**N+ Assignment Module**

Network Fundamentals and Building Networks

• Beginner Question

1.What is network?

Ans. "Network" in the context of technology typically refers to a system of interconnected computers, devices, or nodes that can communicate with each other.

2. List Common Network Components

Ans. switch, cable, hub, router,

3. Add and configure loopback adaptor in network and sharing center

Ans. This command opens the "Add Hardware Wizard," allowing you to manually add hardware, including the Microsoft Loopback Adapter, in the Network Adapters category.

• Intermediate Question

1.Explain application of network

Ans. application of networks enables seamless communication and resource sharing between computers, facilitating tasks such as file sharing, internet access, and collaborative work.

2. What do you mean by Node?

Ans. In networking, a node refers to any device or point on a network, such as a computer or printer, capable of sending, receiving, or forwarding data.

3. practice of simple file folder sharing

Ans. Done.

• Advance Question

1.List types of devices

Ans.  Smart phones, Digital cameras, Digital camcorder. Digital still camera, Mobile. Tablet, NETBOOK, Digital media player.

2.Explain types of router?

Ans. Routers are networking devices that connect different networks together and facilitate the transfer of data between them. There are several types of routers, each serving specific purposes in various networking environments. Home Router, Enterprise Router, Service Provider Router Wireless Router

**Types of Network.**

PAN Personal Area Network,

LAN Local Area Network,

MAN Metropolitan Area Network,

WAN (Wide Area 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.

2. 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. 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.

2. 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.

 3.Explain CAN

Ans. A campus area network CAN is a computer network that spans a limited geographic area. CANs interconnect 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 network topologies refer to the physical layout or arrangement of devices and cables in a network, determining the actual structure and connections between nodes, such as Bus, Star, Ring, and Mesh.

2. Network Architecture: Peer-to-Peer

Ans. Peer-to-Peer network architecture allows devices in a network to communicate directly with each other, sharing resources and responsibilities without a centralized server.

3.Point-to-multipoint network

Ans. Point-to-multipoint network involves communication from one central point to multiple remote points, facilitating efficient data distribution in a star-like configuration.

Top of Form

**Topic: Network Devices**

• Beginner Question

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.

2.Explain Switch?

Ans. A switch is a networking device that connects multiple devices within a local area network (LAN), using MAC addresses to forward data to the appropriate destination device.

• 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,

4.Practice on Remote Desktop connection

Ans. Done.

5.Practice on remote assistance

Ans. Done.

• Advance Question

1.Explain Repeater and router?

Ans. A repeater amplifies and extends the range of signals in a network, while a router directs data between different networks, facilitating communication.

2.What is multiplexer?

Ans. A multiplexer is a device that combines multiple input signals into a single output signal for transmission over a shared medium in telecommunications and networking.

3.Explain MODEM

Ans. A modem (modulator-demodulator) is a device that converts digital data from a computer into analog signals for transmission over analog communication channels and vice versa.

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.

2.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 turns domain names into ip addresses. Which allow browsersto get to websites and other internet resources. Every device on the internet an ip address, which other devices can use to locate the device.

2.Application of DNS with one example

Ans. DNS (Domain Name System) is used to translate human-readable domain names into IP addresses; for example, it allows the translation of [www.example.com](http://www.example.com/) to its corresponding IP address, enabling web browsers to locate websites on the internet

Topic: Network Topologies

• Beginner Question

1. What are the 5 network topologies?

Ans. Bus topologies, Star topologies, Ring topologies, Mesh topologies, Tree topologies.

1. What is Internet topology?

Ans. A computer is a collection of two or more computers which are connected together to share information and resources.

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

1. What is the most common network topology?

Ans. star topology.

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

2.What is physical and logical topology?

Ans. A physical topology describes how network devices are physically connected in other words, how wireless connectivity, and more. A logical topology describes how network devices appear to be connected to each other. A logical topology describes how network devices appear to be connected to each other.

3.What are the types of logical topology?

Ans. BUS topology, RING topology,

Topic: OSI Model

• Beginner Question

1. What is OSI model explain?

Ans. The OSI data model is framework that helps us understand how different network protocols work together for communication between devices.

2.List of Application layer protocol

Ans. application layer protocols define how application processes clients and servers running on different end systems, pass messages to each other.

3.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

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

Ans. 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.

2.What is TCP IP networking?

Ans. TCP/IP stands for transmission control protocol/internet protocol and is a suite of communication protocol used to interconnect network devices on the internet.

• 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?

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.

3.How do I configure network authentication?

Ans. security right-click network authentication service and select configure to start the configuration WIZORD.

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

Ans. done

5.Download GOOGLE chrome

Ans. done

6.configure "date and time" opting in control panel Topic: TCP/IP

Ans. done

• Assignment level Basic:

1.What is TCP/IP?

Ans. TCP/IP is the fundamental suite of protocols governing communication on the internet, providing a standardized framework for data transmission and networking. TCP = all data small data

2.What is the full form of TCP/IP?

Ans. full form is ( transmission control protocol / internet protocol )

• Assignment level Intermediate:

1.List out the types of IP

Ans. There are mainly four types of IP addresses**:** Public, Private, Static. Dynamic

2.What is protocol?

Ans. A protocol is a set of rules and conventions that govern how data is exchanged and transmitted between devices in a network.

3.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, twisted-pair cables, fiber-optic cables.

**Types of Connectors**

Ethernet Cable Connectors,

Coaxial Cable Connectors,

USB Connectors.

2.Explain twisted pair cable and shielded twisted pair cable

Ans. 1. a twisted-pair cabling system is a cable consisting of one or several pairs of copper-wires. These wires are twisted together polymeric compound.

2. shielded twisted pair cabling acts as a conducting shielded by covering the four pairs of signal-carrying wires as a means to reduce electromagnetic interference.

• Intermediate Question

1.Which of these cables connect computers to monitors?

Ans. open file explorer from the taskbar or the start menu, or press the windows logo key-e Select this pc from left pane. In the drive list, select a drive letter. In the folder box, type the path of the folder or computer, or select browse to the folder or computer. Select finish.

2.How do I connect to a shared printer?

Ans. simply open computer screen and click on network, Find a hosting computer on the network and open it, Right click on the shared printer and choose , Another way is to open device manager and right click to find option add printer.

• Advance Question

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. The "A" side of the cable plugs into the USB port on your computer and the "B" side plugs into the back of the printer.

1. What are the different ports and connectors?

Ans. Computer ports in common use cover a wide variety of shapes such as round (PS/2, etc.), rectangular (FireWire, etc.), square (Telephone plug), trapezoidal (D-Sub — the old printer port was a DB-25), etc. There is some standardization to physical properties and function.

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

Ans.To connect a wireless printer, follow these steps:

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

Wait for it to find nearby printers, then choose the one you want to use, and select Add device.

4.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.

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

Ans. Wi-Fi 802.11ac operates in a 5GHz frequency band in the range of 5.17GHz - 5.835GHz, but it doesn't mean that it uses all the band. Wi-Fi divides the frequency band into a number of channels each with 20MHz bandwidth, this bandwidth is the actual set of frequencies used by the device.

6.What frequency does 802.11g use?

Ans. IEEE 802.11g - Released in 2003, it operates in the 2.4 GHz frequency band and offers speeds of up to 54 Mb/s. Devices implementing this standard; therefore, operate at the same radio frequency and range as 802.11b, but with the bandwidth of 802.11a.

7.What standard is compatible with 802.11a?

Ans. It uses MIMO technology to improve communication performance. Up to eight antennas can be supported. The 802.11ac standard is backward compatible with 802.11a/n 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?

Ans. The main difference between IPv4 and IPv6 is the address size of IP addresses. The IPv4 is a 32-bit address, whereas IPv6 is a 128-bit hexadecimal address. IPv6 provides a large address space, and it contains a simple header as compared to IPv4.

2.Explain TCP/IP 2. Explain IPV6 Address with Address structure

Ans. IPv6 uses 128-bit (2128) addresses, allowing 3.4 x 1038 unique IP addresses. This is equal to 340 trillion IP addresses. IPv6 is written in hexadecimal notation, separated into 8 groups of 16 bits by the colons, thus (8 x 16 = 128) bits in total.

3.Define IPV6 reserve address

Ans. These addresses usually have the first 57 bits of the interface identifier set to 1, followed by the 7-bit anycast ID. Prefixes for the network can be of any length for routing purposes, but subnets are required to have a length of 64 bits.

4.Explain Difference between public ip and private ip

Ans. Private IP Address and Public IP Address are used to uniquely identify a machine on the Internet. Private IP address is used with a local network and public IP address is used outside the network. Public IP address is provided by the Internet Service Provider (ISP).

5.Create straight and cross cables and it's testing

Ans. In this cable, transmitting pins of one side connect with the receiving pins of the other side. The wire at pin 1 on one end of the cable connects to pin 3 at the other end of the cable.

• 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.

2.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.

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

Ans.How to Add an Additional IP Address via Windows GUI

Open the Control Panel –> Network and Internet –> Network and Sharing Center -> Change adapter settings (or just run the ncpa.cpl command);

Open the properties of your network interface;

Select TCP/IP v4 in the list of protocols and click Properties;

4.Assign simple IPv6 between two system and ping it.

Ans. Activity 8 - Ping an Internet Host by IPv6 Address

1. Type ping 2001:4860:4860::8888 and press Enter.
2. Observe the results. If you see replies indicating success, you have IPv6 Internet connectivity.

5.Assign and configure simple IPv4 between systems

Ans. Right-click on the network adapter you want to assign an IP address and click Properties. Highlight Internet Protocol Version 4 (TCP/IPv4) then click the Properties button. Now change the IP, Subnet mask, Default Gateway, and DNS Server Addresses. When you're finished click OK.

• Advance Question

1.Which is faster IPv4 or IPv6?

Ans. In general, there's no major difference between IPv4 vs IPv6 speeds, though some evidence does suggest that IPv6 might be slightly faster in some situations.

2.What does TCP do?

Ans. transmission Control Protocol (TCP) is a communications standard that enables application programs and computing devices to exchange messages over a network. It is designed to send packets across the internet and ensure the successful delivery of data and messages over networks.

3.Give security in sharing

Ans. To keep your sharing secure, make sure to only share your location with people you know and regularly check your privacy settings to control who can see your content. Additionally, choose strong passwords and enable two-factor authentication for extra security.

4.Configure "Map network drive"

Ans. to configure a mapped network drive you can right-click on this PC or my computer select map network drive and follow the prompts to specify the network location and letter.

Topic: IP routing and Routing protocols

• Beginner Question

1. What Is Routing?

Ans. routing is like a GPS for data, guiding it to the right destination on a network.

1. How Routing Starts Up?

Ans. Routing starts up when a network device, such as a router, is powered on and initializes its routing protocols and configurations. Once the routing table is populated with this information, the device can start forwarding data packets along the appropriate paths to reach their destinations.

• Intermediate Question

1. What Is Hybrid Routing Protocol?

Ans. hybrid routig protpcol are a combination of distance –vector and link –state routing protocols, and are used to provide a more effcent and scalable routing solution in larger networks.

2.What Are the Range of Ad Values?

Ans. AD value to each source from the range 0-255. In this range a smaller namber.

3.What Is an Autonomous System?

Ans. an autonomous sysem as is a or acollection of network that are all managed and supervised a single entity or organization.

• Advance Question

1.Define Static Routing?

Ans. static routing is manually configuring the network paths for data packets without dynamic updates. .

2.Explain Dynamic Routing?

Ans. 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?

Ans. VLAN is virtual local area network. It is one type of network. it is used to manage networks and security even if they are physically located in a different location.

2.Which two benefits of creating VLANs?

Ans. There are serval benefits of creating VLAN but there are mainely two tyepes of benefits are shown below 1.To improve network performance 2.To enhanced security

3.What is Dynamic VLAN?

Ans. Dynamic VLANs are VLANs that are assigned to network devices dynamically based on certain criteria such as the user's authentication credentials or the device's MAC address.

4.What is Static VLAN?

Ans. A static VLAN is a way to segment a network into separate virtual lans. It network organization and security.

• Intermediate Question

1.What is VLAN and INTERVLAN?

Ans. virtual LANs are networks segments on a switched lan. Inter-vlan routing refers to tha movement of packets across the network between hosts in different network segments.

2.What is trunk port?

Ans. A trunk port allows you to send all those signals for each switch or router across a single trunk link. Ports typically offer higher bandwidth and lower latency than access ports.

• Advance Question

1.How to configure Trunk port?

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

2. How to delete VLAN information from Switch?

Ans. remove VLAN 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.