

Answer Key: JSQ

Section 1 (6 marks per question)

Q1. Differentiate between the Client-Server and Peer-to-Peer paradigms.

Keywords:

Client-Server, Peer-to-Peer

Main Points:

- In the Client-Server paradigm, services are provided by dedicated servers.
- In the Peer-to-Peer paradigm, all nodes can act as both clients and servers.

Detailed Explanation:

The Client-Server paradigm is suitable for centralized services, while the Peer-to-Peer paradigm is more suitable for decentralized applications.

Q2. Explain the role of the Application Layer in the TCP/IP suite.

Keywords:

Application Layer, TCP/IP

Main Points:

- The Application Layer is the highest layer in the TCP/IP suite.
- It provides services directly to the user.

Detailed Explanation:

The Application Layer is responsible for providing specific services to applications, such as web browsing, file transfer, and email.

Q3. Discuss the advantages of nonstandard application layer protocols.

Keywords:

Nonstandard Protocols, Customization

Main Points:

- Nonstandard protocols allow for customization and tailoring to specific needs.
- They can be developed and implemented without the need for standardization.

Detailed Explanation:

Nonstandard protocols provide flexibility and control over application-specific communication, enabling the creation of proprietary solutions.

Q4. What are the characteristics of the Server process in the Client-Server paradigm?

Keywords:

Server process, Client-Server

Main Points:

- The Server process is always running, waiting for client connections.
- It provides a specific type of service.

Detailed Explanation:

The Server process is responsible for handling requests from clients and providing the requested services.

Q5. Identify the main difference between standard and nonstandard application layer protocols.

Keywords:

Standard Protocols, Nonstandard Protocols

Main Points:

- Standard protocols are defined and documented by the Internet authority.
- Nonstandard protocols are created by individual developers or organizations.

Detailed Explanation:

Standard protocols ensure interoperability and consistency, while nonstandard protocols provide flexibility and customization options.

Examples:

- HTTP and FTP are examples of standard protocols.
- Skype is an example of a nonstandard protocol.

Q6. Explain the significance of flexibility in the Application Layer.

Keywords:

Application Layer, Flexibility

Main Points:

- Flexibility allows for the easy addition of new application protocols to the Internet.
- It enables the adoption of new technologies and services without major disruptions.

Detailed Explanation:

The flexibility of the Application Layer has contributed to the growth and evolution of the Internet, allowing for the integration of emerging technologies.

Examples:

- The introduction of social media platforms and mobile applications.

Q7. What is the role of Transport Layer protocols in relation to the Application Layer?

Keywords:

Application Layer, Transport Layer

Main Points:

- Transport Layer protocols provide reliable communication between Application Layer protocols.
- They handle data transmission and ensure error correction and flow control.

Detailed Explanation:

The Application Layer relies on the Transport Layer to establish and maintain connections, ensuring efficient and reliable data exchange.

Examples:

- TCP and UDP are examples of Transport Layer protocols.

Q8. Describe the advantages of using standard application layer protocols.

Keywords:

Standard Protocols, Interoperability

Main Points:

- Standardization ensures interoperability between different systems.
- It facilitates global communication and collaboration.

Detailed Explanation:

Standard protocols provide a common language for application developers, enabling seamless communication and data exchange between devices and networks.

Q9. Explain why the Client-Server paradigm is considered the traditional paradigm.

Keywords:

Client-Server, Traditional Paradigm

Main Points:

- The Client-Server paradigm has been widely adopted and used for decades.
- It provides a well-established and stable architecture for distributed applications.

Detailed Explanation:

The Client-Server paradigm has proven to be reliable and scalable, making it suitable for a wide range of applications and services.

Q10. Discuss the limitations of the Client-Server paradigm.

Keywords:

Client-Server, Limitations

Main Points:

- The Client-Server paradigm can be vulnerable to single points of failure.
- It may require significant resources and maintenance to manage a dedicated server.

Detailed Explanation:

While the Client-Server paradigm offers numerous advantages, it has some limitations that can hinder its performance and scalability in certain scenarios.

Examples:

- If the server fails, clients will be unable to access the services.