1. Explain is the OSI reference model?

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

* Diagram:

sender Application Layer

Presentation Layer Software Layers

Session Layer

Receiver Transport Layer Heart of OSI

Network Layer

Data Link Layer Hardware Layer

Physical Layer

1. What is a Network?

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

Network is the group of computers connected with each other through some type of media that they can share data and resources.

1. What are Routers?

* Router is a network hardware device that allows to make communication in between the internet and all devices which are linked to the internet in your house and office.

1. Explain Encapsulation.

* Encapsulation is a way to restrict the direct access to some components of an object, so users can not access state values for all of the variables of a particular object.

Is a concept used in object-oriented programming to bundle data and methods into easy-to-use units.

Ex : containers are just one example of encapsulation in coding where data and methods are bundled together into a single package.

1. Peer-to-Peer Communication.

* 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.

1. What is TCP and UDP?

* TCP : Transmission Control Protocol

UDP: User Datagram Protocol

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

UDP : refers to a protocol used for communication throughout the internet.

The main difference between TCP and UDP is that TCP is a connection-based protocol and UDP is connectionless.

1. What is Internetwork Operating System software?

* Cisco IOS, or internetwork operating system is software that powers Cisco networking devices such as routers and switches.

1. Explain LAN and draw any example.

* A local area network (LAN) is a collection of devices connected together in one physical location such as a building , office , or home.

1. Explain Network Device - Router Switch and Hub.

* Routers : connect multiple networks and determine the best path for data transmission based on IP addresses.

Switches : connect devices within a network and enable efficient data transfer using MAC addresses.

Hub : on the other hand simply broadcast data to all connected devices.

1. Describe Router and switch connection in LAN.

* Router : connects multiple switches and their respective networks to form an even larger network.

Switch : connects multiple devices to create network.

1. Types of Cable - explain types of Ethernets and speed.

* Twisted Pair Cable

Unshielded Twisted Pair Cable

Shielded Twisted Pair Cable

Coaxial Cable

Fiber Optic Cable

straight cable

roll over cable

coaxial cable: Coaxial is called by this name because it contains two conductors that are parallel to each

other. Copper is used in this as centre conductor which can be a solid wire or a standard one.

It is surrounded by PVC installation

twisted pair :This cable is the most commonly used and is cheaper than others. It is lightweight, cheap,

can be installed easily, and they support many different types of network.

ethernet cable : Ethernet cabling is an important discussion, especially if you are planning on taking the Cisco

exams. Three types of Ethernet cables are available:

■ Straight-through cable

■ Crossover cable

■ Rolled cable

fiber optic :These are similar to coaxial cable. It uses electric signals to transmit data. At the centre is the glass core through which light propagates.In multimode fibers, the core is 50microns, and In

single mode fibres, the thickness is 8 to 10 microns.

The core in fiber optic cable issurrounded by glass cladding with lower index of refraction as compared to core to keep allthe light in core. This is covered with a thin plastic jacket to protect the cladding.

The fibers are grouped together in bundles protected by an outer shield.Fiber optic cable has

bandwidth more than 2 gbps (Gigabytes per Second).

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

* A number is assigned to user sessions and server applications in an IP network. The port number resides in the header area of the packet being transmitted.

Here,

http port number is 80

ftp port number is 20, 21

email- SMPT (outgoing message)

Non-encrypted port number is 25

Secure (TLS) port number is 587

Secure (SSL) port number is 465

POP 3 (Incoming message)

Non-encrypted port number is 110

Secure (SSL) port number is 995

Telnet port number is 23

SSH port number is 22.

1. Explain Node(backborn) and Physical layer.

* Bus topology comprises a single communication line or cable that is connected to each node. The backbone of this network is the central cable

physical layer : The physical layer converts data frames from the upper layers to network signals for efficient data transmission over the network channel.