

### Question no-1

- a) what is DCN?
- b) Describe Computer Networks Types?
- c) Why learn data communication and communication and computer networking?
- d) Where applied communication and computer networking?

### Question no-2

- a) What is Computer network?
- b) Which factors work for computer networks classifications?
- c) What geographical span is on the computer network.
- d) What is inter connectivity? and what is network Architecture?

a) A dynamic circuit network is an advanced computer networking switched protocol technology that combines traditional packet communication based on the Internet Protocol.

### b) Computer network types

There are four kind of datatype mainly -

i) personal Area network:

A personal area network is smallest network which is very personal to a user. PAN has connectivity range up to 10 meters. PAN may include wireless computer keyboard, and mouse, Bluetooth enabled headphones.

ii) Local Area Network (LAN)

iii) Computer network operated inside a building and

Operated under single administrative system is generally termed as local Area network. Number of systems connected in LAN may vary from as less as two to as much as 16 million.

### (iii) metropolitan Area networking

The metropolitan area network generally expands throughout a city such as cable TV network. MAN is a service which is provided by ISPs.

### (iv) wide area networking

As the name suggests, the wide area network covers a wide area which may span across provinces and even a whole country. Telecommunication networks are wide area network.

③ we learn data communication and computer networks  
for three reason. Every reason is given below

① Network basic understanding

A system of interconnected computers and computerized peripherals such as printers is called computer networks. This interconnection among computers facility information sharing among computers may connect to each other by wired or wireless media.

Networking Engineering :-

Networking engineering is a complicated task ; it involves software, framework, chip level engineering and electric pulses.

## Internet

A network of networks is called an internetwork or simply the Internet. It is the largest network in existence on this planet. The Internet largely connects all WANs (largest network) and has a core connection to LANs and other smaller networks.

## d) Application of Communication and Computer Networks

Computer systems and peripherals are connected to form a network. They provide numerous advantages.

- Q) Name some sharing such as printers and storage devices.
- a) ip phones
  - b) video conference
  - c) parallel computing
  - d) instant messaging

Answers to the question no - 10

- a) A system of interconnected computers and computerized peripherals such as printers to form computer networks.
- b) The computer networks are classified based on various factors. They includes:

- Geographical span
- Inter - Connectivity
- Administration
- Architecture

## ① Geographical span options

Geographically a network can be seen in

one of following categories

- ① It may be spanned across your table among bluetooth enable devices, Ranging in more than few meters.
- ② It may be spanned across a whole building, involving intermediate devices

Connect all floors.

- iii) It may be spanned across a whole city.
- iv) It may be spanned across a whole country.
- v) It may be spanned across multiple cities or provinces.
- vi) It may be one network covering whole world.

d)

### Inter - Connectivity

Computer components of a network can be connected to each other differently in some fashion. By connect we mean either logically, physically or both ways.

- a) All devices connected to its left and right port only, creating linear structure.

- b) All devices connected unidirectionally using all previous ways to connect each other, usually in a hybrid structure.
- c) Each device is connected to its left and right peers only, creating linear structure.

## Network architecture:

Computer networks can be discriminated into various types such as client-server, peer-to-peer or hybrid, depending upon its architecture.

- a) There can be one or more system acting as server, and remaining
- b) others being client, requests the server request.

- a) Two system can be connected point to point  
in bus fashion.

Answer to the question no 3

a) what is topology?

Solution A network topology is the arrangement which computer systems or network devices are connected to each other.

b) Possible topology?

Solution There are 8 kind of topology:

i) point-to-point

point-to-point networks contains exactly two hosts such as computer, switches or routers.

Devices connected back using a single piece of cable.

### i) Bus topology:

All devices share single communication line on cable. Bus topology may have problem while multiple hosts sending data at the same time.

### ii) Star topology:

All hosts in star topology are connected central device, using a point to point connection.

### iii) Ring topology:

each host machine connects to exactly two other machines, creating a circular network structure.

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### iii) Ring topology:

each host machine connects to exactly two other machines, creating a circular network structure.

## mesh topology:

A node is connected to one or multiple nodes.

## tree topology:

This is most common form of network topology used present.

## ring chains

This topology connects all the hosts in a linear fashion.

## hybrid topology

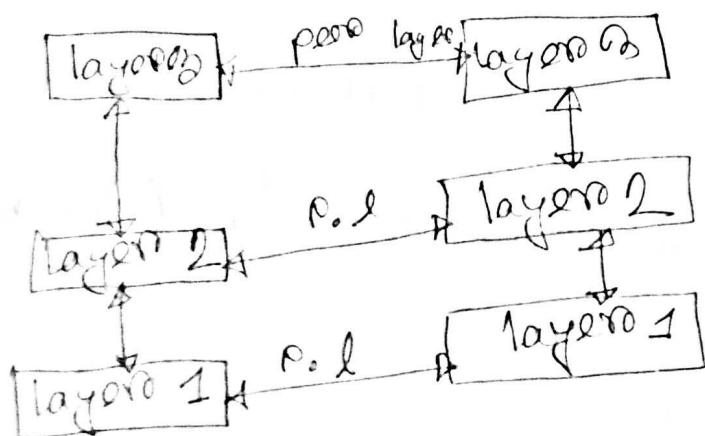
A network structure whose design contains more than one topology is said to be hybrid topology.

② Describe Computer network models?

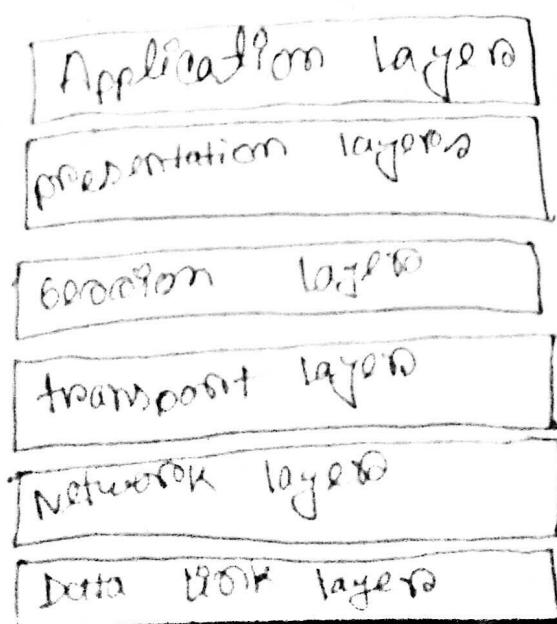
### Solutions

There are three types of network models.

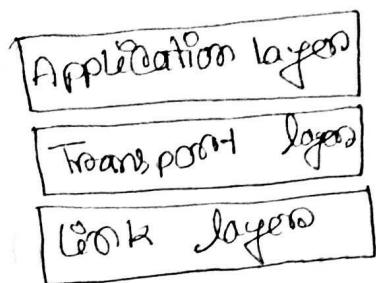
### ③ Layered Models



### OSI Model



## Internet model



d) describe LAN technology briefly?

let us go through various LAN technologies in brief

### Ethernet

Ethernet is a widely deployed LAN technology. Ethernet shares media. Network which uses shared media has high probability of data collision.

### Fast-Ethernet

To overcome need of fast emerging software

and more advanced technology. Ethernet + wireless  
is fast ethernet.

### Giga-ethernet

Giga ethernet provides speed up to 1000 mbps  
second.

### Virtual LAN

Virtual LAN is collection to divide a signal  
broadcast domain into multiple broadcast  
domain.

### Answer to the Question no-4

#### a) Computer networks security

Computer networks security means highly sensitive  
such as the user name, password, personal

documents and confidential documents protected with computer network.

## b) Categories of computer networks

All security threats are operational. They occur only if intentionally triggered. Security threats can be divided into the following categories

- i) Interruption
- ii) Privacy - Breach
- iii) Integrity
- iv) Authenticity

## d) Cryptography algorithms

Cryptography is a technique to encrypt the plain-text data which makes it difficult to understand and interpret. There are several cryptographic algorithms available present day as described below.

### Q) Secret keys

Both sender and receiver share one secret key.

### i) public key encryption

public key encryption is Rivest - Shamir - Adleman

### Message digest

In this method, actual data is not send, instead a hash value is calculated and send.

### Question no-5

a) what are the advantages of a ~~multiple~~ multipoint multipoint connection over a point to point connection?

### Solutions

The advantage of a ~~multiple~~ multipoint connection over a point to point connection are ease of installation, low cost, reliability. A point to point connection is used for connecting 2 devices, whereas in a multipoint connection more than 2 devices share the communication link. Therefore, multipoint connection, thus creating individual connections between all users separately. This

also leads to low cabling cost and installation cost.

b) What are the two types of line configuration?

### Solutions

There are two types of line configurations multipoint and point to point. A multipoint line configuration connects multiple users; while a point to point connection maintains individual connection links between all pairs of users.

Q) Name the four basic network topologies and  
give an advantage of each type.

The four basic network topologies include bus, ring, star and mesh. The advantages of each topology are mentioned as

below :-

Mesh : Robust, secure, priority, reduced traffic.

Star : Robust, less expensive than mesh

Bus : Easy to install, inexpensive, less cabling.

Ring : Easy to install and reconfigure

Fault

a) what are some of the factors that determine whether a communication system is a LAN or a WAN?

### Solutions

Geographical area spanned by a network determines whether it is a LAN or WAN. A LAN or local area network spans a relatively smaller area, whereas a WAN or wide area network, covers a much larger area. Also, WANs have a higher propagation delay than LANs because of the large distance to be covered.

d) what are some of the factors that determine whether a communication system is a LAN or a WAN?

### Solutions

Geographical area spanned by a network determines whether it is a LAN or WAN. A LAN or local area network spans a relatively smaller area, whereas a WAN or wide area network, covers a much larger area. Also, WANs have a higher propagation delay than LANs because of the large distance to be covered.

## Answers To The Questions 6

(i) What are parts in fixed pricing?

Allocation procedures in a developing and non-developing countries and problems arising from the differences in the different models of developing and developed countries are based on the lack of authority in other countries.

What are the functions of the physical layer in the network?

Allocating the maximum physical layer in the local network layer to the core, the local network layer model. The function of allocation of the layer to the transportation of individual bits from one node to another over a physical medium. In TCP/IP model,

the physical layers and the data link layer  
are combined as the host-to-network  
layer.

- ② what is the difference between port  
addresses, logical addresses, and  
physical addresses?

### solutions

#### Logical address

An IP address of the system is called  
logical address. This address is the  
combination of Net ID and Host ID.  
This address is used by network layer  
to identify a particular network

among the network. Their address can be changed by changing the host position on the network. So it is called logical address.

### physical address:

Each system having a NIC through which two systems physically connected with cables. The address of the NIC is called physical address or mac address. These address is used by data link layer.

### port address:

There are many application running on the computer. Each application run with a

post no. on due completion. This post no. for application is decided by the term of due date. This post no. is called post address.

Q) How are OSI and ISO related to each other?

### Solutions

ISO is the organization and OSI is its model.

The international standard organization is a multinational body dedicated world wide agreement on international standard. An OSI standard that covers all

importance of network organizations by  
the open system interconnection  
model.

### Answer to the Question no-7

(a) what should you consider when choosing a  
network topology?  
solution

A network topology is the organization of a  
communication of a network's elements. Those  
elements can include links or nodes.

a network topology consider:

- i) size hardware
- ii) size of the network
- iii) budget limitations

v) need for reliability

v) IP network expansion is likely to be required.

b) what are an advantage of using star topology networks over using bus or ring topology networks?

Advantages of star topology:

v) As compared to Bus topology it gives far much better performance signals donot necessarily get transmitted to all the workstations

i) Components can be removed easily.

ii) Centralized management. It helps in monitoring the network.

iii) Failure of one node or link doesn't affect the rest of network. At the same time it's easy to detect the failure and troubleshoot it.

c) How many nodes share a single channel on a bus topology?

Solution: all connected nodes

d) What would happen to the entire network topology if one of the

nodes in the bus-world network

fail?

solutions Data would no longer be transmitted to or from any node

Answers to the Question no-8

a) what is physical layer?

Solutions

The physical layer consists of all the functions required to transmit a bitstream over a physical medium.

b) what are the concerns of the physical layer on the internet model?

### Solution 8

The network physical layer is the lowest layer on the open system OSI model.

The primary concern of this layer is transmission of individual bits from node to another over a physical medium.

c) what are the responsibilities of the data link layer in the model?

### Solution 9

The data link layer transforms the

physical layer, a raw transmission facility, to a reliable link and is responsible for message delivery

- a) framing
  - b) physical addressing
  - c) flow control
  - d) Error control
  - e) Access control.
- f) what is logical link control layer?

solutions

logical link control layer is responsible for the establishment

and maintenance of the data links  
between different network nodes