Name: Siddarth
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1. **Identify which one is the software layer and which one is the hardware layer in the Open Systems Interconnection Model between A and B.**
   - A represents the software layer, encompassing the Application, Presentation, and Session layers.
   - B represents the hardware layer, including the Network, Data Link, and Physical layers.

2. **What protocol does HTTPS utilize for security?**
   - HTTPS employs the TLS (Transport Layer Security) protocol to ensure secure communication.

3. **Explain VPN apart from LAN, VAN, and MAN.**
   - A VPN (Virtual Private Network) enables users to securely connect to another network over the internet, providing enhanced privacy and security by encrypting data and masking the user's IP address.

4. **Digital Signatures are a new way to sign documents digitally. What other forms of authentication have you used online?**
   - Other forms of authentication I've used include biometric methods (such as fingerprint or facial recognition), two-factor authentication (2FA), and security tokens.

5. **After successful authentication, what is used to determine user access and operations?**
   - After successful authentication, authorization is used to determine what resources the user can access and what operations they can perform.

6. **According to the firewall rules provided, is the action allowed if Network IP: 192.168.21.0 tries to connect and send data? (Allow/Deny)**
    ○ The action is Deny according to the specified firewall rules.

7. **If Application Layer Firewall, software Firewall, and Hardware Firewall are not installed, your application may receive _____ data (malicious/all secured).**
    ○ If these firewalls are not installed, your application may receive malicious data.

8. **When a larger network is divided into smaller networks to maintain security and simplify routing, what is the process called? (Subnetting/Firewall)**
    ○ This process is known as subnetting.

9. **Match A and B to their respective IP assignment types.**
    ○ **Static IP Address:**
        ■ Provided by the ISP (Internet Service Provider).
        ■ Remains constant over time, making it easily traceable.
    ○ **Dynamic IP Address:**
        ■ Provided by DHCP (Dynamic Host Configuration Protocol).
        ■ Changes periodically, making it less traceable.

10. **List two differences between MAC address, IP address, and Network Address.**
    ○ **MAC Address:**
        ■ Unique identifier for network interfaces used for communications on the physical network segment.
        ■ Operates at the Data Link Layer (Layer 2) of the OSI model.
    ○ **IP Address:**
        ■ Numerical label assigned to devices connected to a computer network using the Internet Protocol.
        ■ Operates at the Network Layer (Layer 3) of the OSI model.
    ○ **Network Address:**
        ■ Identifies a network segment and is used in routing to determine the path for data to reach its destination.
        ■ Combines the IP address with the subnet mask.

11. **Match the roles of the 7 OSI layers with their descriptions:**
    - **1. Application Layer:** G. Message formatting, Human-Machine interfaces, HTTP, FTP, Data
    - **2. Presentation Layer:** C. Coding into binary, encryption, compression, JPG, HTTPS, SSL, TSL, ASCII, Data
    - **3. Session Layer:** D. Authentication, Permissions, connections between hosts, NetBIOS, PPTP, RPC, API, Data
    - **4. Transport Layer:** E. End-to-End Error Control, TCP, UDP, Segments
    - **5. Network Layer:** F. Routing, switching, IPV4, IPV6, IPSec, Packets
    - **6. Data Link Layer:** B. MAC Address, Flow control, Frames, switches, ARP
    - **7. Physical Layer:** A. Bit Stream, physical media, Cables, Connectors

12. **DNS translates host names to IP addresses. Ping amazon.com and provide the IP addresses.**
    - **Domain:** amazon
    - **IP address:**

    Pinging amazon.in [52.95.120.67] with 32 bytes of data:

    Reply from 52.95.120.67: bytes=32 time=161ms TTL=242

    Reply from 52.95.120.67: bytes=32 time=161ms TTL=242

    Reply from 52.95.120.67: bytes=32 time=162ms TTL=242

    Reply from 52.95.120.67: bytes=32 time=161ms TTL=242

    Ping statistics for 52.95.120.67:

    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

    Approximate round trip times in milli-seconds:

    Minimum = 161ms, Maximum = 162ms, Average = 161ms

13. **From the routing table, which interface should be chosen for Network ID 172.16.0.0: (A/B)?**
    - **Routing Table:**
        - Network Address: 172.16.0.0
        - Subnet ID: 172.16.0.0/16
        - Network ID Subnet Mask Interface
        - 200.1.2.0 255.255.255.192 A
        - 172.16.0.0 255.255.255.193 B
    - The Interface that should be chosen for Network ID 172.16.0.0 is B.