CCNA Assignment

Module 7 :- Network fundamentals

1. Explain Network Topologies

A: Network topology is how devices are arranged in a network. Types include Bus, Star, Ring, Mesh, and Hybrid. They affect data flow and reliability. Choose based on network size and needs.

2. Explain TCP/IP Networking Model

A: TCP/IP networking model has four layers: Application, Transport, Internet, and Link. The layers handle user interfaces, end-to-end communication, addressing, and physical connections, respectively.

3. Explain LAN and WAN NetworkA: LAN is for small areas with high-speed connections, like within a building. WAN covers larger distances, connecting LANs across cities or countries, with comparatively lower speeds.

4. Differentiate between LAN/WAN operation and features

A: LAN is for small areas like a building, with fast connections. WAN covers big distances, linking buildings or cities, but the speed is not as fast as LAN.

5. Describe the purpose and functions of various network devicesA: Routers connect and direct data between different networks, while switches efficiently link devices within a network. Hubs, though less intelligent, connect devices and broadcast signals. Firewalls enhance security by regulating incoming and outgoing traffic.

6. Make list of the appropriate media, cables, ports, and connectors to connect switches to other.

A: To connect switches to other devices, use Ethernet cables with RJ-45 connectors for short distances, and fiber optic cables with connectors like LC or SC for longer distances.

7. Define Network devices and hosts

A: Network devices, such as routers and switches, manage communication, while hosts like computers actively exchange data in a computer network.

8. What are Ethernet Standard (802.3) and Frame Formats?A: The Ethernet standard (IEEE 802.3) governs wired networking, specifying rules for communication. Ethernet frame formats define how data is structured in packets, ensuring consistent and reliable information exchange.

1. Comparison between UTP, MM and SM Ethernet Cabling

A: UTP suits short distances, MM excels locally with high bandwidth, and SM is optimal for long distances. Each has specific advantages based on distance needs.

2. Make Cross cable

A: To make a cross-over Ethernet cable, arrange wires using T568A on one end and T568B on the other. Terminate both ends with RJ-45 connectors and test for functionality.

3. Differentiate between LAN/WAN operation and features

A: LANs operate within limited areas, offering high data rates and Ethernet connections, usually owned by one organization. WANs cover larger regions, connect LANs across cities, have slower data rates, and involve multiple organizations or service providers.

4. Explain ARP, ICMP and Domain nameA: ARP resolves IP to MAC addresses locally. ICMP aids in error reporting and diagnostics. Domain names are human-readable labels for IP addresses.

5. Describe the components required for network and Internet communications

A: Network components: routers, switches, modems, cables, end points device.

6. Explain Encapsulation and DE capsulation in OSI Reference modelA: Encapsulation in OSI adds layer-specific headers; decapsulation removes them during data transfer.

7. Explain network segmentation and basic traffic management concepts

A:Network segmentation divides for security; QoS prioritizes traffic, load balancing distributes load.

8. What is flow control and acknowledgment?A: Flow control manages data transmission speed to prevent congestion, while acknowledgment confirms successful data receipt, ensuring reliable communication.

1. Use the OSI and TCP/IP models and their associated protocols to explain how data Flows in a networkA: Data flows through OSI (7 layers) and TCP/IP (4 layers) models using protocols at each layer for tasks like addressing and reliable communication.

2. Identify and explain at layers 1, 2, 3, and 7 using a layered model approach

A: Layer 1 (Physical) manages raw bit transmission via cables and connectors. Layer 2 (Data Link) ensures reliable point-to-point communication with framing and MAC addressing.

3. Explain CSMA/CD and CSMA/CA

A: CSMA/CD for Ethernet: Listen, then transmit, with collision detection.

CSMA/CA for wireless: Sense channel, use RTS/CTS to avoid collisions.

4. Describe the uses of straight-through and crossover Ethernet cablesA: Straight – through cable is used connect pc to switch, switch to router and crossover cable is used to connect switch to switch or router to router.

5. Explain Layer 2 and Layer 3 Switch

A: Layer 2 switches operate at the Data Link layer, using MAC addresses for packet forwarding. Layer 3 switches, functioning at the Network layer, additionally use IP addresses for routing, providing more advanced networking capabilities.

6. Explain Spanning Tree Protocol

A: Spanning Tree Protocol (STP) prevents network loops by blocking redundant paths, ensuring a stable topology.

7. Explain unicast Multicast and Broadcast

A: Unicast: One sender, one receiver. Multicast: One sender, selected group. Broadcast: One sender, all devices.

8. Explain CAM (Content Addressable Memory)

A: CAM (Content Addressable Memory) enables quick data retrieval by searching content, often used in switches for fast MAC address lookup.

9. Explain CAM (Ternary Content Addressable Memory)

A: TCAM (Ternary Content Addressable Memory) allows data retrieval based on 0, 1, or don't care states, used in networking for fast matching in routing tables and access control lists.

10. Which command use of Show MAC TABLE?A: show mac address-table