**N+ Assignment**

**Module 5. Network Fundamentals and Building Networks**

• Beginner Question

1. **What is network?**

* A network consists of two or more computers that are linked in order to share resources, exchange files, or allow electronic communications.

1. **List Common Network Components**

* Some important network components are NIC, switch, cable, hub, router, and modem.

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

* In the Common hardware types list, click Network adapters, and then click Next. In the Manufacturers list box, click Microsoft. In the Network Adapter list box, click Microsoft Loopback Adapter, and then click Next. Click Next to start installing the drivers for your hardware

• Intermediate Question

1. **Explain application of network**

* A network application is any application running on one host providing communication to another application running on a different host.

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

* the connection point among network devices such as routers, printers, or switches that can receive and send data from one endpoint to the other.

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

* Done

• Advance Question

1. **List types of devices**

* Mouse, printer, projector, usb flash drive, tablet, webcam, router

1. **Explain types of router**

* wired routers, wireless routers, core routers, edge routers and VPN routers

Topic: Types of Network

• Beginner Question

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

* 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**

* Network switch, Router, Modem, Repeater , Fibe -optic cable

• Intermediate Question

1. **Explain Wide Area Network**

* The technology that connects your offices, data centers, cloud applications, and cloud storage together.

1. **Explain Network Backbone**

* Backbone networks are networks designed with high capacity connectivity infrastructure that form the main link, or backbone, connecting the different parts of the network.

1. **Explain CAN**

* A controller area network (CAN) bus is a high-integrity serial bus system for networking intelligent devices.

• Advance Question

1. **Define Physical**

* The different connectors usually represent the physical network cables, and the nodes represents usually the physical network devices (like switches).

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

* A peer-to-peer architecture consists of a decentralized network of peers - nodes that are both clients and servers.

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

* One central node or hub communicates with several, up to hundreds in some cases, or end nodes.

Topic: Network Devices

• Beginner Question

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

* The primary purpose of network devices is to transmit and receive data quickly and securely. "Network Devices" is a broad term that encompasses a range of communication equipment including hubs, switches, routers, bridges, gateways, modems, repeaters, and more.

1. **Explain Switch?**

* A switch responds to an external force to mechanically change an electric signal. Switches are used to turn electric circuits ON and OFF and to switch electric circuits.

• Intermediate Question

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

* Coaxial cable, twisted pair, fibre-optic cable.

1. **Explain Define Access point**

* A stand-alone device or computer that allows wireless devices to connect to and communicate with a wired computer network. You have some final steps to go through to set up your access point to communicate properly and securely with the server.

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

* **The transmission modes are of three major types:**
* Simplex Transmission Mode.
* Half Duplex Transmission Mode.
* Full Duplex Transmission Mode.

1. **Practice on Remote Desktop connection**

* Done

1. **Practice on remote assistance**

* Done

• Advance Question

1. **Explain Repeater and router**

* The router is being used to connect to the internet, whereas the repeater is used to replicate the router's received signals and the repeater amplifies.

1. **What is multiplexer?**

* A multiplexer also known as a data selector, is a device that selects between several analog or digital input signals and forwards the selected input to a single output line.

1. **Explain MODEM**

* a network device that both modulates and demodulates analog carrier signals (called sine waves) for encoding and decoding digital information for processing.

1. **Monitor "event viewer"**

* 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**

* Dynamic Host Configuration Protocol is a client/server protocol that automatically provides an IP host with its IP address and other related configuration information such as the subnet mask and default gateway.

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

* DNS server, NTP, and any communication protocol.

• Intermediate Question

1. **Explain Domain naming Services**

* The Domain Name System turns domain names into IP addresses, which browsers use to load internet pages. Every device connected to the internet has its own IP address, which is used by other devices to locate the device.

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

* internet navigation for example, [www.amazon.com](http://www.amazon.com) to machine readable IP addresses (for example, 192.0.2.44).

Topic: Network Topologies

• Beginner Question

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

* Bus, Star, Ring, Mesh, Tree, and Hybrid

1. **What is Internet topology?**

* Internet topology is the structure by which hosts, routers or autonomous systems (ASes) are connected to each other.

1. **What is protocol**

* A protocol is a set of rules and guidelines for communicating data.

• Intermediate Question

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

* Star topology

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

* Star topology is a network topology in which each network component is physically connected to a central node such as a router, hub or switch.

• Advance Question

1. **Explain Hybrid topology**

* A hybrid topology is a type of network topology that combines two or more network topologies, including ring, bus, and mesh topologies.

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

* A logical topology is how devices appear connected to the user. A physical topology is how they are actually interconnected with wires and cables.

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

* The two logical topologies are broadcast (also known as bus) and sequential (also known as ring).

Topic: OSI Model

• Beginner Question

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

* Describes seven layers that computer systems use to communicate over a network.

1. **List of Application layer protocol**

* HTTP. HTTP

FTP.

SMTP.

DNS.

1. **How many types of protocols are there?**

* TCP/IP , UDP/IP, HTTP and FTP

• Intermediate Question

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

* TCP/IP is a practical model that addresses specific communication challenges and relies on standardized protocols.

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

* A suite of communication protocols used to interconnect network devices on the internet.

• Advance Question

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

* A wired network uses cables to connect devices, such as laptop or desktop computers, to the Internet or another network.

1. **What are the disadvantages of wired networks?**

* complex installation, less flexibility for movement and changes, and expensive set up and maintainance charged due to the need for physical infrastructure and cable management.

1. **How do I configure network authentication?**

* In System i® Navigator, expand your system > Security. Right-click Network Authentication Service and select Configure to start the configuration wizard.

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

* Done

1. **Download google chrome**

* Done

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

* Step 1: Select Windows + R. Step 2: Select Control > Enter. This will open your computer's Control Panel. Step 3: Select Clock and region > Date and time.

Topic: TCP/IP

• Assignment level Basic:

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

* TCP/IP is a suite of communication protocols used to interconnect network devices on the internet.

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

* Transmission Control Protocol/Internet Protocol.

• Assignment level Intermediate:

1. **List out the types of IP**

* There are four different types of IP addresses: public, private, static, and dynamic.

1. **What is protocol?**

* In networking, a protocol is a set of rules for formatting and processing data.

1. **DO a practical to set the tcp/ip in network adapter?**

* Done

Topic: Cables

• Beginner Question

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

* Coaxial cables, twisted pairs, fibre optical, patch cables, power cables, etc.

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

* A cable consisting of one or several pairs of copper wires. Shielded twisted pair cabling acts as a conducting shield by covering the four pairs of signal-carrying wires.

• Intermediate Question

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

* VGA, DVI, HDMI and Display Port.

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

* **Connect a shared printer using Settings**

1. Select the Start button, then select Settings > Devices > Printers & scanners.
2. Under Add printers & scanners, select Add a printer or scanner.
3. 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?**

* USB cable

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

* Ethernet port U s b Serial port VGA port Audio ports HDMI port Modem port rj11 rj45 ox cable

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

* **To connect a wireless printer, follow these steps:**

1. Select Start > Settings > Bluetooth & devices > Printers & scanners . ...
2. Next to Add a printer or scanner, select Add device.
3. Wait for it to find nearby printers, then locate the one you want to use, and select Add device.
4. **Application and brief explanation of fiber optic cable and Coaxial cable**

* 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?**

* Apple and Samsung

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

* 2.4 GHz

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

* 802.11a speeds and backward compatibility to 802.11b.

Topic: TCP/IP concepts - IPv6, IPv4

• Beginner Question

1. **What is the difference between IPv4 & IPv6?**

* **Ipv4 ipv6**

Standard since 1974 1998

Developed by IETF

Length in bits 32bit 128bit

Address format dotted decimal hexadecimal

Dynamic dhcp slaac/dhcpv6

Addressing

Ip sec optional mandatory

1. **Explain TCP/IP**

* A suite of communication protocols used to interconnect network devices on the internet.

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

* Pv6 address is 128 bits in length and consists of eight, 16-bit fields, with each field bounded by a colon.

1. **Define IPV6 reserve address**

* IANA provides global unicast addresses

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

* A private IP address, such as a home or office network, is assigned to a device on a local network and is used to identify the device within that network. A public IP address is assigned to a device directly connected to the internet and is used to identify the device on the internet.

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

* Done

• Intermediate Question

1. **Brief explanation of ip Addresses**

* The unique identifying number assigned to every device connected to the internet.

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

* IPv6 also offers some advantages over IPv4, such as improved security, performance, and scalability.

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

* Done

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

* Done

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

* Done

• Advance Question

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

* IPv6 is faster than IPv4 in network devices because it lacks network-address translation (NAT). Using IPv6 is a better choice for people that require high speed for their network processing.

1. **What does TCP do?**

* TCP is a communications standard that enables application programs and computing devices to exchange messages over a network.

1. **Give security in sharing**

* Use end-to-end encryption. Make sure your files are end-to-end encrypted.

Choose a privacy-focused provider.

Use strong passwords.

Turn on two-factor authentication (2FA) .

Password-protect files.

Set sharing time limits.

Monitor file access.

Use a VPN on public WiFi.

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

* Click the Start button. In the search box, type This PC, then select This PC from the search results. Click Computer and then click Map network drive.

Topic: IP routing and Routing protocols

• Beginner Question

1. **What Is Routing?**

* Routing is the process of path selection in any network. Communication between two nodes in an interconnected network can take place through many different paths.

1. **How Routing Starts Up?**

* The routing process starts when software on a host device uses a packet's contents, destination, or purpose to select a possible route from a routing table.

• Intermediate Question

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

* Hybrid Routing Protocol is a network routing protocol that combines Distance Vector Routing Protocol and Link State Routing Protocol features.

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

* AD value to each source from the range 0 – 255.

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

* a set of Internet routable IP prefixes belonging to a network or a collection of networks that are all managed, controlled and supervised by a single entity or organization.

• Advance Question

1. **Define Static Routing?**

* 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?**

* Dynamic routing is a mechanism through which routing information is exchanged between routers to determine the optimal path between network devices.

Topic: Switching and VLANS

• Beginner Question

1. **What is VLAN?**

* A virtual local area network 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?**

* VLANs advantages including ease of administration, confinement of broadcast domains, reduced network traffic, and enforcement of security policies.

1. **What is Dynamic VLAN?**

* 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?**

* 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?**

* Virtual LANs ( VLANS ) are networks segments on a switched LAN. Inter-VLAN routing refers to the movement of packets across the network between hosts in different network segments.

1. **What is trunk port?**

* 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?**

* To configure a trunk interface, the switchport mode trunk interface command is used.

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

* **Removing VLANs from Switch Ports**

1. Select the Configuration > Ports > Ports page.
2. If not already selected, select the fabric and the switches to edit.
3. Select the ports to configure:
4. Select Actions > VLANs > Remove.