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I.D : 14596

SECTION : A

SEMESTER : 4th

CLASS TIMING : Wednesday 2 – 5pm

PAPER : Computer communication and network (Theory)

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QUESTION # 1.

a) The open source interconnect model is a conceptual framework that organizes the functionalities ---------- ?

ANSWER:-

The datalink is layer responsible for moving frames from one hop (node) to the next.

Datalink layer performes the most reliable node to node delivery of data. It forms frames from the packets that are recieved from network layer and give it to physical meaning layer. It also synchronize the information which is to be transmitted.

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FUNCTION OF DATALINK LAYER:-

FRAMING:-

frames are the streams of bits recieved from the network layer into manageable data link units, this division of streams of bits is done by datalink layer.

PHYSICAL ADDRESSING:-

The date link layer adds a header to the frames in order to define physical address of the sender or receiver of the frame. Therefore, data links play major role in physical addressing of sender and receiver of file.

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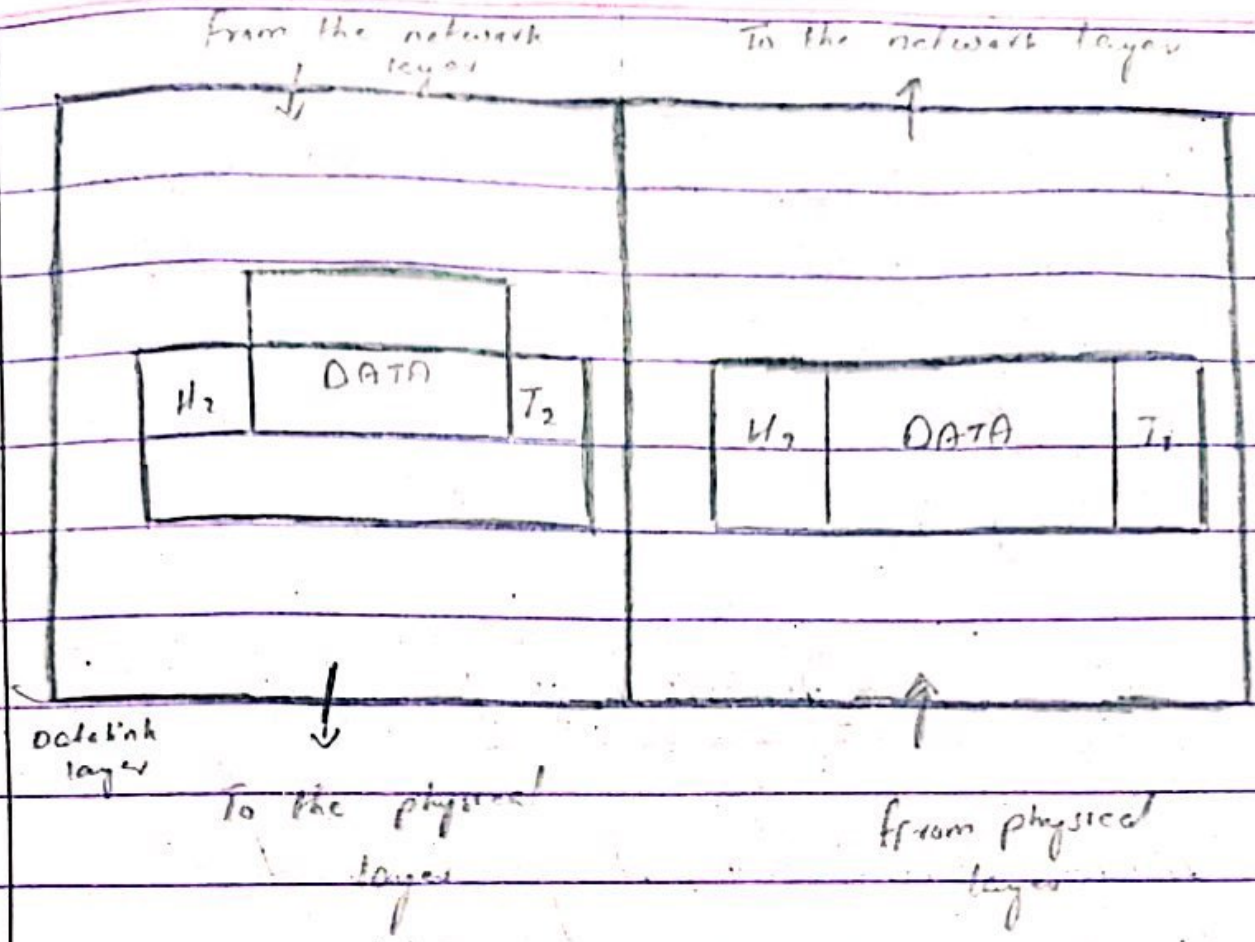

DESIGN ISSUES WITH DATALINK LAYER :-

The issue that arises in the data link layer is how to keep a fast transmitter from drowing a slow reciever in data.

Broadcast network have an additional issue in the

datalink layer. How to control access to the shared channel. A special sublayer of the data link layer the modern access control. (MAC)

QUESTION # 1

b) Argue the advantages and disadvantages of combining the session, presentation?

ANSWER:-

ADVANTAGES:-

- Single layer to study as all the functionalities provided at this layer.
- Higher Band with as number of layers is reduced.

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- Mostly, it simplifies the conceptual problem of having to deal with these things in the network stack itself.
- The session and presentation layers might pop up but you should keep it up.

DISADVANTAGES:-

Make reasoning about the architecture of network system less effective.
There will be security issues as the Network security and application security will open at a single point which may our network open with threat.
It make the troubleshooting hard as multiple errors may resides at single.

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- It is very complex and the initial implementation of OSI model is very complex and slow.

QUESTION # 2

a) There are several network layer models proposed in the OSI model. Find all of them?

ANSWER:-

PHYSICAL LAYER:-

The physical layer is responsible for movements of individual bits from one hop (node) to the next.

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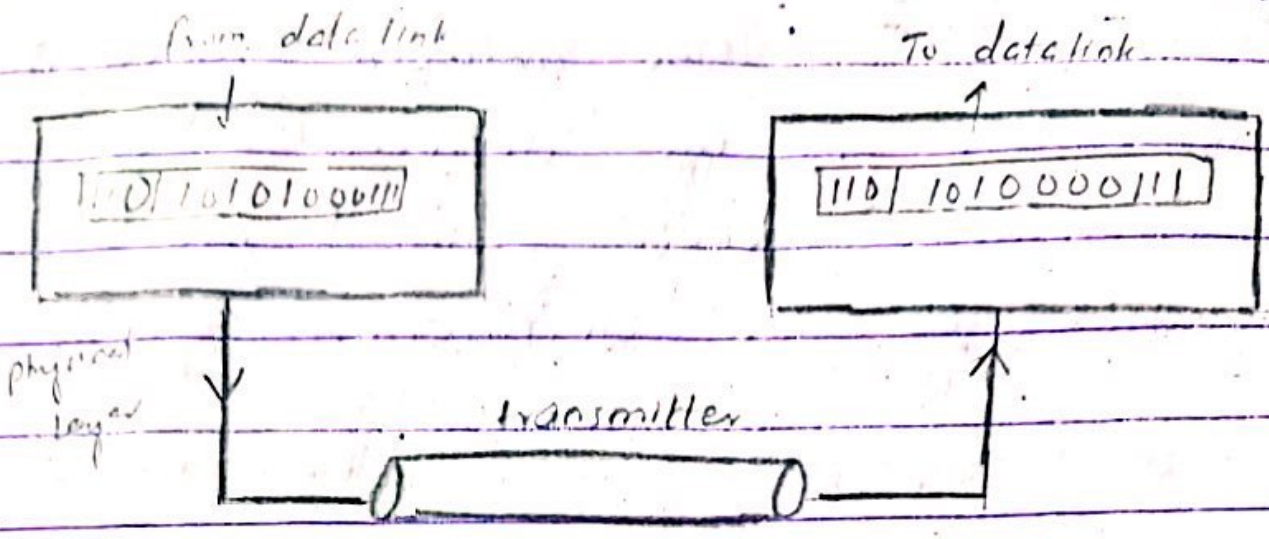
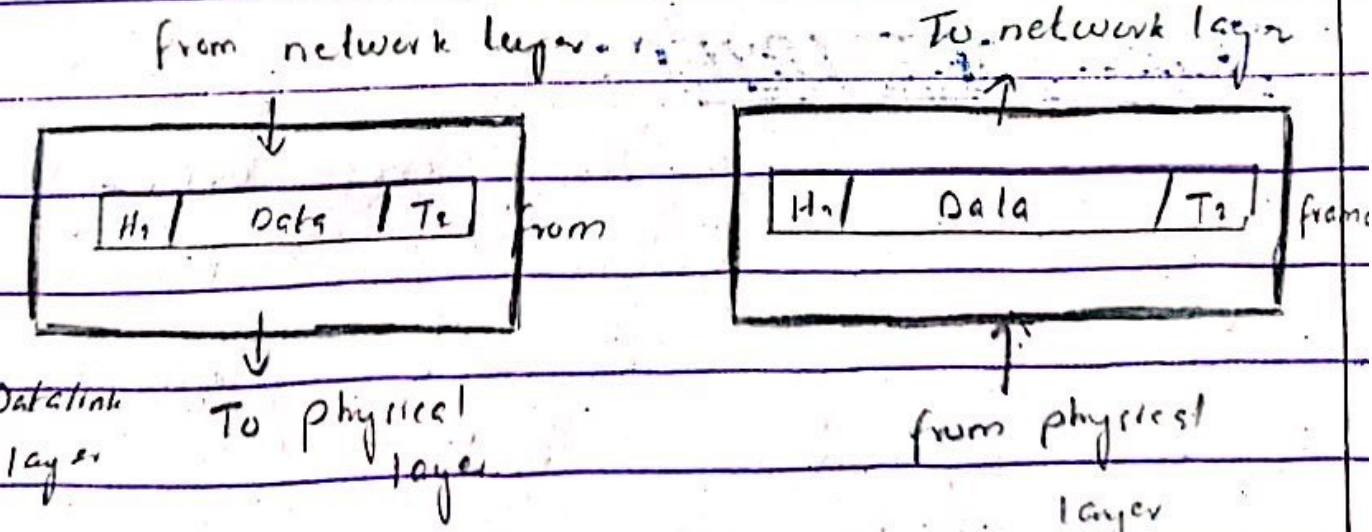


DATALINK LAYER:-

The data link layer is responsible for moving frames from one node to the next node.



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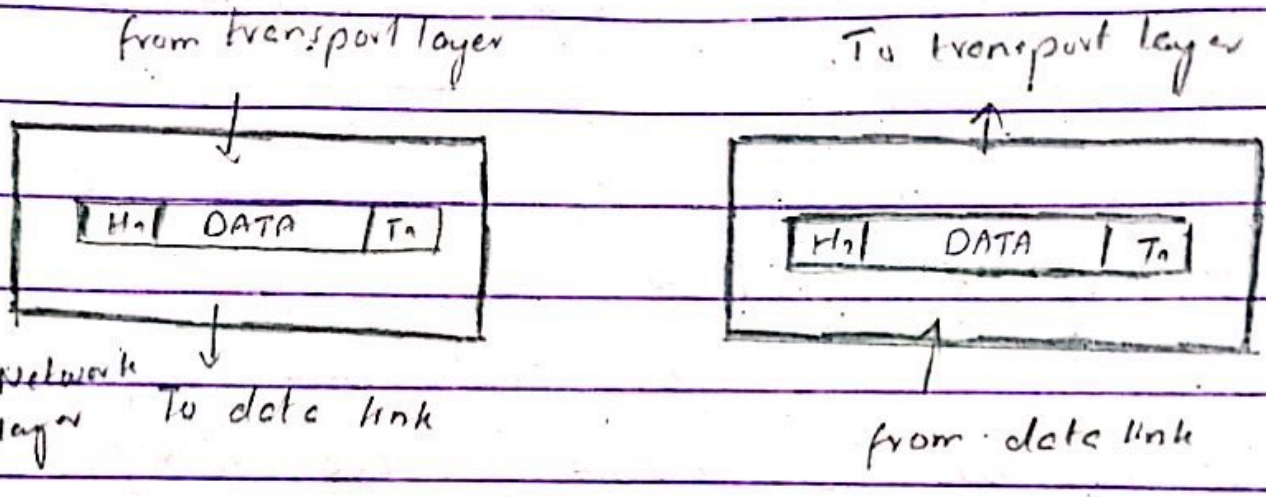
NETWORK LAYER:-

The network layer is responsible for the delivery of individual packets from the source to the destination point.



TRANSPORT LAYER:

The transport layer is responsible for the delivery of message from one process to another.

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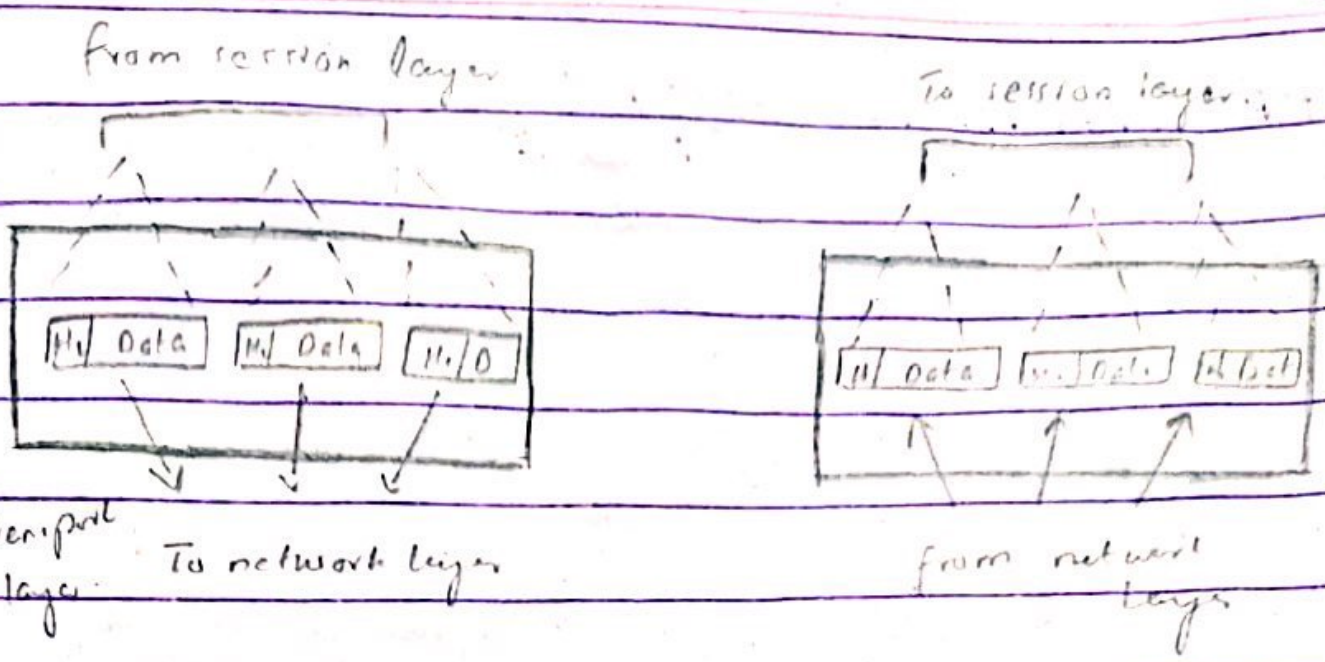
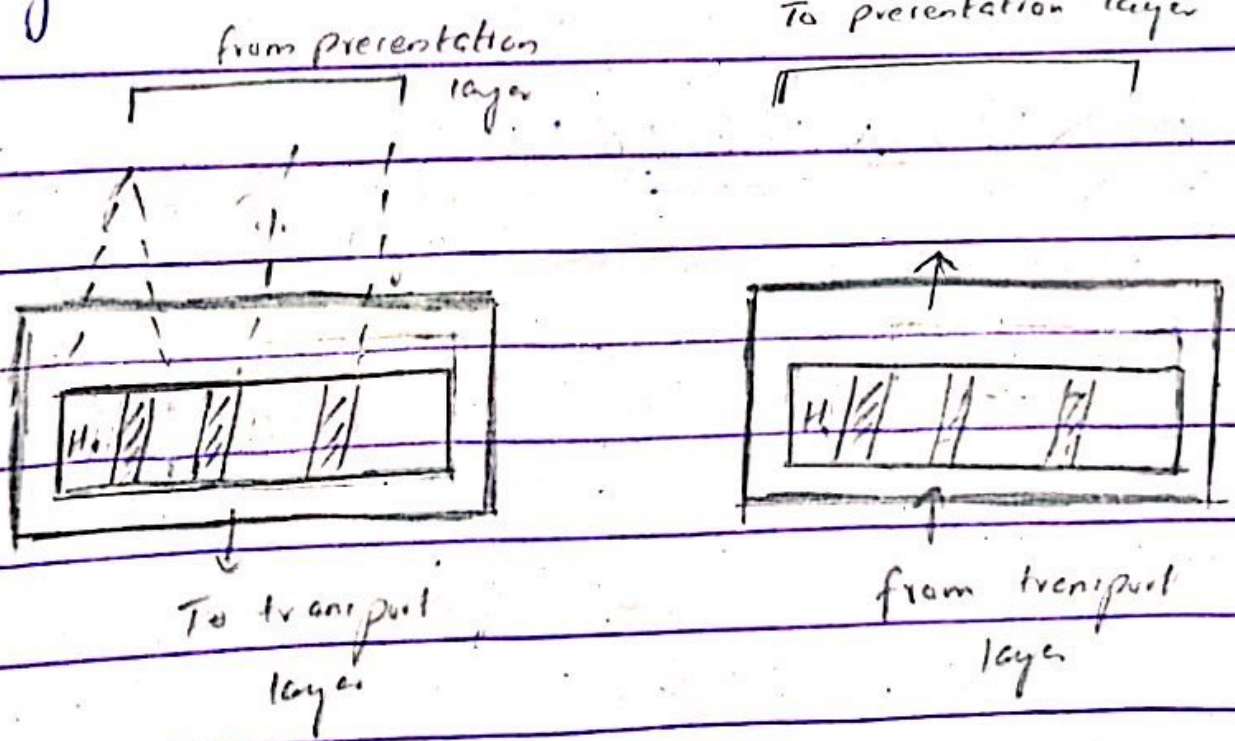


SESSION LAYER:-

The session layer is responsible for dialog control and synchronization.



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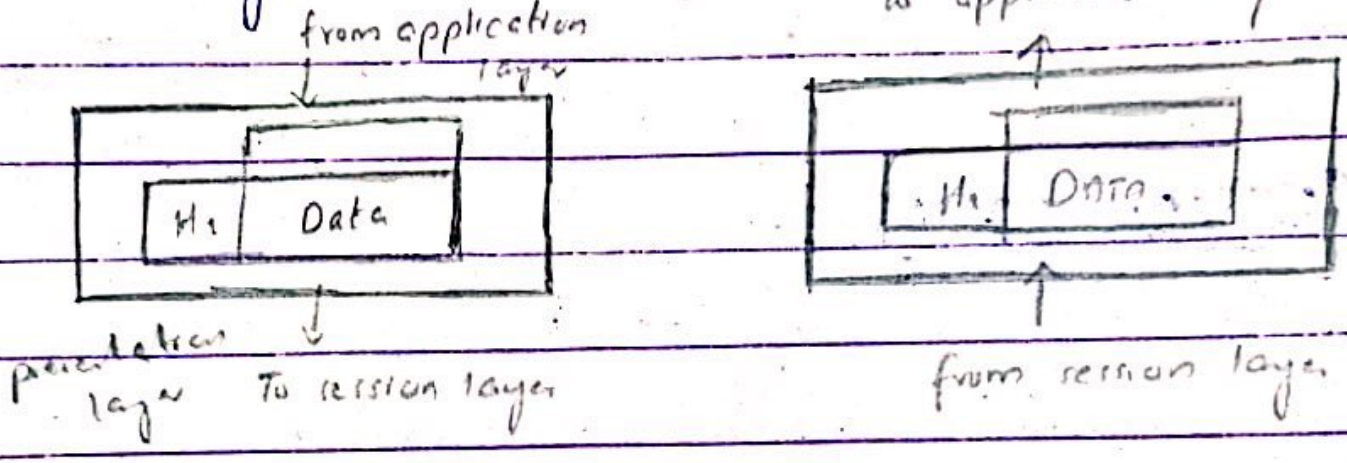
PRESENTATION LAYER :-

The presentation layer is responsible for translation, compression and encryption.



APPLICATION LAYER :-

The application layer is responsible for providing services to the user.

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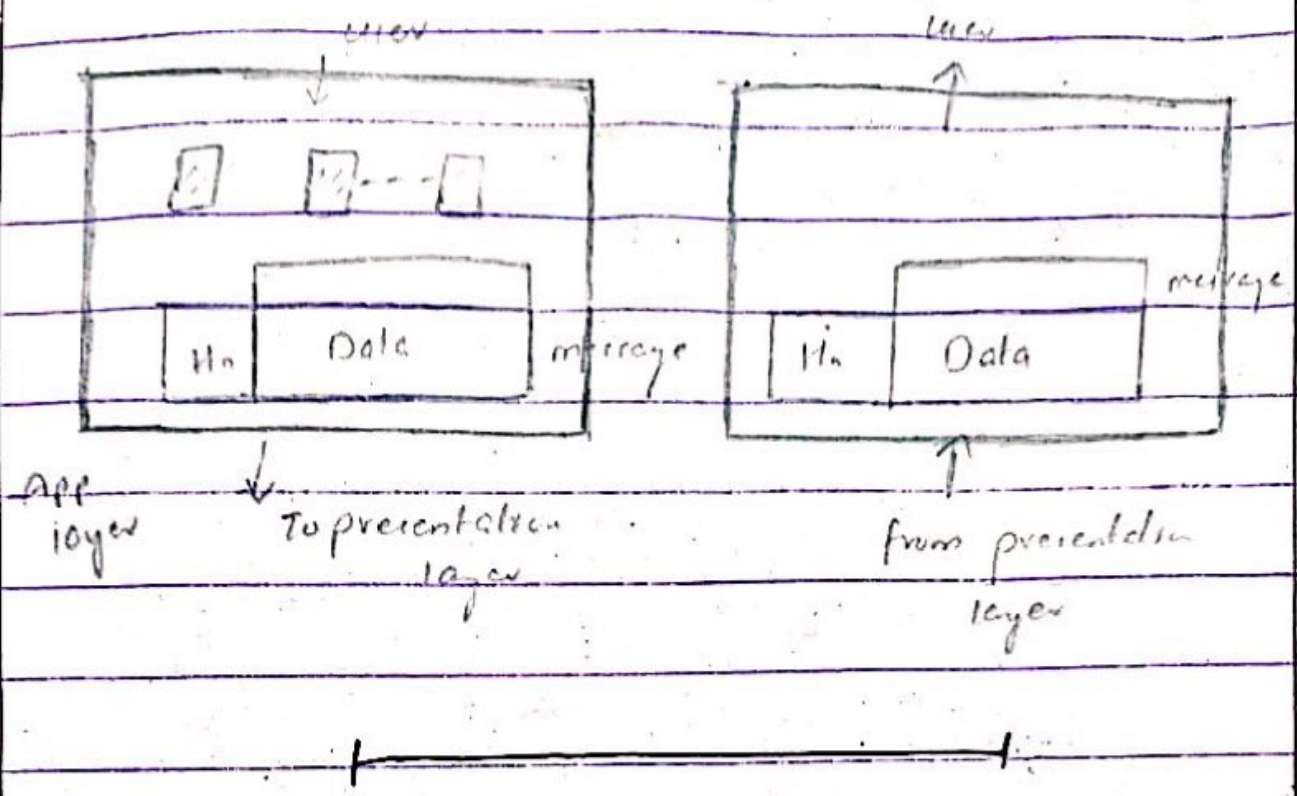

QUESTION # 2

b) If a signal does not change at all its frequency - - - - - - - its frequency infinite, three of sine wave of amplitude - - - - ?

ANSWER:-

⇒ Because two waves at different wavelength and frequency cannot be exact

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copies of each other differ only by a phase shift. However it is possible for the sum of the two waves to be periodic, then there will be an overall phase for the new periodic signal.

⇒ Phase and frequency are not explicitly measured on a time domain.

⇒ A frequency domain plot shows the relationship between amplitude and frequency.

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QUESTION # 3

a) Four connections (10Kbps, 100Kbps, 1Mbps and 10Mbps) together. A unit is 1 byte or 8 bits. Find a) the duration - - - - - - - - - d) the duration of a point?

ANSWER :-

SOLUTION :-

a) Duration of a bit before multiplexing :-
The duration of 1 bit 4 bytes. Before multiplexing is 8/4 Kbps, or 0.05?

b) The transmission link rate :-
The rate of the link is 8 times the rates of a connection or 4Kbps.

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c) The duration of a time slot :-

The duration of each time slot is one-fourth of the duration of each bits before multiplexing or 1/4 ms or 250 μs. Note that we can also calculate this from the date rate of the link, 4Kbps : The bits duration is the inverse of the date link rate, or 1/4 kbps or 250 μs.

d) The duration of a frame :-

The duration of a frame is always the same as the duration of a unit before multiplexing, or 1ms we can also calculate this in another way. Each frame in this type of duration has four slots. so the duration of a frame is 4 times μs or 1ms.

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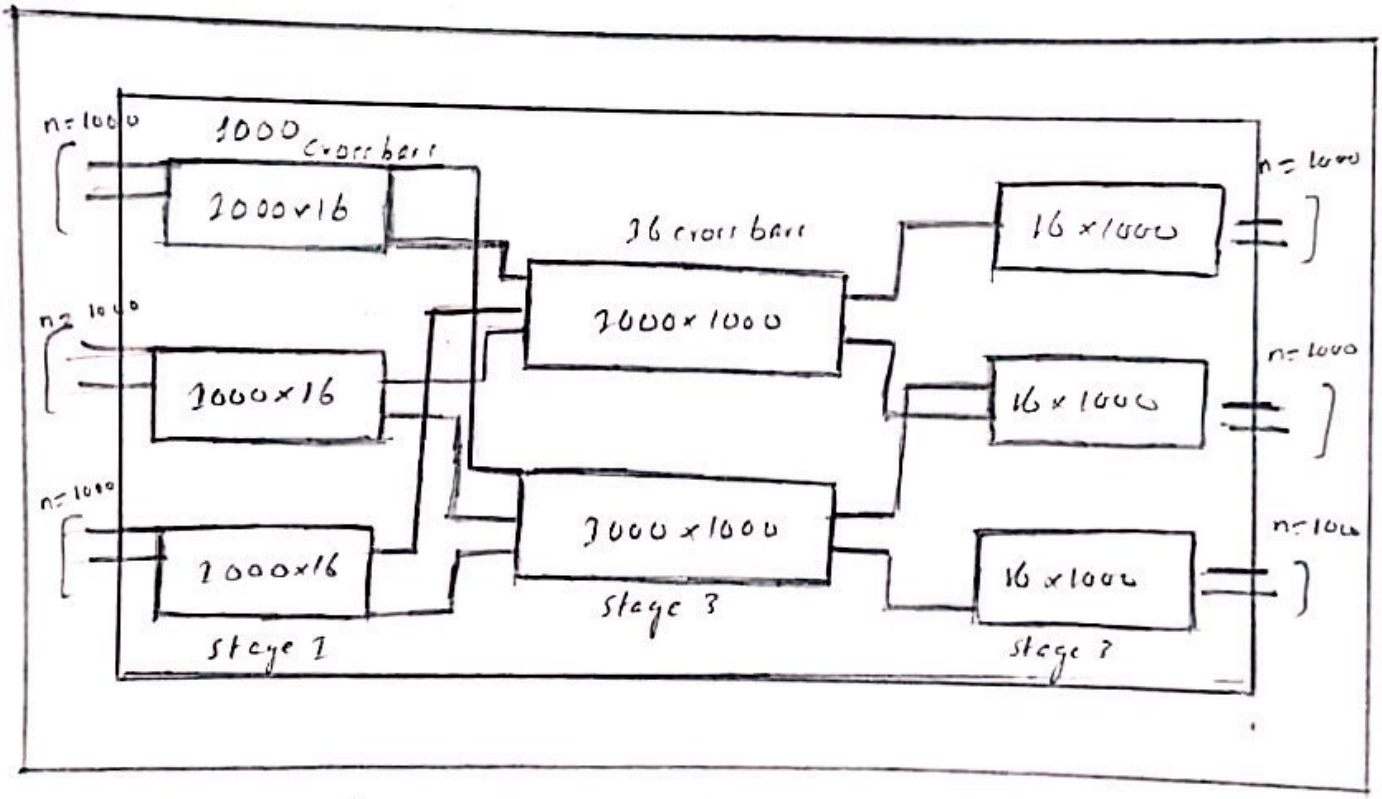
b) We need a three stage space duration division switch with total input of 10,000. we use 1000 crossbars at the first and third stage and 16 crossbars at the middle stage?

ANSWER :-

We draw the configuration diagram.

N = 1000 , n = 1000 , K = 16



b) Calculate the number of cross point.

The total number of cross point =

= 1000 (1000x16) + 1000 (1000x16) + 1000 (1000x16)

= 16000000 + 16000000 + 16000000

Total = 48000000

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c) Find the possible number of simulteneus connections?

SOLUTION:-

Only four simulteneus connections are possible for each crossbars at the first stage. This means that the total number of simulteneus connection is

$= 16 \times 1000$

$= \boxed{16000}$

d) Find the possible number of simulteneus connections if we use a single crossbars. (1000 x 1000) ?

SOLUTION:-

If we use one crossbars (1000x1000) all inputs lines can

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