## Assignments level Intermediate:

### Do a practical to disassemble the laptop and change the corrupted ram.

### DONE

* 1. Do a practical to change the cartridge of the printer.
* DONE

### Do a practical to change the processor fan.

### DONE

* 1. Do a practical to check the laptop which is not starting up
* DONE

N+ Assignment

# Module 5. Network Fundamentals and Building Networks

## Beginner Question

### What is network?

* 1. A network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications.

### List Common Network Components

* 1. Twisted pair cable, coaxial cale, Fibre optic cable.

### Add and configure loopback adaptor in network and sharing center

* 1. A Loopback adapter is a network interface that can be used to route network traffic from one application to another on the same computer, but does NOT send that traffic to any other device on the network.

## Intermediate Question

### Explain application of network

* + - 1. A network application is any application running on one host providing communication to another application running on a different host.

### What do you mean by Node?

* + - 1. A node is a basic unit of a data structure, such as a linked list or tree data structure. Nodes contain data and also may link to other nodes. Links between nodes are often implemented by pointers.

### practice of simple file folder sharing

* DONE

## Advance Question

### List types of devices

* 1. The definition of a device is a tool or technique used to do a task. An example of a device is a telephone for the hearing impaired. An example of device is a literary tool like personification.

### Explain types of router

* 1. Wired routers are older versions of routers with cable connections at both ends to receive and distribute data packets. Wireless routers, which transmit data directly to computers and other electronic devices via radio signals, are more advanced.

# Topic: Types of Network

## Beginner Question

### What is Difference between a LAN, MAN, WAN?

* + - 1. MAN is an acronym for Metropolitan Area Network. 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.

### Common Network Components

* + - 1. Some important network components are NIC, switch, cable, hub, router, and modem. Depending on the type of network that we need to install, some network components can also be removed.

## Intermediate Question

### Explain Wide Area Network

We define WAN, or wide-area network as a computer network that connects smaller networks.

### Explain Network Backbone

A backbone is the part of the computer network infrastructure that interconnects different networks and provides a path for exchange of data between these different networks.

### Explain CAN

A Controller Area Network (CAN) bus is a communication system made for vehicle intercommunication.

## Advance Question

### Define Physical Network Topologies

The physical topology of a network is the physical layout of nodes and connections.

### Network Architecture: Peer-to-Peer

Peer-to-peer architecture (P2P architecture) is a commonly used computer networking architecture in which each workstation, or node, has the same capabilities and responsibilities.

### Point-to-multipoint network

The point-to-multipoint topology consists of a central base station that supports several subscriber stations.

# Topic: Network Devices

## Beginner Question

### Why we use Network and Devices

A. Hardware devices that are used to connect computers, printers, fax machines and other electronic devices to a network are called network devices. These devices transfer data in a fast, secure and correct way over same or different networks.

### Explain Switch?

A. A switch, in the context of networking, is a high-speed device that receives incoming data packets and redirects them to their destination on a local area network (LAN).

## Intermediate Question

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

A. Networking cables are networking hardware used to connect one network device to other network devices or to connect two or more computers to share printers, scanners etc.

### 2. Explain Define Access point

A. An access point is a device that creates a wireless local area network, or WLAN, usually in an office or large building.

### 3. Which types of transmission modes in computer network

A. Transmission Modes in Computer Networks Half-Duplex and Full-Duplex

### 4. Practice on Remote Desktop connection

### DONE

5. Practice on remote assistance

* DONE

## Advance Question

### Explain Repeater and router

* 1. A Router is a communication device that is used to connect two different networks. A Repeater is a communication device that is used to regenerate a signal.

### What is multiplexer?

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

### Explain MODEM

* 1. A modulator-demodulator or modem is a computer hardware device that converts data from a digital format into a format suitable for an analog transmission medium such as telephone or radio.

### Monitor "event viewer"



* 1. From the Activity pane, drag a Monitor Event Log activity to the runbook. Double-click the Monitor Event Log activity icon to open the Properties dialog box. Configure the settings on the Details tab and on the Advanced tab.

# Topic: Install and configure DHCP, DNS

## Beginner Question

### Explain DHCP Dynamic host configuration protocol

* + - 1. DHCP (Dynamic Host Configuration Protocol) is a network management protocol used to dynamically assign an Internet Protocol (IP) address to any device, or node, on a network so they can communicate using IP.



### Application of DHCP with one example

* + - 1. A valid IP address for the subnet to which it is connecting. Requested DHCP options, which are additional parameters that a DHCP server is configured to assign to clients. Some examples of DHCP options are Router (default gateway), DNS Servers, and DNS Domain Name.

## Intermediate Question

### Explain Domain naming Services

Domain name service (DNS) is the application service that translates the IP address into a more recognized and memorable name. Whenever using the Internet, there are millions of DNS servers that translate any uniform resource locator (URL) typed into the location field of any Web browser into a specific IP address.

### Application of DNS with one example

DNS, or the Domain Name System, translates human readable domain names (for example, www.amazon.com) to machine readable IP addresses (for example, 192.0. 2.44).

# Topic: Network Topologies

## Beginner Question

### What are the 5 network topologies?

There are five types of topology – Mesh, Star, Bus, Ring and Hybrid.

### What is Internet topology?

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

### What is protocol

protocol, in computer science, a set of rules or procedures for transmitting data between electronic devices, such as computers.

## Intermediate Question

### What is the most common network topology?

* Star topology is by far the most common, Bus topology—also known as line or backbone—connects all devices via a single cable running in one direction, Ring topology, as its name suggests, features all nodes arranged in a ring.

### Explain star topology in networking?

A. 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. It is the combination of two or more different topologies. For example, in a college we have so many departments, let us say one department uses ring topology and another department uses Star topology, connecting these two topologies which results in Hybrid Topology. Hybrid= Ring+Star.

### 2. What is physical and logical topology?

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

### 3. What are the types of logical topology?

A. Logical Topologies. 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?

A. The OSI Model (Open Systems Interconnection Model) is a conceptual framework used to describe the functions of a networking system.

### 2. List of Application layer protocol

A. DNS, DHCP, and FTP are all application layer protocols in the TCP/IP protocol suite.

### 3. How many types of protocols are there?

A. There are three main types of network protocols. These include network management protocols, network communication protocols and network security protocols: Communication protocols include basic data communication tools like TCP/IP and HTTP.

## Intermediate Question

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

A. TCP/IP Model is a communication protocols suite using which network devices can be connected to the Internet. On the other hand, the OSI Model is a conceptual framework, using which the functioning of a network can be described.

### 2. What is TCP IP networking?

A. TCP/IP is the abbreviation that is commonly used for the set of network protocols that compose the Internet Protocol suite.

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

A. A wired Internet connection implies cable, DSL or FiOS, which is cabled from the user's premises to the service provider.

### 2. What are the disadvantages of wired networks? 3.How do I configure network authentication?

A. Stability and reliability, Faster speeds and high connectivity, better security, Accessibility.

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

4. Download google chrome

### 5. configure "date and time" opting in control panel

A. DONE ALL THREE

# Topic: TCP/IP

## Assignment level Basic:

### What is TCP/IP?

* 1. TCP/IP stands for Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet.

### What is the full form of TCP/IP?

* 1. TCP/IP stands for Transmission Control Protocol/Internet Protocol

## Assignment level Intermediate:

### List out the types of IP

* + - 1. There are four types of IP addresses: public, private, static, and dynamic.

### What is protocol?

* + - 1. protocol, in computer science, a set of rules or procedures for transmitting data between electronic devices, such as computers.

### DO a practical to set the tcp/ip in network adapter?

A. DONE

# Topic: Cables

## Beginner Question

### Types of cables and connectors?

* 1. There are three types of cable connectors: coaxial cable connectors, twisted-pair cable connectors, and fiber-optic cable connectors with the twisted pair.

### Explain twisted pair cable and shielded twisted pair cable

* 1. These are a pair of two insulated copper wires twisted together without any other insulation or shielding

## Intermediate Question

### Which of these cables connect computers to monitors?

* + - 1. HDMI CABLE.

### How do I connect to a shared printer?

* + - 1. Open "Devices and Printers" on the second computer, click "Add a printer," select the "Add a network, wireless or Bluetooth printer" option, click on the printer, click "Next," and then follow the remaining prompts to finish adding the shared printer. Both computers can now use the printer.

### Which cable that is commonly used to connect a computer to a printer?

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.

### What are the different ports and connectors?

The parallel port, serial port, and video port all use D type connectors (DB-25M, DB-9M, and DB- 15F, respectively).

### How do I connect my laptop to my printer without cable?

Simply plug the USB cable from your printer into an available USB port on your PC, and turn the printer on. Select the Start button, then select Settings >Devices >Printers & scanners. Select Add a printer or scanner. Wait for it to find nearby printers, then choose the one you want to use, and select Add device.

### 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.

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

The full 5 GHz range spans frequencies from 5.15 GHz to 5.85 GHz.

### What frequency does 802.11g use?

802.11b and 802.11g use the 2.4-GHz ISM band, operating in the United States under Part 15 of the U.S. Federal Communications Commission Rules and Regulations. 802.11n can also use that 2.4-GHz band.

### What standard is compatible with 802.11a?

communication takes place at 6Mbps, 12Mbps, or 24Mbps. 802.11a is incompatible with the 802.11b and 802.11g wireless standards.

# Topic: TCP/IP concepts - IPv6, IPv4

## Beginner Question

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

The main difference between IPv4 and IPv6 is the address size of IP addresses.

### Explain IPV6 Address with Address structure

An IPv6 address is 128 bits in length and consists of eight, 16-bit fields, with each field bounded by a colon.

### Define IPV6 reserve address

Each field must contain a hexadecimal number, in contrast to the dotted-decimal notation of IPv4 addresses. In the next figure, the x's represent hexadecimal numbers.

### Explain Difference between public ip and private ip

A private IP address is used within a private network to connect securely to other devices within that same network.

### Create straight and cross cables and it's testing

A. DONE

## Intermediate Question

### Brief explanation of ip Addresses

* 1. IP address stands for “Internet Protocol address.” The Internet Protocol is a set of rules for communication over the internet, such as sending mail, streaming video, or connecting to a website. An IP address identifies a network or device on the internet.

### What is the advantage of IPv6 over IPv4?

* 1. IPv6 utilizes 128-bit Internet addresses. Therefore, it can support 2^128 Internet addresses— 340,282,366,920,938,463,463,374,607,431,768,211,456 of them to be exact. The number of IPv6 addresses is 1028 times larger than the number of IPv4 addresses.

### Assign multiple IPv4 in single network adapter [lan card]

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

### Assign and configure simple IPv4 between systems

A. DONE ALL

## Advance Question

### Which is faster IPv4 or IPv6? 2.What does TCP do?

* 1. 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.

### Give security in sharing

* 1. Secure file sharing is the process of sharing one or more files securely or privately.

### Configure "Map network drive"

* 1. Press Win + E to open a file Explorer window, In win 10 choose this pc from the left side of the window, In window 10, click the computer tab.

# Topic: IP routing and Routing protocols

## Beginner Question

### What Is Routing?

A. What Does Routing Mean? Routing refers to establishing the routes that data packets take on their way to a particular destination.

### How Routing Starts Up?

A. Routing refers to establishing the routes that data packets take on their way to a particular

destination.

## Intermediate Question

### What Is Hybrid Routing Protocol?

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

### What Are the Range of Ad Values?

* 1. Administrative Distance (AD) is a numeric value which can range from 0 to 255.

### What Is an Autonomous System?

* 1. An Autonomous System (AS) is 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

### Define Static Routing?

* + - 1. Static routing performs routing decisions with preconfigured routes in the routing table, which can be changed manually only by administrators.

### Explain Dynamic Routing?

* + - 1. 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

### What is VLAN?

VLAN is a custom network which is created from one or more local area networks.

### Which two benefits of creating VLANs?

A VLAN allows you to segment a network without needing separate hardware. So, you can have a single physical switch, but multiple different networks connected.

### What is Dynamic VLAN?

Dynamic VLANs are assigned to a port based on the MAC address of the device plugged into a port.

### 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

### 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.

### What is trunk port?

A trunk port allows you to send all those signals for each switch or router across a single trunk link.

## Advance Question

### How to configure Trunk port?

A. To configure a switch port on one end of a trunk link, use the switchport mode trunk command. With this command, the interface changes to permanent trunking mode.

### How to delete VLAN information from Switch?

A. To delete the vlan database on a Cisco switch, simply go to the privilege mode and issue the command #delete vlan.

# Module 6. Network security, Maintenance and Troubleshooting procedures

57 64

# Topic: A SOHO Networks

## Beginner Question

### 1. What is SOHO network?

A. SOHO stands for **Small Office and Home Office Networks**. It allows computers in a home office or remote office to connect to a corporate network, or access centralized, shared resources.

### 2. What does SOHO mean networking?

A. The term small office/home office (SOHO) refers to **a small business that is often run out of small office spaces, homes, or even virtually**.

## Intermediate Question

### 1. How does a SOHO network work?

A. It is a LAN (local area network) mainly referred to as a business category involving a small number of workers usually from 01 to 10.

### 2. Issues with Soho Networking?

A. SOHO network, **manage domain name resolution, firewall protections, dynamic addressing, wireless connectivity, and of course, routing**.

## Advance Question

### 1. How Small is the “S” in SOHO?

A. The term small office/home office (SOHO) refers to a small business that is often run out of small office spaces, homes, or even virtually. These businesses are commonly considered [microenterprises](https://www.investopedia.com/terms/m/microenterprise.asp).

### 2. SOHO Routers vs. Home Routers?

A. SOHO routers are designed to deliver wired and wireless broadband network routing. **Unlike traditional routers, these are structured specifically for small office/home office networks**, which is where the SOHO acronym comes in.

# Topic: NAT & PAT

## Beginner Question

### 1. What is NAT?

A. NAT stands for **network address translation**. It's a way to map multiple local private addresses to a public one before transferring the information.

### 2. What is PAT?

A. **to strike lightly with the hand or a flat instrument** : strike or beat gently. : to flatten, smooth, or shape with pats. 3. : to tap or stroke gently with the hand to soothe or to show affection or approval.

### 3. Different between NAT & PAT?

A. **AT translates the inside local addresses into inside global addresses; similarly, PAT translates the private unregistered IP addresses into public registered IP addresses**. However, unlike NAT, PAT also uses source port numbers, allowing multiple hosts to share a single IP address while using different port numbers.

## Intermediate Question

### 1. However, Will Nat work?

A. NAT stands for **network address translation**. It's a way to map multiple local private addresses to a public one before transferring the information

### 2. Explain NAT?

A. NAT stands for **network address translation**. It's a way to map multiple local private addresses to a public one before transferring the information

## Advance Question

### 1. What is different between Static & Dynamic NAT?

A. The main difference between dynamic NAT and static NAT is that **static NAT allows a remote host to initiate a connection to a translated host if an access list exists that allows it, while dynamic NAT does not**.

2. NAT stand for?

A. Network address translation

3. PAT stand for?

A. Portable appliance testing

# Topic: Authentication and Access Control

## Beginner Question

### 1. What Is Acl?

A. An access control list (ACL) **contains rules that grant or deny access to certain digital environments**.

### 2. What Are Different Types of Acl?

A. There are four different types of ACLs, each of which has a different use. they are reflexive, extended, dynamic, and standard.

## Intermediate Question

### 1. Explain Standard Access List?

A. Access-list (ACL) is **a set of rules defined for controlling network traffic and reducing network attacks**.

### 2. Explain Extended Access List?

A. It can give the system administrator setting up the network a higher degree of flexibility and control.

## Advance Question

### 1. What Is Wildcard Mask?

A. A wildcard mask is **a mask of bits that indicates which parts of an IP address are available for examination**.

### 2. In Which Directions We Can Apply an Access List?

A. Inbound: This applies to packets coming into the interface. Outbound: This applies to packets going out of the interface.

# Topic: WAN Technologies

## Beginner Question

### Fiber-optic communication

* 1. Fiber-optic communication is **a method of transmitting information from one place to another by sending pulses of infrared light through an optical fiber.**

### What is Leased Line

* 1. A leased line is **a dedicated data connection with a fixed bandwidth**. It enables small, medium, and large businesses to connect to the internet in a secure, reliable, and highly efficient manner, with maximum download capacity, resilience, and uptime.

### Explain Circuit switching

* 1. Circuit switching is **a type of network configuration in which a physical path is obtained and dedicated to a single connection between two endpoints in the network for the duration of a dedicated connection**.

## Intermediate Question

### Explain Packet Switching

* + - 1. Packet switching is **the transfer of small pieces of data across various networks**. These data chunks or “packets” allow for faster, more efficient data transfer. Often, when a user sends a file across a network, it gets transferred in smaller data packets, not in one piece.

### What is difference between leased line and broadband?

* + - 1. **A leased line contract guarantees businesses uninterruptible download and upload speeds, unlike broadband that competes for internet speed and bandwidth with other users**.

### How much is a 100mb Leased Line?

* + - 1. A 100MB leased line is **a point-to-point symmetric data connection that offers a connection speed of 100Mbit/s**. Cost Comparison. A 100MB leased line costs about twice as much as 10MB one, which in turn cost just over twice as much as a 2MB connection.

## Advance Question

### Difference between a POTS line and a leased line?

What is the difference between a POTS line and a leased line? **POTS line is voice-grade dial-up, while leased line is better quality and always on**.

### What is the process of packet switching?

Packet switching is **the transfer of small pieces of data across various networks**. These data chunks or “packets” allow for faster, more efficient data transfer. Often, when a user sends a file across a network, it gets transferred in smaller data packets, not in one piece.

### Difference between circuit switching and packet switching?

Packet switching is a connectionless service. It does not require any dedicated path between the sender and receiver.

### Practice on printer sharing

A. DONE

### Use of IIS [ Via "add and remove" feature from control panel. "appwiz.cpl" command]

A. DONE

# Topic: Communication technologies Cloud and Virtualization

## Beginner Question

### What is virtualization?

* 1. This enables IT organizations to run more than one virtual system – and multiple operating systems and applications – on a single server. The resulting benefits include economies of scale and greater efficiency.

### What are two types of virtualization in cloud?

* 1. There are **two types** of Network Virtualizations in cloud computing: Internal Network Virtualization : extends network-like functionality to a single system. External Network Virtualization : Combines multiple networks or its individual parts into a single virtual unit.

## Intermediate Question

### What are the two types of virtualization?

* + - 1. In Full virtualization, virtual machines permit the execution of the instructions with the running of unmodified OS in an entirely isolated way. In paravirtualization, a virtual machine does not implement full isolation of OS but rather provides a different API which is utilized when OS is subjected to alteration.

### What is VMware virtualization technology?

* + - 1. Technology of VMware is based on the key concept of **Full Virtualization**. Either in desktop environment, with the help of type-II hypervisor, or in server environment, through type-I hypervisor, VMware implements full virtualization.

## Advance Question

### What is the difference between cloud and virtualization?

In short, virtualization creates simulated versions of a machine's software or hardware components, while cloud computing is a model that enables users to access a shared pool of resources conveniently.

### What are the benefits of implementing virtualization in cloud computing?

Virtualization in cloud computing can **prevent your IT system from failing**. Even if one part of your system crashes, it doesn't mean the entire system will. A virtual machine helps protect your IT environment from bugs, viruses, and crashes when you are testing software or trying out a new program.

# Topic: Monitoring Tools

## Beginner Question

### Why are network monitoring tools used?

Network monitoring tools gather and analyze network data to provide network administrators with information related to the status of network appliances, link saturation, the most active devices, the structure of network traffic or the sources of network problems and traffic anomalies.

### Explain firewalls

**Stateless firewalls only analyze each packet individually, whereas stateful firewalls — the more secure option — take previously inspected packets into consideration**.

## Intermediate Question

### Explain core switches

A. Core switches serve as the gateway to a wide area network (WAN) or the Internet - they provide the final aggregation point for the network and allow multiple aggregation modules to work together.

### Explain client systems

A. Client Systems means the Client's information technology infrastructure, including computers, software, hardware, databases, electronic systems (including database management systems), and networks, whether operated directly by Client or through the use of third-party services.

## Advance Question

### 1. What is network management?

A. The overarching role of network management is ensuring network resources are made available to users efficiently, effectively and quickly.

### 2. Explain Event Viewer

A. Examples of these are programs that don't start as expected, or automatically downloaded updates. Event Viewer is especially useful for troubleshooting Windows and application errors.

### 3. Practice "parental control" or "family safety" option in control panel

A. DONE

# Topic: Network Security, Network vulnerabilities

## Beginner Question

### What are network vulnerabilities?

* 1. At the broadest level, network vulnerabilities fall into three categories: **hardware-based, software- based, and human-based**.

### What are the types of network security attacks?

* 1. The different types of cyber-attacks are **malware attack, password attack, phishing attack, and SQL injection attack**

## Intermediate Question

### What is virus in network security?

* + - 1. A virus might corrupt or delete data on a computer, use e-mail programs to spread itself to other computers, or even erase everything on a hard disk. See malicious code.

### What is the difference between virus and antivirus?

* + - 1. Antivirus software or anti-virus software is a computer program used to prevent, detect, and remove the virus. Whereas, Virus is a kind of malware that infects files and then spreads through a device whenever the file or program is run.

## Advance Question

### Who is vulnerable in network security?

Network vulnerabilities can be either non-physical or physical. Non-Physical: This weakness refers to anything related to data and software.

### How do you assess vulnerability?

**Vulnerability assessment tools are designed to automatically scan for new and existing threats that can target your application**.

### What are the principles of network security?

he basic tenets of information security are **confidentiality, integrity and availability**. Every element of the information security program must be designed to implement one or more of these principles. Together they are called the CIA Triad.

### What is a firewall to use for?

Firewalls **provide protection against outside cyber attackers by shielding your computer or network from malicious or unnecessary network traffic**. Firewalls can also prevent malicious software from accessing a computer or network via the internet.

### configure advanced firewall setting?

A. DONE

### configure "date and time" opti

A. DONE