

Answer Key: MAQB

Section 1 (6 marks per question)

Q1. Explain the role of the network layer in transferring data from source to destination.

Keywords:

Main Points:

- Accepts a packet from the transport layer
- Encapsulates it in a datagram
- Delivers it to the data link layer

Detailed Explanation:

At the destination, the datagram is decapsulated, the packet is extracted, and delivered to the corresponding transport layer.

Q2. Describe the network layer responsibilities in ensuring host-to-host message delivery on the Internet.

Keywords:

Logical addresses, Routing, Data routing paths

Main Points:

- Design of logical addresses
- Routing packets from source to destination
- Managing data transfer using logical network paths

Detailed Explanation:

Network layer also utilizes routing protocols to assist packets in finding their path from source to destination.

Q3. Discuss the key communication responsibilities handled by the network layer.

Keywords:

Data packet delivery, Packet fragmentation, Packet routing

Main Points:

- Carrying data packets from source to destination
- Fragmenting packets for reliable delivery
- Routing packets through available routes

Detailed Explanation:

Additionally, source and destination addresses are added to data packets within the network layer.

Q4. Explain the process of packetizing at the network layer and its significance.

Keywords:

Packetizing, Data encapsulation, Network layer packet

Main Points:

- Encapsulation of data in a network layer packet
- Addition of source and destination addresses
- Delivery to the data link layer

Detailed Explanation:

Packetizing ensures ordered and reliable transmission of data across the network.

Q5. Describe the essential features and services provided by the network layer.

Keywords:

Network layer features, Network layer services

Main Points:

- Packetizing
- Routing
- Forwarding
- Error control
- Flow control
- Congestion control
- Quality of service
- Security

Detailed Explanation:

These services are crucial for efficient and reliable network communication.