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BS(SE)—4 — Section 'A'

Paper — Computer Communication And Networks

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Date — 27-4-2020

Q1 Part (a) :-

Ans :- The OSI (open System interconnection model) is a conceptual framework used to describe the functions of a networking system.

The OSI model was orignely developed to facilitate interoperability b/w vendors and to define clear standards for network communication. However, the older TCP/IP model remain the communication today. the older TCP/IP architecture model heed already itself in real-world network environments. it served as a solid foundation for the internet - including all of the security, privacy and performance-related challenges

the OSI model is widely criticized for in inherent implementation complexity that renderers networking operation ~~is~~ inefficient

and slow. the academic ~~operation~~ approch to developing the OSI protocol suite relied on replacing existing protocales across all communication layer with better alternatives. this approach failed. to gain traction in the Industry vendors had already invested signifient resource in TCP/IP products and had to manage interopersbilty with the vast chvices of protocols and specification offered by the OSI model.

21 Part (b):.

Ans The advantage and disadvantage of combining session, presention and application layer in the OSI model:

Advantage:

i) Single layer to study as all the functionalities is provided at this layer.

ii) Higher bandwidth as number of layers is reduced.

iii) Reduced encapsulation: Three layers mean that the application data is encapsulation three times, instead with one layer.

iv) Faster transmit rate:

disadvantages:-

i) Can make reasoning about the architecture of network systems less effective.

ii) There will be security issues as the network security and application security would open at a single point w/c may expose our network open to our threat.

iii) it make troubleshooting hard as multiple errors may reside at a single point.

iv) ~~it make~~ tr
iv) ~~Sach~~

Q2 Part(a)::

Ans::

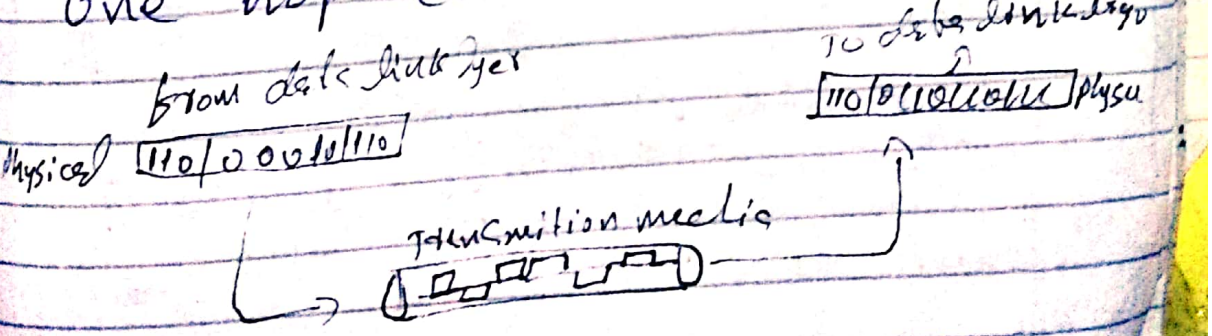
The OSI model was developed by the International organization for standardization

There are 7-layers.

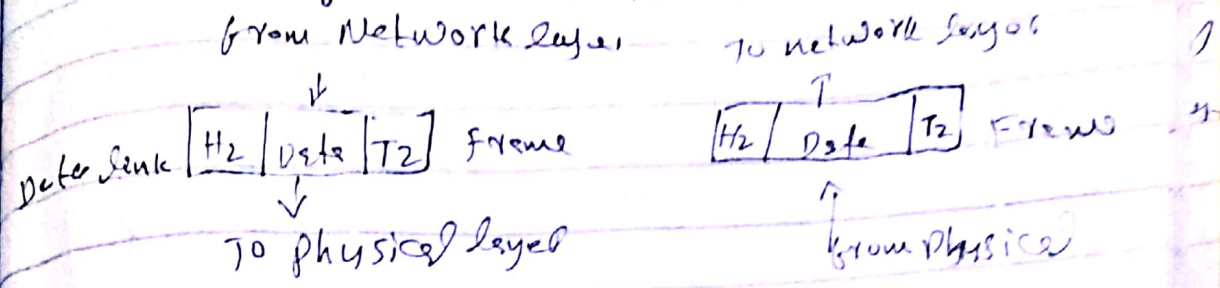
i) Physical (e.g cable, RJ45)
ii) Data link (e.g MAC, switch)
iii) Network (e.g IP, routers.
iv) Transport (e.g TCP, UDP)
v) Session (e.g Syn/Ack)
vi) Presentation (ASCII, PNG)
vii) Application (HTTP, FTP).

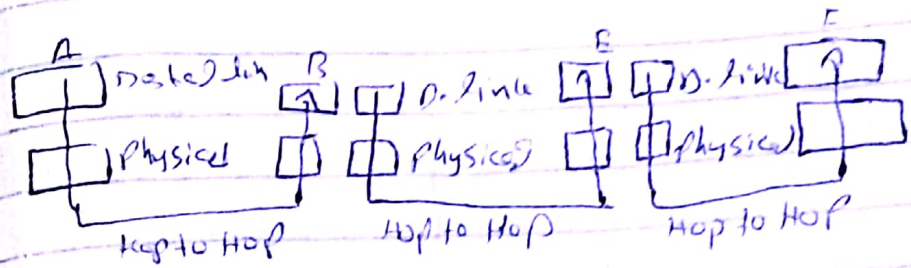
layers:
1) Physical layer:

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

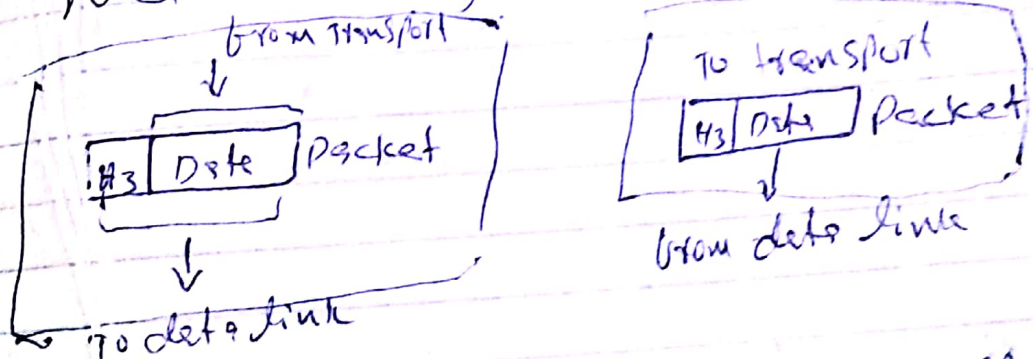


2) Data link layer:
The data link layer is responsible for moving frames from one hope (node) to the next.

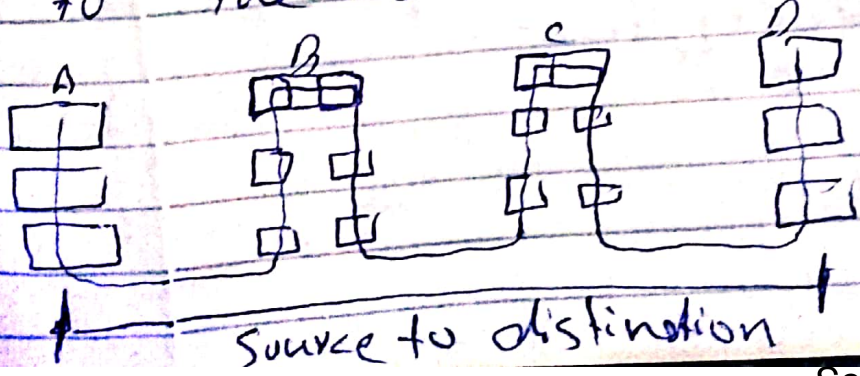




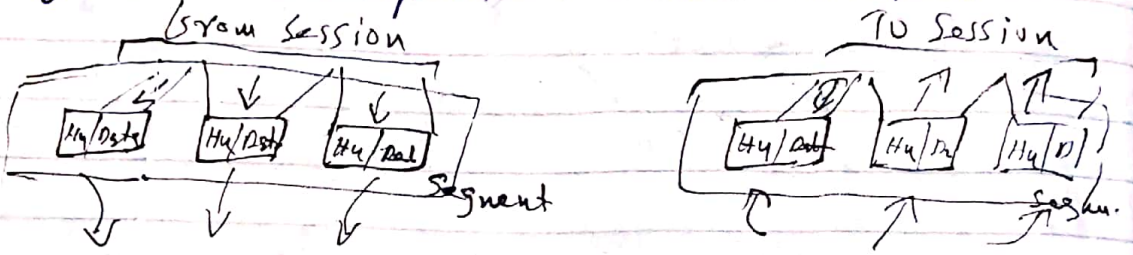
3) Network layer:



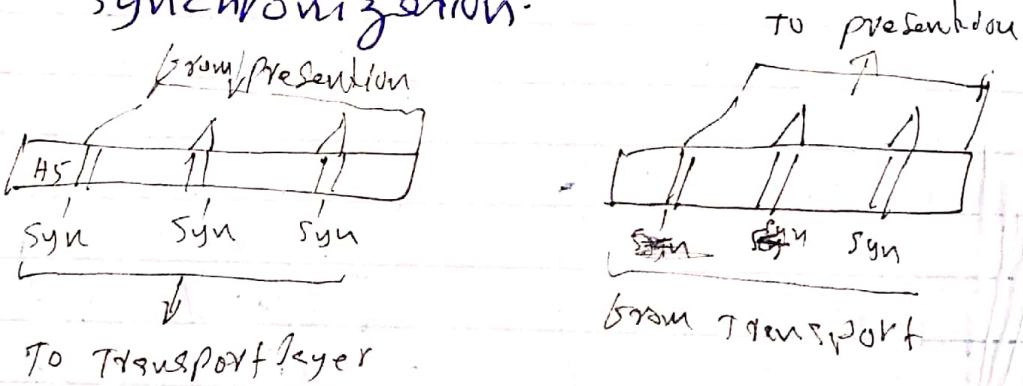
The net work layer is responible for the delivery of individualy packets from the source host to the distination host.



iv) Transport layer:
The Transport layer is responsible for the delivery of a message from one process to another.

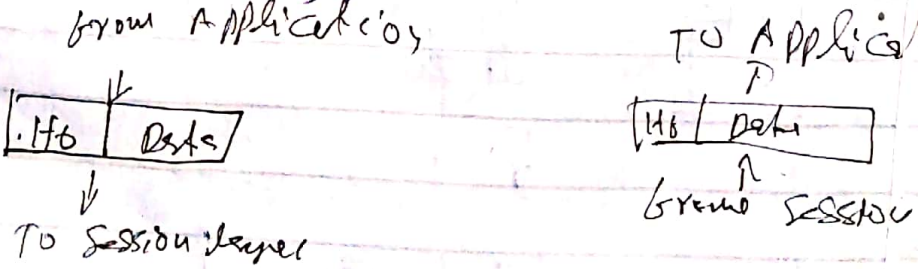


v)
Session layer:
The session layer is responsible for dialog control and synchronization.



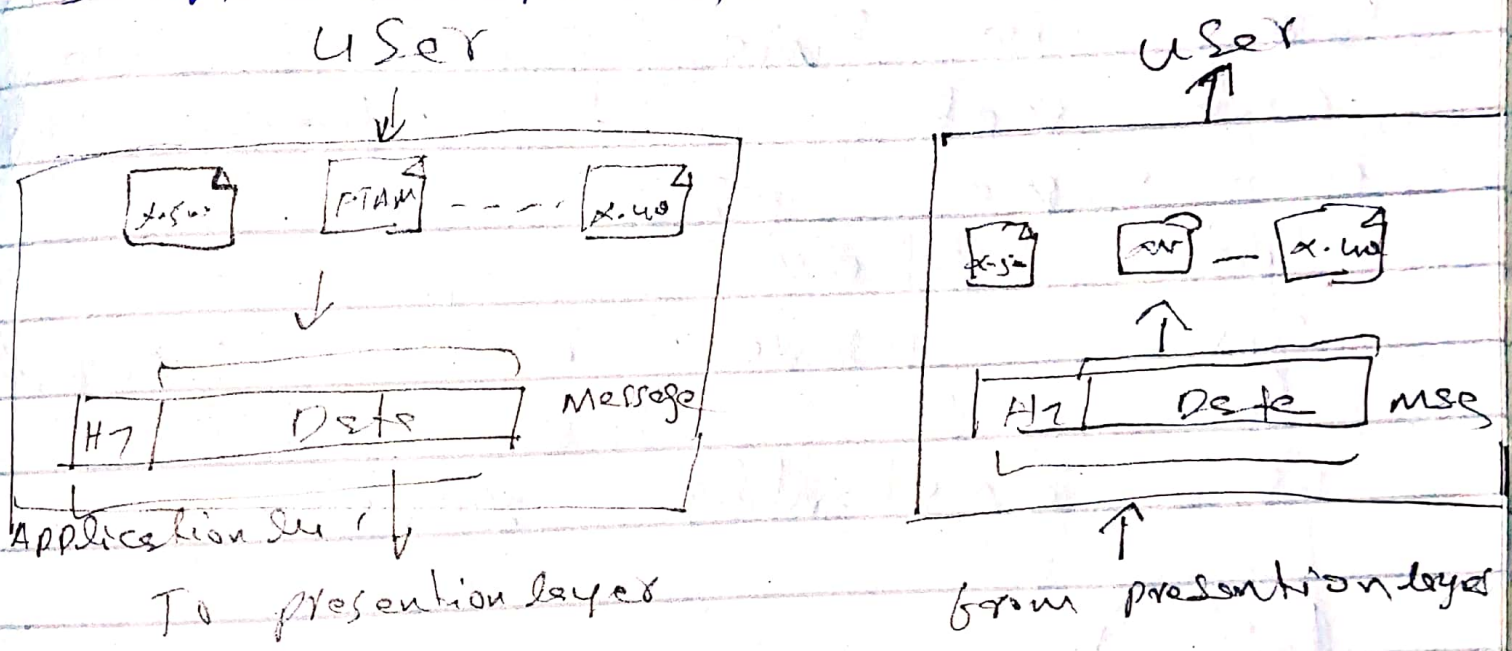
vi)
Presention layer:

The presention layer is responsible for translation Compression and encryption-



vii) Application layer:-

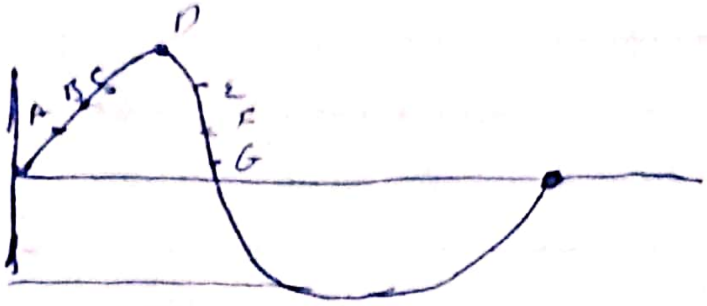
The application layer is responsible for providing services to the user.



Q2 b2.

Ans

Phase is a specific location of sine waves. So in this scenario we can not plot phase of a sine wave in a time phase of a sine wave in a time phase plot is the wave is constantly aliasing.



As we can see that all the points are in different position thus we cannot explicity plot the phase in time phase plot

Q3:. Part (b)

Ans:.

a) Draw the Configuration diagram.

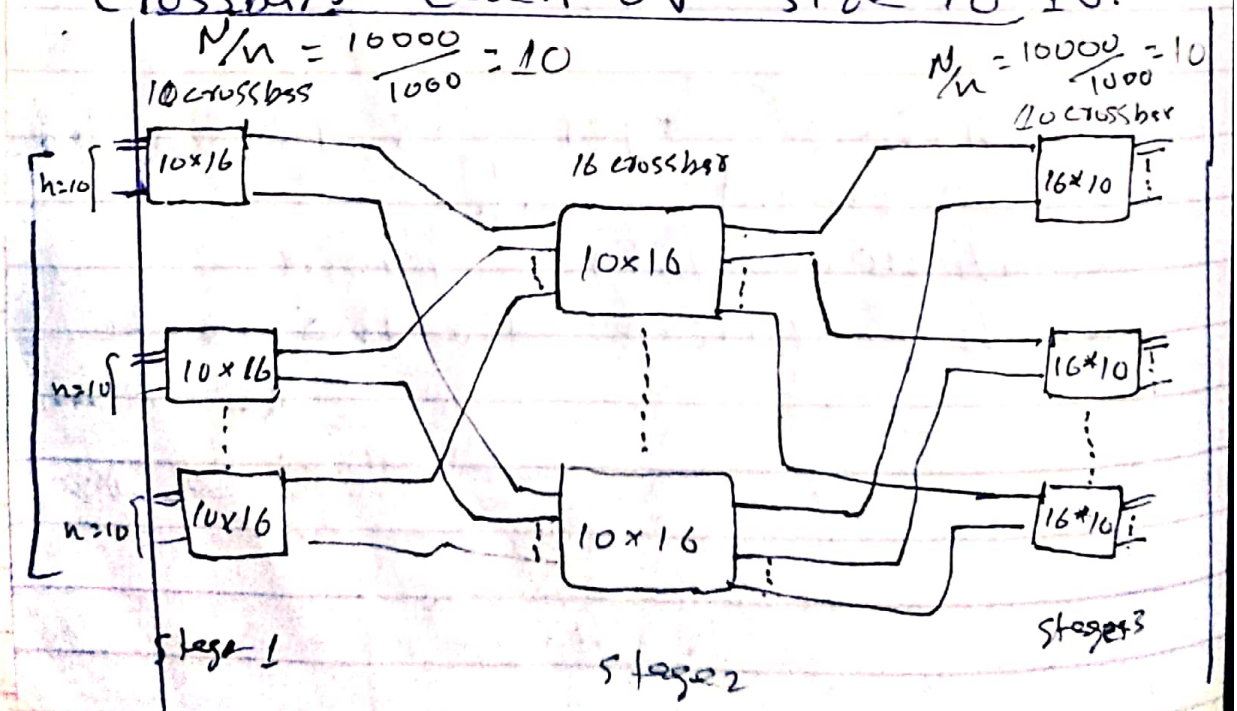
Given data:.

$N = 10,000$
$n = 1000$
$k = 16$

* In the 1st stage we have $N/n = 10,000/1000$ crossbars each of size $10*16$.

* In the Second stage we have 16 crossbars. each of size $10*10$.

in the 1st stage we have 10 crossbars. each of size $16*10$.



b) calculate the total number of cross points.

Total number of cross points =

$= 10(10*16) + 16(10*10) + 10(16*10) = 4800$

c) Find the possible numbers of simultaneous connection.

only four simultaneous connection are possible for each crossbar at the first stage. this means that the total number of simultaneous connection is $16*10 = 160$.

d) Find the possible number of simultaneous connection if we use one single crossbar ($1000 * 1000$).

if we use one single crossbar (1000×1000), all the input lines can have a connection at the same time w/c means 1000 simultaneous connection.

e) Find the blocking factor and the ratio of the number of connection in c and d.

The blocking facto is

$1 - \frac{160}{1000} = 16\%$

Q 3 9 2

Ans

A four connection is (10kbps, 100kbps, 1mbps) and 10mbps this mean that the bit duration.

10 kbps = 0.01 ms

100 bps = 0.1 ms

1 mbs = 1 mc

10 mbps = 10 ms

the duration of 1 bit befor multiplexed is 1/1000 = 0.001s or 1ms.

and each duration is

10 kbps = 0.01 ms
100 kbps = 0.1 ms
1 mbps = 1 ms
10 mbs = 10 ms

the transmition rate of the link is 4 time

of a Connection or 4 kbps.

the duration of each time slot is one-duration of the duration of each bit befor multiplexing or 1/4 ms or 250 μs. Some is the duration of a unit before multiplexing or so the duration or time Sold.