniques.

All questions follow Bloom's taxonomy with:

- 30% Remembering/Understanding (3 marks)
- 50% Applying/Analyzing (5 marks)
- 20% Evaluating/Creating (10 marks)