1. **What is a Network?** A network is a collection of interconnected devices or nodes, such as computers, servers, printers, routers, switches, etc., that are linked together to share resources, information, and services. Networks can be wired or wireless.
2. **What is Internet & Intranet?**
   * **Internet:** The internet is a global network that connects millions of computers worldwide, allowing them to communicate and share information. It is a public network accessible to anyone with an internet connection.
   * **Intranet:** An intranet is a private network within an organization that uses internet protocols and technologies for sharing information, collaboration, and internal communication. It is accessible only to authorized users within the organization.
3. **How many types of Networks are used?** There are several types of networks used, including:
   * Local Area Network (LAN)
   * Wide Area Network (WAN)
   * Metropolitan Area Network (MAN)
   * Personal Area Network (PAN)
   * Campus Area Network (CAN)
4. **Difference between LAN & PAN?**
   * LAN (Local Area Network) connects devices over a short distance, typically within a single building or campus, while PAN (Personal Area Network) connects devices within the personal space of an individual, such as Bluetooth devices, personal cell phones, etc.
5. **Explain LAN?**
   * LAN stands for Local Area Network. It is a network that connects computers and other devices within a limited area, such as a home, office, or school. LANs typically use Ethernet cables or Wi-Fi for connectivity.
6. **What are different types of LAN devices?**
   * LAN devices include routers, switches, hubs, network interface cards (NICs), access points, and Ethernet cables.
7. **What is a configured network?**
   * A configured network is a network that has been set up and customized with specific settings, such as IP addresses, subnet masks, DNS servers, etc.
8. **How do we configure a network?**
   * Network configuration involves setting up various parameters such as IP addresses, subnet masks, default gateways, DNS servers, etc., on devices like computers, routers, and switches. This can be done through the device's network settings interface or through command-line utilities.
9. **How to check the IP address?**
   * On Windows, you can check the IP address by opening the Command Prompt and typing "ipconfig". On macOS or Linux, you can use the "ifconfig" command.
10. **How to check the IP address through cmd?**
    * Open Command Prompt and type "ipconfig" on Windows, or "ifconfig" on macOS/Linux.
11. **How can we enter a static address in a network adapter?**
    * In Windows, you can enter a static IP address by going to Network and Sharing Center > Change adapter settings > right-click on the network adapter > Properties > select Internet Protocol Version 4 (TCP/IPv4) > Properties > and then enter the static IP address, subnet mask, default gateway, and DNS server addresses manually.
12. **Do a practical to release the packets from the adapter.**

**Done in class**

1. **Do a practical to renew the lease of the ip address.**

**Done in class**

1. **Do a practical to check the connectivity to the google.**

**Done in class**

1. **What is the difference between WEP and WPA?**
   * WEP (Wired Equivalent Privacy) and WPA (Wi-Fi Protected Access) are both security protocols used to secure wireless networks. However, WPA is more secure than WEP. WEP has known vulnerabilities and is relatively easy to crack, while WPA offers stronger encryption and security features.
2. **What is a Wireless Network?**
   * A wireless network is a type of computer network that uses wireless data connections between network nodes. It allows devices to connect to the network without using physical cables.
3. **What is a wireless network connection?**
   * A wireless network connection is a connection established between devices using wireless technology, such as Wi-Fi or Bluetooth, to transmit data without the need for physical cables.
4. **What are the basic concepts of networking?**
   * Basic concepts of networking include protocols, addressing, routing, switching, topologies, security, and network devices.
5. **What do you need to know about networking?**
   * Knowledge of networking includes understanding network architectures, protocols, addressing schemes, troubleshooting techniques, security measures, and various network devices and technologies.
6. **How do you explain computer networking?**
   * Computer networking is the practice of connecting computers and other devices together to share resources and communicate with each other. It involves the use of hardware devices, such as routers, switches, and cables, as well as software protocols to facilitate communication and data exchange.
7. **What do you mean by the term URL?**
   * URL stands for Uniform Resource Locator. It is a reference or address used to locate resources on the internet, such as web pages, files, or documents. A URL typically consists of a protocol (such as http or https), domain name, and path to the resource.
8. **Term which is used to see web pages is called what?**
   * The term used to view web pages is a web browser.
9. **In Ethernet, which topology is used?**
   * Ethernet commonly uses a bus or star topology, though other variations such as ring and mesh topologies are also possible.
10. **Set of rules and regulations while working on the internet, which term is used?**
    * The set of rules and regulations while working on the internet is commonly referred to as Internet Protocol (IP) standards or Internet standards.
11. **What do you mean by RAS?**
    * RAS stands for Remote Access Service. It is a feature in Windows Server operating systems that allows remote users to connect to a network over a dial-up or VPN connection.
12. **What are the main search engines to get more website URLs on the Internet?**
    * The main search engines to find website URLs on the internet include Google, Bing, Yahoo, and DuckDuckGo.
13. **What does the PROTOCOL consist of?**
    * A protocol consists of a set of rules and conventions that govern how data is transmitted and received between devices on a network.
14. **What is Virtualization?**
    * Virtualization is the process of creating a virtual (rather than actual) version of something, such as an operating system, server, storage device, or network resources.
15. **What is the Difference between Full Virtualization and Para Virtualization?**
    * Full virtualization allows multiple operating systems to run concurrently on a single physical machine without modifying the guest operating systems. Para virtualization requires modifications to the guest operating systems to run on a virtual machine.
16. **What is a Hypervisor?**
    * A hypervisor is a software layer that allows multiple virtual machines to run on a single physical machine. It manages and allocates physical resources to virtual machines, enabling them to operate independently.
17. **What are different hypervisors available in Linux?**
    * Some popular hypervisors available in Linux include KVM (Kernel-based Virtual Machine), Xen, and VMware ESXi.
18. **What is Virtualization and what are its types?**
    * Virtualization is the process of creating virtual versions of physical resources such as servers, storage devices, or networks. Its types include server virtualization, storage virtualization, network virtualization, and desktop virtualization.
19. **Name the components that are used in VMware infrastructure. What are the benefits of Virtualization?**

In a VMware infrastructure, several components are commonly used. These include:

1. **ESXi Hypervisor**: ESXi is a bare-metal hypervisor that runs directly on physical hardware. It allows multiple virtual machines (VMs) to run on a single physical server.
2. **vCenter Server**: vCenter Server is a centralized management platform that provides tools for managing virtualized environments. It allows administrators to configure, monitor, and manage multiple ESXi hosts and VMs from a single interface.
3. **vSphere Client**: vSphere Client is a graphical user interface (GUI) used to interact with vCenter Server and manage virtual infrastructure components such as VMs, hosts, and storage.
4. **vSphere Web Client**: vSphere Web Client is a web-based interface for managing VMware vSphere environments. It provides similar functionality to the vSphere Client but is accessible through a web browser.
5. **VMware vSphere Distributed Switch (VDS)**: VDS is a centralized virtual switch that provides network connectivity to VMs across multiple ESXi hosts. It simplifies network management and configuration in virtualized environments.
6. **VMware vSAN (Virtual Storage Area Network)**: vSAN is a software-defined storage solution that pools together local storage resources from ESXi hosts to create a distributed storage platform. It provides scalable and high-performance storage for virtual machines.
7. **VMware Tools**: VMware Tools is a suite of utilities and drivers installed in guest operating systems running on VMware virtual machines. It enhances VM performance, improves compatibility, and enables features such as time synchronization and guest OS shutdown.
8. **VMware vMotion**: vMotion is a feature that allows live migration of running VMs between ESXi hosts with no downtime. It enables workload balancing, hardware maintenance, and disaster recovery without interrupting service.
9. **VMware High Availability (HA)**: HA is a feature that automatically restarts VMs on remaining hosts in the event of a host failure. It helps ensure high availability and reliability of virtualized applications.
10. **VMware Distributed Resource Scheduler (DRS)**: DRS is a feature that dynamically allocates and balances computing resources such as CPU and memory across ESXi hosts in a vSphere cluster. It optimizes resource utilization and performance.

Benefits of Virtualization:

1. **Resource Utilization**: Virtualization allows better utilization of physical hardware resources by running multiple virtual machines on a single physical server. This improves overall efficiency and reduces hardware costs.
2. **Cost Savings**: Virtualization reduces hardware and operating costs by consolidating workloads onto fewer physical servers. It also lowers power consumption, cooling requirements, and data center space.
3. **Flexibility and Scalability**: Virtualization provides agility and scalability by allowing easy deployment, provisioning, and migration of virtual machines. It enables organizations to quickly adapt to changing business requirements and scale infrastructure as needed.
4. **Improved Disaster Recovery**: Virtualization facilitates faster and more efficient disaster recovery through features like live migration (vMotion), high availability (HA), and site recovery. It enhances data protection and minimizes downtime in case of disasters.
5. **Isolation and Security**: Virtualization provides strong isolation between virtual machines, enhancing security by preventing one VM from affecting others. It also enables security features such as virtual firewalls, encryption, and intrusion detection.
6. **Testing and Development**: Virtualization offers a sandbox environment for testing, development, and experimentation without impacting production systems. It allows developers to quickly spin up virtual machines for software testing and debugging.
7. **Legacy Application Support**: Virtualization enables running legacy applications on modern hardware by encapsulating them within virtual machines. It ensures compatibility and extends the lifespan of legacy systems.
8. **Green IT**: Virtualization contributes to environmental sustainability by reducing the number of physical servers required, resulting in lower energy consumption and carbon footprint.