CCNA ASSIGNMENT 1

Q.1 Explain is the OSI reference model?

ANS. The OSI reference model describes the functions of a telecommunication or networking system, while TCP/IP is a suite of communication protocols used to interconnect network devices on the internet. TCP/IP and OSI are the most broadly used networking models for communication.

Q.2 What is a Network?

ANS. Computer networking refers to interconnected computing devices that can exchange data and share resources with each other. These networked devices use a system of rules, called communications protocols, to transmit information over physical or wireless technologies.

Q.3 What are Routers?

ANS. A router receives and sends data on computer networks. Routers are sometimes confused with network hubs, modems, or network switches. However, routers can combine the functions of these components, and connect with these devices, to improve Internet access or help create business networks.

Q.4 Explain Encapsulation.

ANS. In computer networking, encapsulation is a method of designing modular communication protocols in which logically separate functions in the network are abstracted from their underlying structures by inclusion or information hiding within higher-level objects.

Q.5 Peer-to-Peer Communication.

ANS. Peer-to-peer (P2P) is a decentralized communications model in which each party has the same capabilities and either party can initiate a communication session.

Q.6 What is TCP and UDP?

ANS. TCP

Transmission Control Protocol (TCP) is connection-oriented, meaning once a connection has been established, data can be transmitted in two directions. TCP has built-in systems to check for errors and to guarantee data will be delivered in the order it was sent, making it the perfect protocol for transferring information like still images, data files, and web pages.

But while TCP is instinctively reliable, its feedback mechanisms also result in a larger overhead, translating to greater use of the available bandwidth on your network.

UDP

User Datagram Protocol (UDP) is a simpler, connectionless Internet protocol wherein error-checking and recovery services are not required. With UDP, there is no overhead for opening a connection, maintaining a connection, or terminating a connection; data is continuously sent to the recipient, whether or not they receive it.

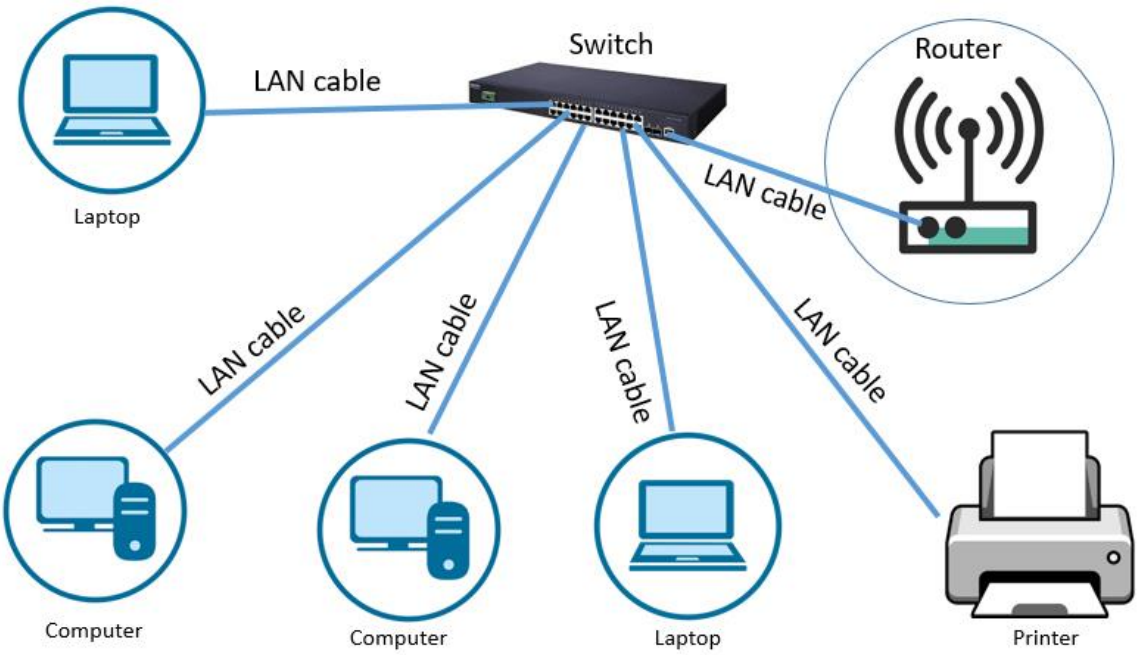
Although UDP isn't ideal for sending an email, viewing a webpage, or downloading a file, it is largely preferred for real-time communications like broadcast or multitask network transmission.

Q.7 What is Internetwork Operating System software?

ANS. Cisco IOS (Internetwork Operating System) is a proprietary operating system that runs on Cisco Systems routers and switches. The core function of Cisco IOS is to enable data communications between network nodes.

Q.8 Explain LAN and draw any example.

ANS. A local area network (LAN) is a devices network that connect with each other in the scope of a home, school, laboratory, or office. Usually, a LAN comprise computers and peripheral devices linked to a local domain server. All network appliances can use a shared printers or disk storage. A local area network serve for many hundreds of users.



Local Area Network

Q.9 Explain Network Device - Router Switch and Hub

ANS. Both Routers and Switches are network connecting devices. Routers work at the network layer and are responsible to find the shortest path for a packet across the network,

whereas Switches connect various devices in a network. Routers connect devices across multiple networks.

Q.10 Describe Router and switch connection in LAN.

ANS. A router is a device that connects two or more packet-switched networks or subnetworks. It serves two primary functions: managing traffic between these networks by forwarding data packets to their intended IP addresses, and allowing multiple devices to use the same Internet connection.

A network switch is a hardware component responsible for relaying data from networks to the destination endpoint through packet switching, MAC address identification, and a multiport bridge system. A network switch connects and transmits data packets to and from devices on a local area network (LAN).

Q.11 Types of Cable - explain types of Ethernets and speed.

ANS.

Category	Max. Data Rate	Bandwidth	Max. Distance	Usage
Category 1	1 Mbps	0.4 MHz		Telephone and modem lines

Category	Max. Data Rate	Bandwidth	Max. Distance	Usage
Category 2	4 Mbps	4 MHz		LocalTalk & Telephone
Category 3	10 Mbps	16 MHz	100 m (328 ft.)	10BaseT Ethernet
Category 4	16 Mbps	20 MHz	100 m (328 ft.)	Token Ring
Category 5	100 Mbps	100 MHz	100 m (328 ft.)	100BaseT Ethernet
Category 5e	1 Gbps	100 MHz	100 m (328 ft.)	100BaseT Ethernet, residential homes
Category 6	1 Gbps	250 MHz	100 m (328 ft.) 10Gb at 37 m (121 ft.)	Gigabit Ethernet, commercial buildings
Category 6a	10 Gbps	500 MHz	100 m (328 ft.)	Gigabit Ethernet in data centers and commercial buildings
Category 7	10 Gbps	600 MHz	100 m (328 ft.)	10 Gbps Core Infrastructure
Category 7a	10 Gbps	1000 MHz	100 m (328 ft.) 40Gb at 50 m (164 ft.)	10 Gbps Core Infrastructure
Category 8	25 Gbps (Cat8.1) 40 Gbps (Cat8.2)	2000 MHz	30 m (98 ft.)	25 Gbps/40 Gbps Core Infrastructure

Q.12 Explain TCP/IP -List of Protocol and port Number.

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 (an intranet or extranet).

PROTOCOLS	TCP/UDP	PORT NUMBER
File Transfer Protocol (FTP) (RFC 959)	TCP	20/21
Secure Shell (SSH) (RFC 4250-4256)	TCP	22
Telnet (RFC 854)	TCP	23
Simple Mail Transfer Protocol (SMTP) (RFC 5321)	TCP	25
Domain Name System (DNS) (RFC 1034-1035)	TCP/UDP	53
Dynamic Host Configuration Protocol (DHCP) (RFC 2131)	UDP	67/68

Trivial File Transfer Protocol (TFTP) (RFC 1350)	UDP	69
Hypertext Transfer Protocol (HTTP) (RFC 2616)	TCP	80
Post Office Protocol (POP) version 3 (RFC 1939)	TCP	110
Network Time Protocol (NTP) (RFC 5905)	UDP	123
NetBIOS (RFC 1001-1002)	TCP/UDP	137/138/139
Internet Message Access Protocol (IMAP) (RFC 3501)	TCP	143
Simple Network Management Protocol (SNMP)	TCP/UDP	161/162

(RFC 1901-1908, 3411-3418)		
Border Gateway Protocol (BGP) (RFC 4271)	TCP	179
Lightweight Directory Access Protocol (LDAP) (RFC 4510)	TCP/UDP	389
Hypertext Transfer Protocol over SSL/TLS (HTTPS) (RFC 2818)	TCP	443
Lightweight Directory Access Protocol over TLS/SSL (LDAPS) (RFC 4513)	TCP/UDP	636
FTP over TLS/SSL (RFC 4217)	TCP	989/990

Q.13 Explain Node(backborn) and Physical layer.

ANS. A backbone network is a core part of a computer network that connects multiple networks together. The network interconnects various LANs, WANs, and subnetworks, allowing them to communicate and exchange information over its high-capacity connectivity infrastructure.

The physical layer defines the relationship between a device and a transmission medium, such as a copper or optical cable. This includes the layout of pins, voltages, cable specifications, hubs, repeaters, network adapters, host bus adapters (HBA used in storage area networks) and more.