## Module 5. Network Fundamentals and Building Networks

### **Beginner Question**

1. **What is network?**

**Ans-in the computer world network is two or more device are connected to each other it’s called network.**

1. **List Common Network Components**

**Ans- switch ,router ,hub**

1. **Add and configure loopback adaptor in network and sharing center?**

**Ans-In Windows, open Device Manager.**

**Click Next on the Welcome to the Add Hardware Wizard.**

**On the box that asks, "What do you want the wizard to do?",**

**Scroll down and select Network Adapters**

### **Intermediate Question**

1. **Explain application of network?**

**Ans- A network application is any application running on one host providing communication to another application running on a different host. Network applications allow network operators to easily manage and monitor network traffic as well as analyze data that can be used to improve network systems**

1. **What do you mean by Node?**

**Ans-A node is a point of intersection/connection within a data communication network. In an environment where all devices are accessible through the network, these devices are all considered nodes. The individual definition of each node depends on the type of network it refers to.**

1. **practice of simple file folder sharing**

**Ans- a process of sharing knowledge, skills, and experiences within an organization**

### **Advance Question**

1. **List types of devices ?**

**Ans-Mobile, Tablet, Notebook, Digital media player,**

**Smart–phones,Digital cameras ,Digital still camera.**

**Calculator watch , Smartwatch.**

1. **Explain types of router?**

**Ans- Wired and wireless routers**

**Wired routers share data over cables and create wired local area networks (LANs), while wireless routers use antennas to share data and create wireless local area networks (WLANs).**

### **Topic: Types of Network**

#### **Beginner Question**

1. **What is Difference between a LAN, MAN, WAN?**

**Ans- WAN is an acronym for Wide Area Network. LAN is a network that usually connects a small group of computers in a given geographical area. MAN is a comparatively wider network that covers large regions- like towns, cities, etc. The WAN network spans to an even larger locality.**

1. **Common Network Components?**

**Ans- Computer network components include both physical parts and the software required to install computer networks in both organizations and homes. The server, client, peer, transmission medium, and connecting devices are the hardware components. The operating system and protocols are software components.**

#### **Intermediate Question**

1. **Explain Wide Area Network?**

**Ans- A wide-area network is the technology that connects your offices, data Centers, cloud applications, and cloud storage together. It is called a wide-area network because it spans beyond a single building or large campus to include multiple locations spread across a specific geographic area, or even the world.**

1. **Explain Network Backbone?**

**Ans- a backbone or core network is a part of a computer network which interconnects networks, providing a path for the exchange of information between different LANs or subnetworks. A backbone can tie together diverse networks in the same building, in different buildings in a campus environment, or over wide areas.**

1. **Explain CAN ?**

**Ans- A campus area network (CAN) is a computer network that spans a limited geographic area. CANs inter connect multiple local area networks (LAN) within an educational or corporate campus. Most CANs connect to the public Internet.**

#### **Advance Question**

1. **Define Physical Network Topologies ?**

**Ans- Physical topology describes the actual or the physical layout of a network, such as the physical arrangement of wires, media (computers), or cables in a network. Two or more devices can connect to a link, and when the number of links exceeds two, they form a physical topology.**

1. **Network Architecture: Peer-to-Peer?**

**Ans- A peer-to-peer network is designed around the notion of equal peer nodes simultaneously functioning as both "clients" and "servers" to the other nodes on the network. This model of network arrangement differs from the client–server model where communication is usually to and from a central server.**

1. **Point-to-multipoint network?**

**Ans- The point-to-multipoint topology consists of a central base station that supports several subscriber stations. These offer network access from a single location to multiple locations, permitting them to use the same network resources between them.**

### **Topic: Network Devices**

#### **Beginner Question**

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1. **Why we use Network and Devices?**

**Ans- File sharing - you can easily share data between different users, or access it remotely if you keep it on other connected devices. Resource sharing - using network-connected peripheral devices like printers, scanners and copiers, or sharing software between multiple users, saves money.**

1. **Explain Switch?**

**Ans- The expression used in a switch statement must have an integral or enumerated type, or be of a class type in which the class has a single conversion function to an integral or enumerated type. You can have any number of case statements within a switch.**

#### **Intermediate Question**

1. **Define list of cables in use of network?**

**Ans- Twisted pair, coaxial cables and Fiber optic cable**

1. **Explain Define Access point?**

**Ans- an access point is a device that creates a wireless local area network, or WLAN, usually in an office or large building. An access point connects to a wired router, switch, or hub via an Ethernet cable, and projects a Wi-Fi signal to a designated area.**

1. **Which types of transmission modes in computer network ?**

**Ans- Simplex Transmission Mode.**

**Half Duplex Transmission Mode.**

**Full Duplex Transmission Mode.**

1. **Practice on Remote Desktop connection?**

**Ans- done**

1. **Practice on remote assistance?**

**Ans- done**

#### **Advance Question**

1. **Explain Repeater and router?**

**Ans- a Wi-Fi repeater, extender, or booster is a device that forwards wireless signals from the router to cover a larger area, such as multiple floors of a house. The repeater creates a new network based on signals from the originating network, and the clients that connect to the repeater are thus on a separate network**

1. **What is multiplexer?**

**Ans - a device that selects between several analog or digital input signals and forwards the selected input to a single output line.**

1. **Explain MODEM?**

**Ans- a modem is a hardware which connects to a computer, broadband network or wireless router. Modem converts information between analogue and digital formats in real time making seamless two-way network communication.**

1. **Monitor "event viewer"?**

**Ans - The Event Viewer is a tool in Windows that displays detailed information about significant events on your computer.**

### **Topic: Install and configure DHCP, DNS**

#### **Beginner Question**

1. **Explain DHCP Dynamic host configuration protocol?**

**Ans- Dynamic Host Configuration Protocol (DHCP) is a network protocol used to automate the process of configuring devices on IP networks, thus allowing them to use network services such as DNS, NTP, and any communication protocol based on UDP or TCP.**

1. **Application of DHCP with one example?**

**Ans- Dynamic Host Configuration Protocol (DHCP) is a network protocol used to automate the process of configuring devices on IP networks, thus allowing them to use network services such as DNS, NTP, and any communication protocol based on UDP or TCP.**

**example: A DHCP Server is a network server that automatically provides and assigns IP addresses, default gateways and other network parameters to client devices.**

#### **Intermediate Question**

1. **Explain Domain naming Services?**

**Ans- A Domain Name System (DNS) turns domain names into IP addresses, which allow browsers to get to websites and other internet resources. Every device on the internet has an IP address, which other devices can use to locate the device.**

1. **Application of DNS with one example?**

**Ans- DNS servers convert URLs and domain names into IP addresses that computers can understand and use. They translate what a user types into a browser into something the machine can use to find a webpage. This process of translation and lookup is called DNS resolution.**

**example: 192.0.2.44 DNS server**

### **Topic: Network Topologies**

#### **Beginner Question**

1. **What are the 5 network topologies?**

**Ans- star topologies**

**Mash topologies**

**Bus topologies**

**Ring topologies**

**Hybrid topologies**

**Tree topologies**

1. **What is Internet topology?**

**Ans - Internet topology is the structure by which hosts, routers or autonomous systems are connected to each other. The majority of existing Internet topology research focuses on the AS-level.**

1. **What is protocol?**

**Ans- in networking, a protocol is a standardized set of rules for formatting and processing data. Protocols enable computers to communicate with one another.**

#### **Intermediate Question**

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1. **What is the most common network topology?**

**Ans- star topologies.**

1. **Explain star topology in networking?**

**Ans- Star topology is the most commonly used topology system. Every node connects to a central network device in this layout, like a hub, switch or computer.**

#### **Advance Question**

1. **Explain Hybrid topology?**

**Ans- a type of network topology in which two or more different topologies are integrated or combined to lay out a network. In layman's terms, hybrid topology is the combination of two or more networks.**

1. **What is physical and logical topology?**

**Ans- a physical topology describes how network devices are physically connected - in other words, how devices are actually plugged into each other. We're talking about cables, wireless connectivity, and more. A logical topology describes how network devices appear to be connected to each other.**

1. **What are the types of logical topology?**

**Ans- bus topologies and ring topologies.**

### **Topic: OSI Model**

#### **Beginner Question**

1. **What is OSI model explain?**

**Ans- the OSI data model provides a universal language for computer networking, so diverse technologies can communicate using standard protocols or rules of communication. Every technology in a specific layer must provide certain capabilities and perform specific functions to be useful in networking.**

1. **List of Application layer protocol? How many types of protocols are there?**

**Ans: 1) HTTP.**

**2) FTP.**

**3) SMTP.**

**4) DNS.**

**5) Telnet.**

**6) SSH.**

**7) NFS.**

**8) SNMP.**

#### **Intermediate Question**

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1. **What is the difference between TCP IP model and OSI model?**

**Ans- key Difference between TCP/IP and OSI Model. TCP/IP is a practical model that addresses specific communication challenges and relies on standardized protocols. In contrast, OSI serves as a comprehensive, protocol-independent framework designed to encompass various network communication methods.**

1. **What is TCP IP networking?**

**Ans- TCP/IP stands for Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet. TCP/IP is also used as a communications protocol in a private computer network.**

#### **Advance Question**

1. **What is a wired Internet connection?**

**Ans- a wired network uses cables to connect devices, such as laptop or desktop computers, to the Internet or another network. A wired network has some disadvantages when compared to a wireless network. The biggest disadvantage is that your device is tethered to a router.**

1. **What are the disadvantages of wired networks? how do I configure network authentication?**

**Ans- Less mobility for users.**

**Installation time.**

**Maintenance.**

**If not laid properly, wires can make a space look untidy, be a trip hazard or become disconnected easily by accident.**

1. **Practice of Team viewer, Any Desk, Google Hangout, Skype, zoom?**

**Ans- done**

1. **Download google chrome**

**Ans- done**

1. **configure "date and time" opting in control panel**

**Ans- done**

### **Topic: TCP/IP**

* **Assignment level Basic:** 
  1. **What is TCP/IP?**

**Ans- TCP/IP stands for Transmission Control Protocol/Internet Protocol. TCP/IP is a set of standardized rules that allow computers to communicate on a network such as the internet**

* 1. **What is the full form of TCP/IP?**

**Ans- transmission control protocol or internet protocol.**

* **Assignment level Intermediate:** 
  1. **List out the types of IP?**

**Ans - public, private, static, and dynamic.**

* 1. **What is protocol?**

**Ans- protocol is a set of rules for formatting and processing data.**

* 1. **DO a practical to set the TCP / IP in network adapter?**

**Ans- done**

### **Topic: Cables**

#### **Beginner Question**

1. **Types of cables and connectors?**

**Ans- Coaxial Cables.**

**Fiber Optic Cables.**

**Types of Connectors.**

**Ethernet Cable Connectors.**

**Coaxial Cable Connectors.**

**USB Connectors.**

1. **Explain twisted pair cable and shielded twisted pair cable?**

**Ans- Shielded twisted pair is a special kind of copper telephone and local area network wiring used in some business installations. It adds an outer covering or shield that functions as a ground to ordinary twisted pair wiring.**

#### **Intermediate Question**

1. **Which of these cables connect computers to monitors?**

**Ans - HDMI cable and display port.**

1. **How do I connect to a shared printer?**

**Ans- Settings > Devices > Printers & scanners.**

**Under Add printers & scanners, select Add a printer or scanner.**

**Choose the printer you want, and then select Add Device.**

#### **Advance Question**

1. **Which cable that is commonly used to connect a computer to a printer?**

**Ans- A USB cable connects your printer to your computer, so you have a direct connection every time you print. The majority of printers are compatible with a USB 2.0 A/B cable.**

1. **What are the different ports and connectors?**

**Ans- In Computers, communication ports can be divided into two types based on the type or protocol used for communication. They are Serial Ports and Parallel Ports.**

1. **How do I connect my laptop to my printer without cable?**

**Ans- Select the Start button, then select Settings > Devices > Printers & scanners > Add a printer or scanner.**

**then choose the one you want to use, and select Add device.**

1. **Application and brief explanation of fiber optic cable and Coaxial cable?**

**Ans- Optical fibre and Coaxial cables, both are different types of guided media cables. Optical fibre is made up of plastic and glass and is used to transmits signals in form of light or optics whereas coaxial cable is made using plastic and copper wires and is used to transmits signals in form of electric signals.**

1. **Which of following operates at the 5GHz frequency range?**

**Ans-**

**802.11a uses the 5 GHz U-NII band which, for much of the world, offers at least 23 non-overlapping, 20-MHz-wide channels.**

1. **What frequency does 802.11g use?**

**Ans- 2.4 GHz**

1. **What standard is compatible with 802.11a?**

**Ans- The 802.11ac standard is backward compatible with 802.11an devices; however, supporting a mixed environment limits the expected data rates.**

### **Topic: TCP/IP concepts - IPv6, IPv4**

#### **Beginner Question**

1. **What is the difference between IPv4 & IPv6? 2. Explain TCP/IP?**

**Ans- The 802.11ac standard is backward compatible with 802.11a/n devices; however, supporting a mixed environment limits the expected data rates.**

1. **Explain IPV6 Address with Address structure?**

**Ans- IPv6 address is 128 bits in length and consists of eight, 16-bit fields, with each field bounded by a colon. Each field must contain a hexadecimal number, in contrast to the dotted-decimal notation of IPv4 addresses.**

1. **Define IPV6 reserve address?**

**Ans- IPv6 address is a 128-bit alphanumeric value that identifies an endpoint device in an Internet Protocol Version 6 (IPv6) network. IPv6 is the successor to a previous addressing infrastructure, IPv4, which had limitations IPv6 was designed to overcome.**

1. **Explain Difference between public ip and private ip?**

**Ans- A public IP address identifies you to the wider internet so that all the information you're searching for can find you. A private IP address is used within a private network to connect securely to other devices within that same network.**

1. **Create straight and cross cables and it's testing ?**

**Ans- done**

#### **Intermediate Question**

1. **Brief explanation of ip Addresses?**

**Ans- An Internet Protocol (IP) address is the unique identifying number assigned to every device connected to the internet. An IP address definition is a numeric label assigned to devices that use the internet to communicate.**

1. **What is the advantage of IPv6 over IPv4?**

**Ans- IPv6 has a much larger address space than IPv4, allowing for more devices, networks, and services to be connected. IPv6 also offers some advantages over IPv4, such as improved security, performance, and scalability.**

1. **Assign multiple IPv4 in single network adapter [lan card]**

**Ans- done**

1. **Assign simple IPv6 between two system and ping it.**

**Ans- done**

1. **Assign and configure simple IPv4 between systems**

**Ans- done**

#### **Advance Question**

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**1.Which is faster IPv4 or IPv6?**

**2.What does TCP do?**

**Ans- IPv6 is faster than IPv4TCP is a communications standard that enables application programs and computing devices to exchange messages over a network.**

1. **Give security in sharing**

**Ans- done**

1. **Configure "Map network drive"**

**Ans- done**

### **Topic: IP routing and Routing protocols**

#### **Beginner Question**

1. **What Is Routing?**

**Ans- Routing is the process of path selection in any network.**

1. **How Routing Starts Up?**

**Ans- The router looks up the header packet and determines the packet destination.**

#### **Intermediate Question**

1. **What Is Hybrid Routing Protocol?**

**Ans- Hybrid Routing Protocol is a network routing protocol that combines Distance Vector Routing Protocol (DVRP) and Link State Routing Protocol (LSRP) features.**

1. **What Are the Range of Ad Values?**

**Ans- 0 to 225**

1. **What Is an Autonomous System?**

**Ans- Autonomous system (AS) is a network or a collection of networks that are all managed and supervised by a single entity or organization.**

#### **Advance Question**

1. **Define Static Routing?**

**Ans- Static routing is a form of routing that occurs when a router uses a manually-configured routing entry, rather than information from dynamic routing traffic.**

1. **Explain Dynamic Routing?**

**Ans- Dynamic routing, also called adaptive routing, is a process where a router can forward data via a different route for a given destination based on the current conditions of the communication circuits within a system.**

### **Topic: Switching and VLANS**

#### **Beginner Question**

1. **What is VLAN?**

**Ans- A virtual local area network (VLAN) is a virtualized connection that connects multiple devices and network nodes from different LANs into one logical network.**

1. **Which two benefits of creating VLANs?**

**Ans - VLANs provide a number of advantages including ease of administration, confinement of broadcast domains, reduced network traffic, and enforcement of security policies.**

1. **What is Dynamic VLAN?**

**Ans- Dynamic VLAN assignment separates and isolates devices into different network segments based on the device or user authorization and their characteristics.**

1. **What is Static VLAN?**

**Ans- A static VLAN is a group of ports designated by the switch as belonging to the same broadcast domain.**

#### **Intermediate Question**

1. **What is VLAN and INTERVLAN?**

**Ans- VLANs divide broadcast domains in a LAN environment. Whenever hosts in one VLAN need to communicate with hosts in another VLAN, the traffic must be routed between them. This is known as inter-VLAN routing.**

1. **What is trunk port?**

**Ans- A trunk port is a type of connection on a switch that is used to connect a guest virtual machine that is VLAN aware.**

#### **Advance Question**

1. **How to configure Trunk port?**

**Ans- create one sub-interface for every VLAN configured on our switch.**

1. **How to delete VLAN information from Switch?**

**Ans- Select the Configuration > Ports > Ports page.**

**If not already selected, select the fabric and the switches to edit.**

**Select the ports to configure:**

**Select Actions > VLANs > Remove.**