Module 1:- Basic Concepts of Network

2 Marks:

1. **What is the central connecting point in a star network topology called?**
2. **Describe the layout of devices in a star network topology.**
3. **Briefly describe the role of DHCP (Dynamic Host Configuration Protocol) in network administration.**
4. **What is the significance of the default gateway in a network configuration?**
5. **Explain the difference between a hub and a switch in a network.**
6. **Define the term "LAN" and provide an example of a LAN environment.**
7. **What is the purpose of an IP address in computer networking?**

5 Marks:

1. **Discuss the concept of a hybrid network topology and how it combines elements of different topologies to meet specific networking requirements Provide examples of scenarios where a hybrid topology would be beneficial and Explain the Design Considerations Involved.**
2. **Describe the mesh network topology, including its full mesh and partial mesh variants. Discuss the advantages of a mesh topology in terms of redundancy and fault tolerance, as well as the challenges associated with implementing and managing a mesh network.**
3. **What is the purpose of the ARP (Address Resolution Protocol) in computer networking? Provide a brief overview of how ARP resolves IP addresses to MAC addresses.**
4. **Define the term "routing" in the context of computer networking Briefly explain how routing algorithms work to determine the best path for data packets in a network.**
5. **Explain the concept of bandwidth in computer networks Discuss why bandwidth is an important factor in determining the performance of a network.**
6. **Describe the role of a firewall in computer networks Explain how firewalls enhance network security and provide an example of a type of firewall.**
7. **What is the purpose of a MAC address in computer networking? Provide a brief explanation of how MAC addresses are used in data communication.**

Module 2:- Data Link Layer

2 Marks:

1. **What is the role of framing in the Data Link Layer?**
2. **Explain the purpose of the CRC (Cyclic Redundancy Check) in the Data Link Layer.**

3. **What is the significance of subnetting in the content of the Network Layer?**
4. **Differentiate between connectionless and connection-oriented communication in the Network Layer.**
5. **Explain the concept of fragmentation in the context of the Network Layer.**
6. **Describe one advantage of using error detection techniques in the Data Link Layer.**
7. **Define MAC (Media Access Control) address and explain its significance in data communication at the Data Link Layer.**

5 Marks:

1. **Describe advantages of using routing protocols in the Network Layer.**
2. **Explain the concept of framing in the Data Link Layer. Discuss the purpose of framing and describe two common framing techniques used in modern networks. Provide examples of protocols associated with each framing technique.**
3. **Discuss the concept of encapsulation and decapsulation in the integration of the Data Link and Network Layers. Explain how data is encapsulated at the Network Layer and then further encapsulated into frames at the Data Link Layer for transmission.**
4. **Explain the role of ARP (Address Resolution Protocol) in the integration of the Data Link and Network Layers. Discuss how ARP maps IP addresses to MAC addresses in a local network.**
5. **Define the Network Layer in the OSI model and explain its primary functions Discuss how the Network Layer facilitates end-to-end communication in a network.**
6. **Explain the role of the Data Link Layer in the OSI model Discuss its responsibilities and functions.**
7. **Compare and contrast the two sublayers of the Data Link Layer LLC (Logical Link Control) and MAC (Media Access Control) Provide examples of protocols associated with each sublayer.**

Module 3:- Transport Layer

2 Marks:

1. **Define the term "protocol" in the context of the Application Layer.**
2. **Define the term "segmentation" in the context of the Transport Layer.**
3. **Explain the role of flow control in the Transport Layer.**
4. **What is the role of the Transport Layer in multiplexing and demultiplexing?**

5. **What is the role of HTTP (Hypertext Transfer Protocol) in the Application Layer?**
6. **Differentiate between a web browser and a web server in the context of the Application Layer**
7. **Explain the role of the chant in the client-server model of communication at the Application Layer.**

5 Marks:

1. **Elaborate is the primary function of the Application Layer in the OSI model?**
2. **Explain the primary functions of the Application Layer in the OSI model Discuss the role of protocols in the Application Layer and provide examples of commonly used application layer protocols.**
3. **Explain the primary functions of the Transport Layer in the OSI model Discuss the differences between the Transmission Control Protocol (TCP) and the User Datagram Protocol (UDP) in terms of their rehability, flow control, and error detection mechanisms. Provide examples of scenarios where each protocol is commonly used.**
4. **Explain the key responsibilities of the Transport Layer in the OSI model Discuss the differences between connection-oriented and connectionless communication in the Transport Layer, highlighting the advantages and disadvantages of each approach. Provide examples of protocols that use each type of communication.**
5. **Explain the client-server model in the context of the Application Layer. Discuss the roles of clients and servers in application communication and provide examples of applications that follow this model**
6. **Define the Application Layer in the OSI model and discuss its primary functions.**
7. **Describe the process of error detection and correction in the Transport Layer Discuss the significance of techniques such as checksum and acknowledgment in ensuring data integrity and reliability.**