



**Mawlawi Bhashani Science and Technology University**

# **Assignment**

CT Assignment No: 01

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## **Submitted by**

Name: Binodon

ID:IT-17046

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Dept. of ICT

MBSTU.

## **Submitted To**

Nazrul Islam

Assistant Professor

Dept. of ICT

MBSTU.

Course Title: Telecommunication Engineering Course Code:

1.

- (a) What is telecommunication system? Write 3 down about telecommunication network?
- (b) Write down the classification of Automatic switching system
- (c) Explain briefly Multiprogramming Environment

3

6

2.

- (a) What is load sharing mode?
- (b) Write down about the process control block? and explain each process
- (c) What is process switching and context switching?

2

3

7

3.

- (a) Write down the differences between voice & data traffic
- (b) What is Application layer
- (c) Explain Routing Strategy Diagram

2

5

7

- 4.
- (a) Explain briefly about transmission media 6
  - (b) What is Routing Information protocol, define 3  
with an example
  - (c) What is satellite network? What is synchronization 1  
and what is bandwidth (2)
- 5.
- (a) What is layer? Define layer 2
  - (b) Write down the PDU of different layer 4
  - (c) Describe ISO-OSI reference model, and draw 6  
the graph
- 6.
- (a) Write down ISO OSI features and its drawbacks 4
  - (b) Write down public switch transmission protocol 2
  - (c) Bandwidth of PST 2
  - (d) PSTN Data Communication networks, describe 6  
briefly
- 7.
- a) Describe transport layer briefly 4
  - b) Types of connection in telecom network 4
  - c) Write down the crossbar switch features 4
- 8.
- a) What is switching network, and its types? 6
  - b) Describe circuit switching & message switching 6
  - c) What is packet switching 2

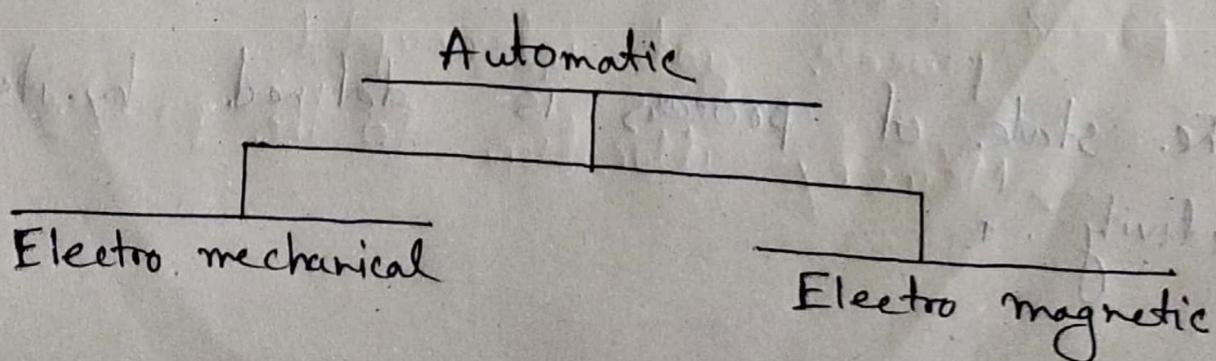
Ans to the Q No 1 (a)

Telecommunication represent the transfer of info, from an entity at one place to an entity at another place, whereas the information can be in form of data voice or symbol.

A telecommunication network is a group of system that establishes a distant call. The switching system are part of telecommunication network.

Ans to the Q No 1 (b)

The automatic switching system are classified as following:



## Electromechanical Switching Systems:

Here, mechanical switches are electrically operated

## Electronic Switching Systems:

Here, the usage of electronic components such as diodes, transistor and ICs are used for the switching purpose.

Ans to the Q no 1 (f)

There are three following state of a Multiprogramming environment.

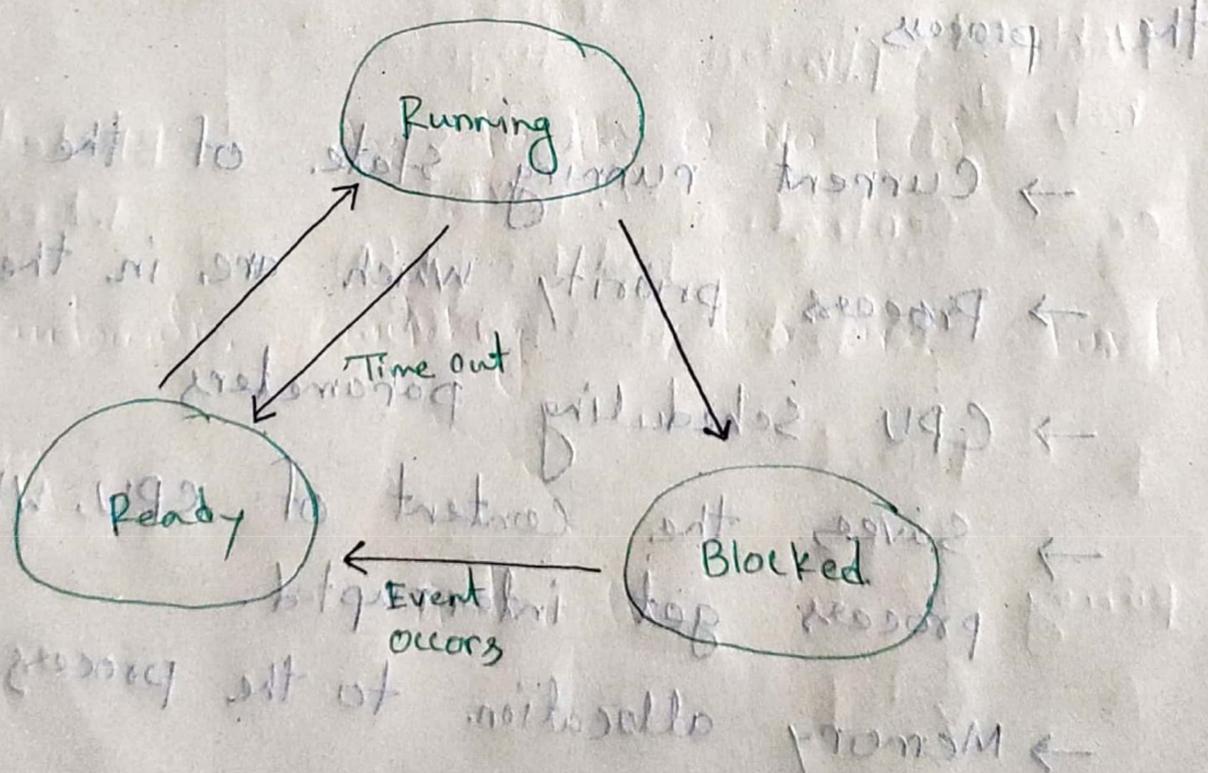
- Running
- Ready
- Block

The state of process is defined by its current activity.

⇒ A process is said to be running, if an instruction is currently being executed by the processor.

⇒ A process is said to be ready if the next instruction of running a process is waiting or has an instruction that is timed out.

⇒ A process is said to be blocked, if it is waiting for some event to occur before it can proceed.



### Ans to the Q no 2 (a)

Load sharing mode is where a task is shared between two processors. The Exclusion device ED is used instead of the comparator in this mode.

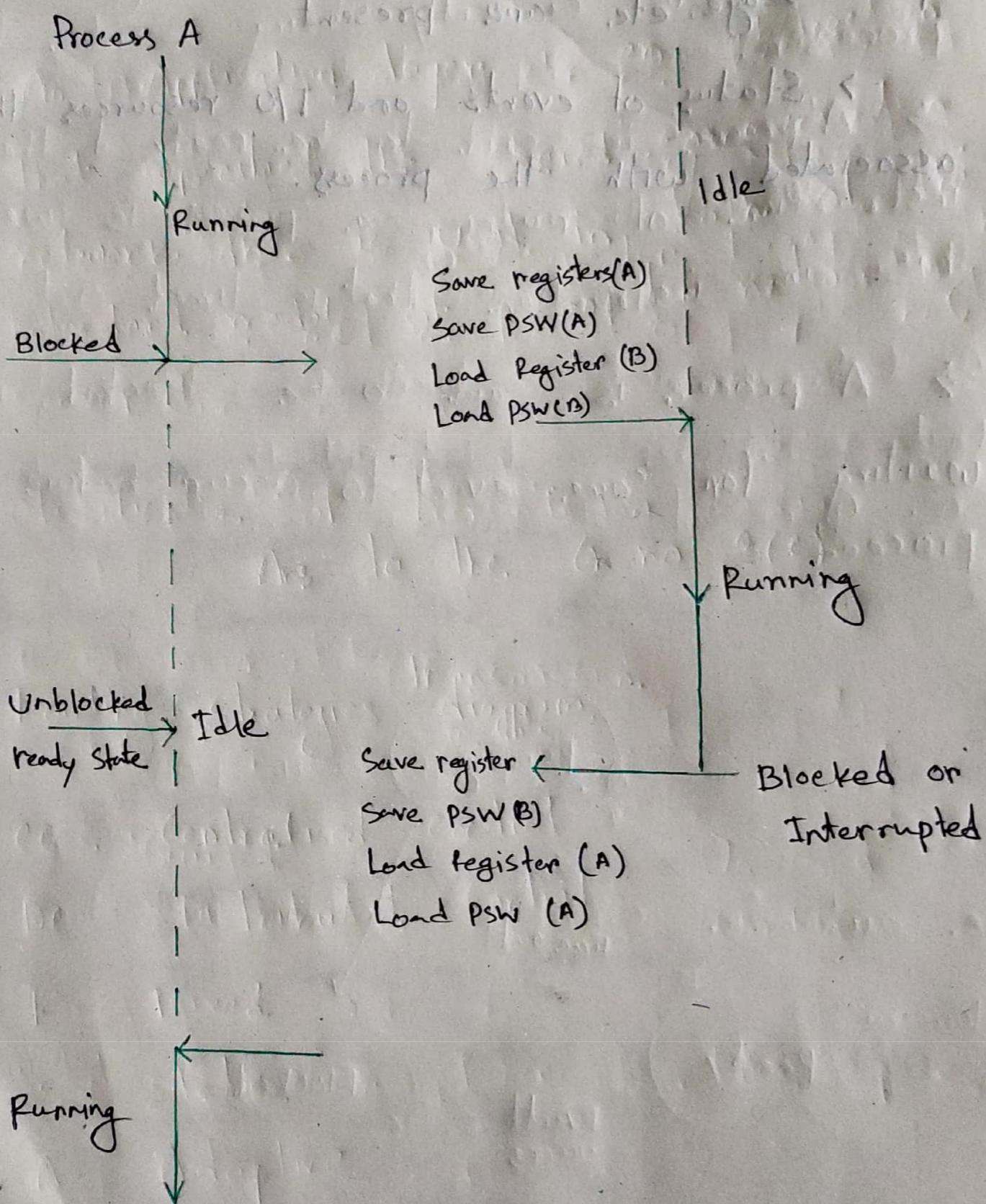
### Ans to the Q no 2 (b)

The process control block represents each process in the operating system. PCB is a data structure containing the following information about the process.

- Current running state of the process
- Process priority which are in the ready state
- CPU scheduling parameters
- Saves the content of CPU, When a process get interrupted.
- Memory allocation to the process

- The details of process like its number, CPU usage, etc are present
- Status of events and I/O resources that are associated with the process.

Ans to the Q no. 2(c)



Ans to the Q no 3(a)

The difference between Voice & Data traffic are as follow:

Voice traffic	Data traffic
i) Continuous	1. Bursty
ii) Low bandwidth for long duration	2. High Bandwidth for short duration
iii) Half duplex	3. Half or full duplex
iv) Real time	4. Near real time
v) Loss acceptable	5. Loss Unacceptable
vi) Error tollerable	6. Error Unacceptable
vii) Typical line - 85957.	

### Ans to the Q no 3(b)

An Application layer is an abstraction layer that specified the shared communication network. This is used in both of the standard models of Computer networking

### Ans to the Q no 3(c)

Routing strategies diagram:

CC = Centralised control

DC = Distributed Control

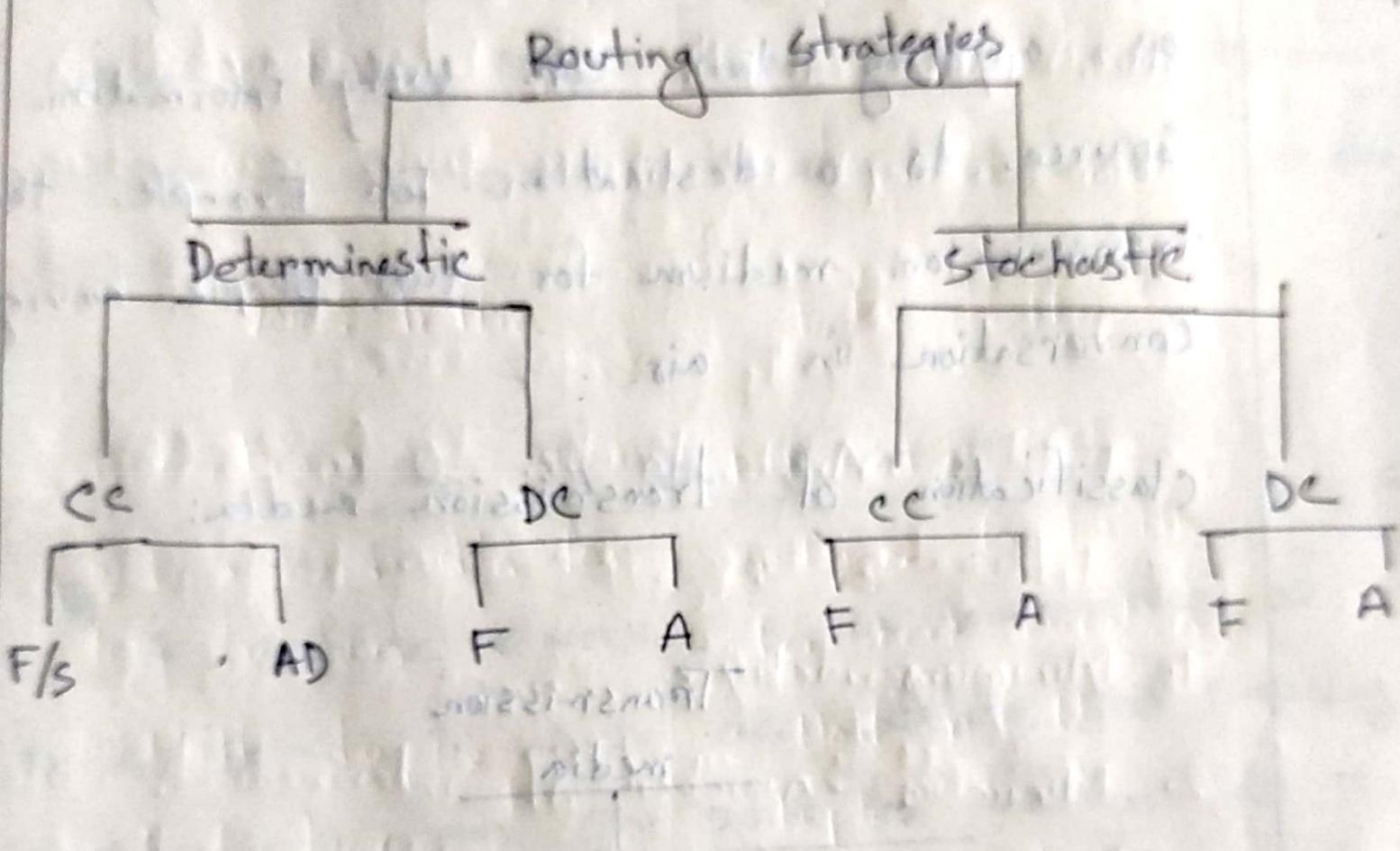
F = Fixed

S = Static

A = Adaptive

D = Dynamic

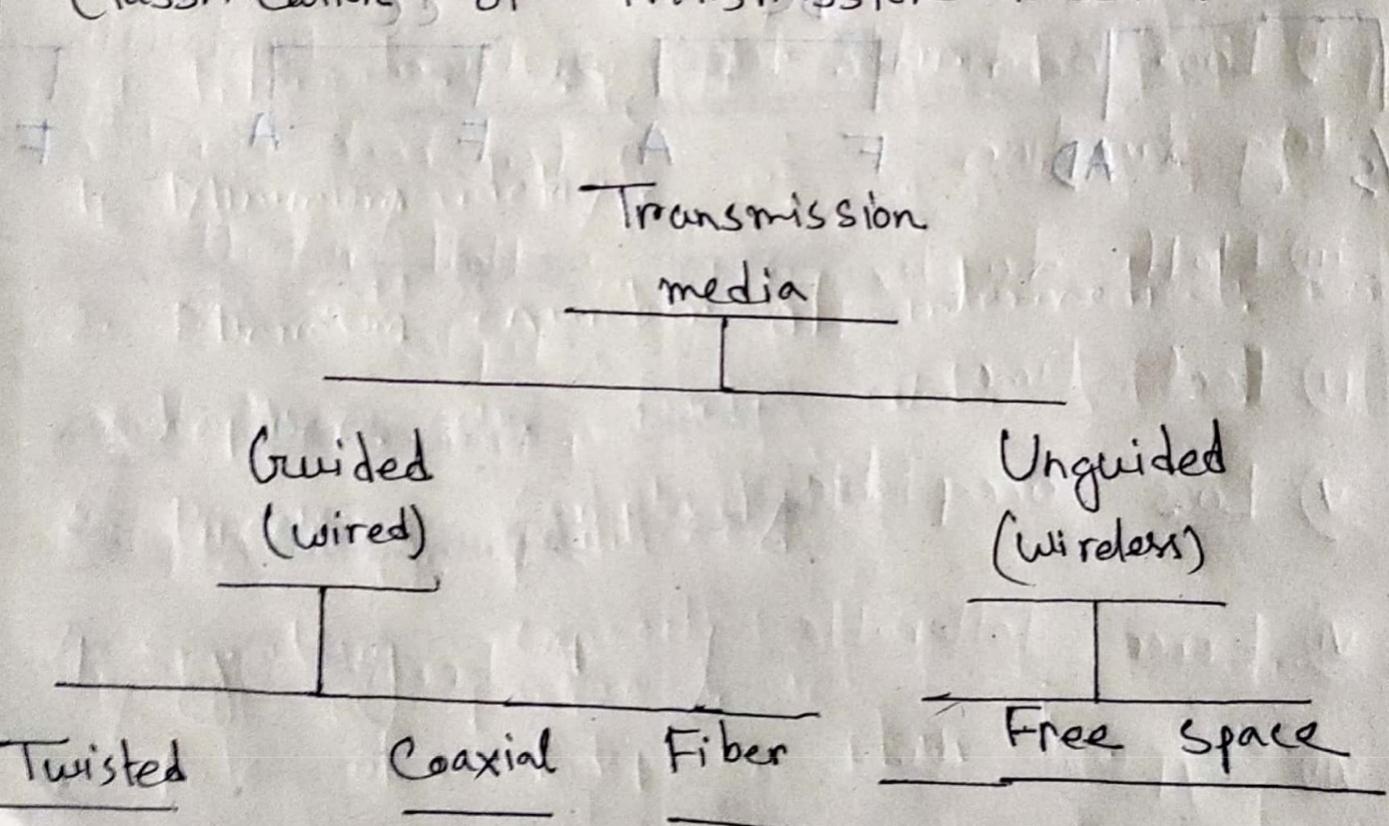
Diagram:



Ans to the Q no 4-(a)

A transmission media can be broadly defined as anything that can carry information from source to a destination. For Example, the transmission medium for two people having conversation in air.

Classification of transmission media:



Ans to the Q no 4 - (b)

The Routing Information Protocol is an intra domain routing protocol used inside an autonomy system. It is basically implementing distance vector routing directly.

Ans to the Q no 4 (c)

B A satellite network is a combination of nodes, some of which are satellite, that provides communication from one point to another into the earth.

All base channels need to be synchronised to use CDMA. To provide synchronization bases use the service of GPS (Global positioning system).

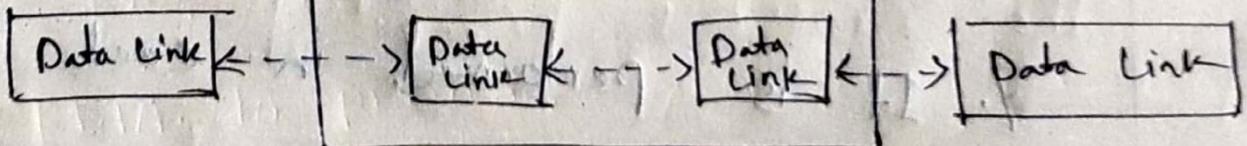
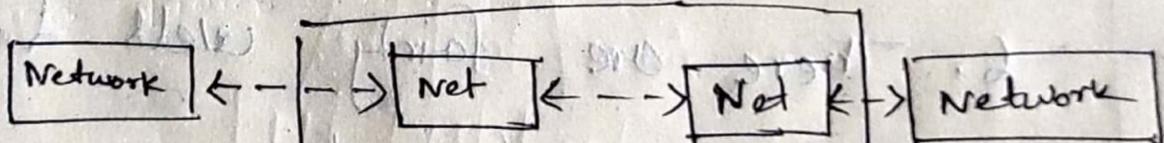
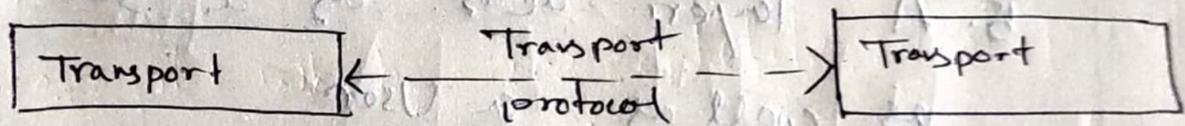
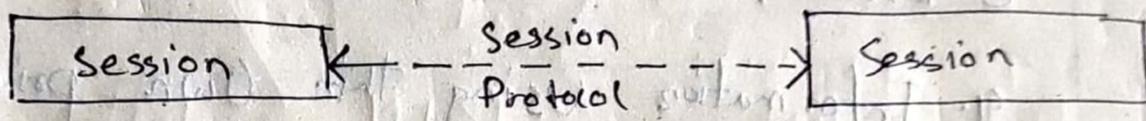
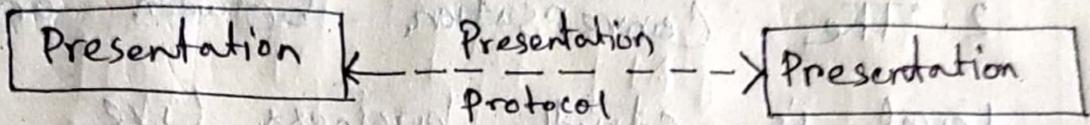
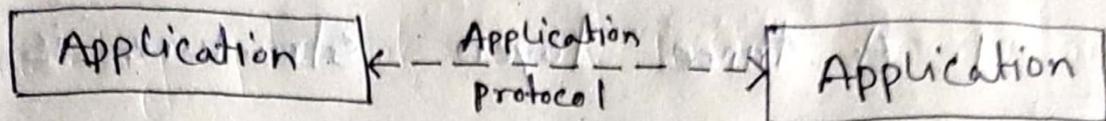
Ans to the Q no 5(a)

A layer is composed of subsystem of the same rank of all the interconnected system. The concept is shown with subsystem

Ans to the Q no 5(b)

1. Minimum delay
2. Minimum number of intermediate nodes or hops
3. Processing complexity
4. Signalling capacity
5. Rate of Adaption in the case.
6. Fairness of traffic
7. Reasonable response time

## Ans to the Q no 5 (c)



ISO OSI reference model

## Ans to the Q no 6(a)

### ISO-OSI Features:

1. A three layer structure is used in this communication process
2. The conversation between an upper & lower level is strictly business like
3. Entities in the same level or level exchange information using their own private protocols
4. A layer acts as a service provider as well as a user
5. There are fairly well defined functions to be performed
6. It is performed in each layer
7. It is immaterial as to how functions to be performed in each layer.

(1)

Ans to the Q no 6 (b)

Data transmission is "Public switched telephone networks and electronic PABXs are designed to carry analog voice signals. Here data rates are usually limited. Maximum 64 kbps.

Ans to the Q no 6 (c)

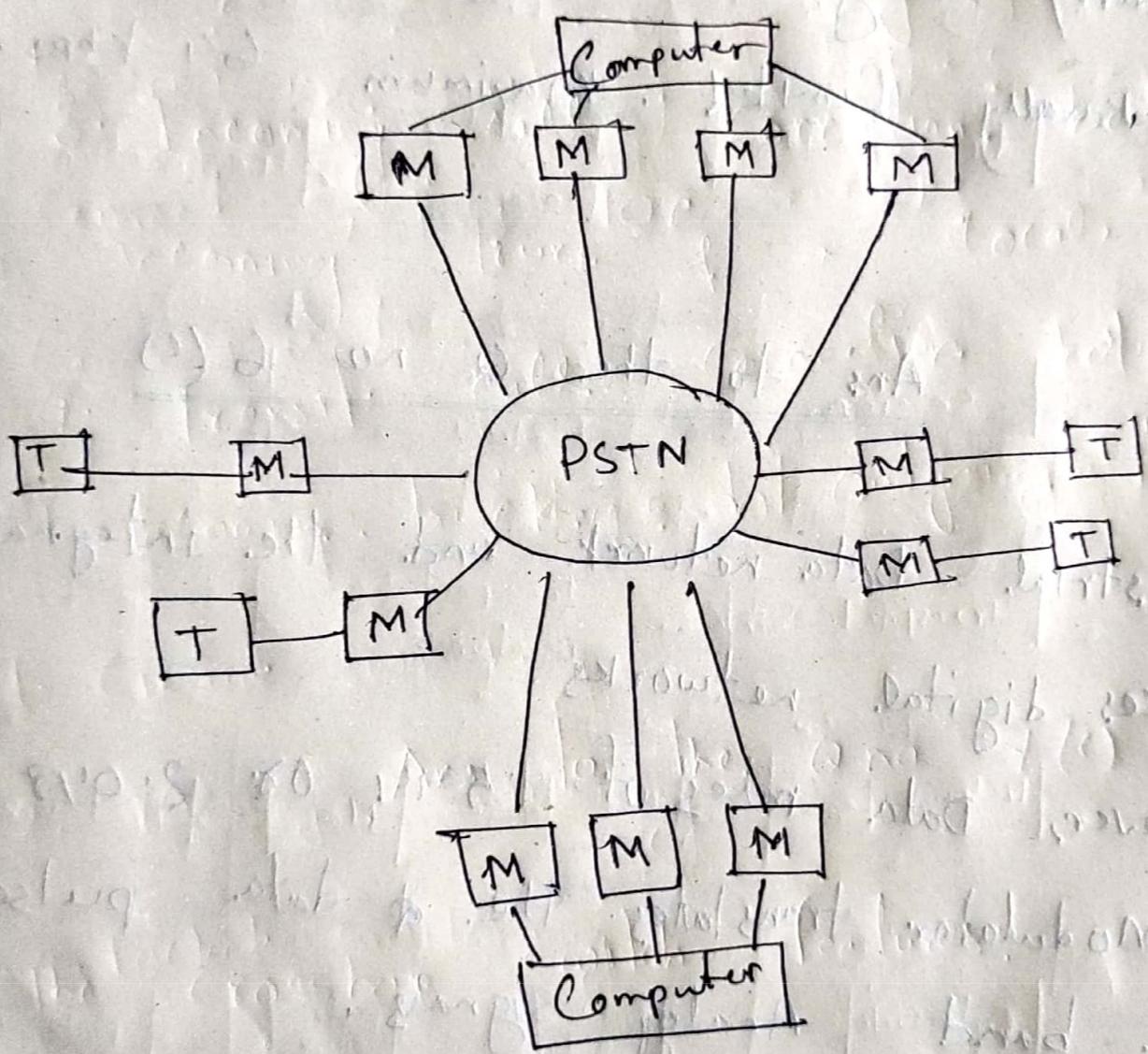
Terrestrial Data network and the integrated services digital networks.

However, Data rates of 1.544 or 2.048 mbps & Modulator translates the digital data pulse int voice band Analog signals.

At the transmitting end.

Ans to the Q no 6 (d)

## Data Communication Using PSTN:



M - modem

T - Terminal

Ans to the Q no 7(a)

Transport layer: It is the first end to end layer in the OSI Architecture. It is responsible for matching User message characteristics and service requirements with that of the network capabilities. For a User it is transport network that offers services regardless of the underlying networks.

Ans to the Q no 7(b)

There are 4 types of connection in telecommunication network.

1) Public switched telephone network

2) Private switched telephone network

1. Local call connection between two subscriber in the system.
2. Outgoing call connection between a subscriber and an outgoing trunk.
3. Incoming call connection between an incoming trunk and a local subscriber.
4. Transit call connection between an incoming trunk and outgoing trunk.

Ans to the Q no 7 (c)

- The crossbar switch features:
1. While processing a call, the common control system helps in the sharing of sources.

2. The specific rate functions of call processing are hardwired because of the wire logic.
3. The flexible system design helps in the appropriate ration selection is allowed for a specific switch
4. Fewer moving parts ease the maintenance of crossbar switching system.

Ans to the Q no 8(a)

In massive network, there can be multi-paths from sender to receiver. Switching techniques decides the best routes for data transmission. Switching techniques is used to connect systems for making one to one communication.

There are 3 types of communication:

1. Circuit switching
2. Message switching
3. Packet switching

(Q) Ans to the Q no 18 (4)

packet switching:

⇒ A message is broken down into parts and each part is sent separately

⇒ Example: UDP protocol

