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Program BS(SE)

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Assignment Sessional

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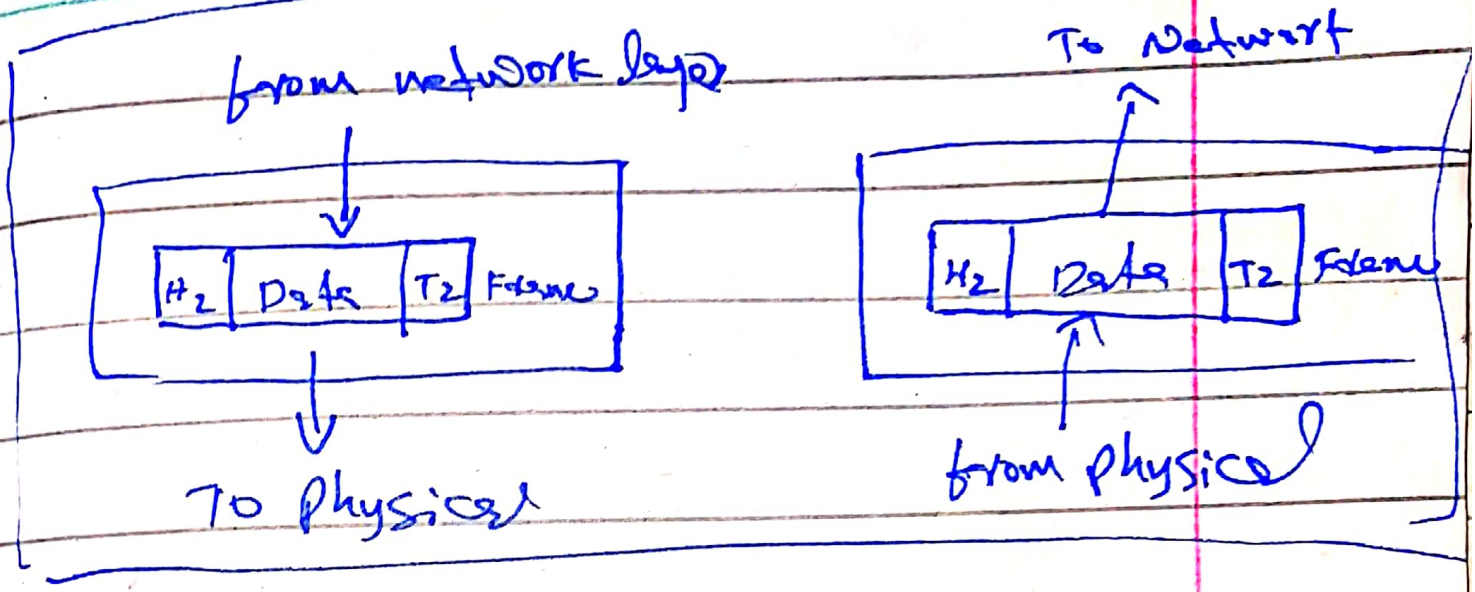
Q1:

Ans:

OSI model consist of 7 layer. The data link, layer is the ~~third (3rd)~~ second layer of OSI model. the data link laye take Servece from Networking layer to Physical layer.

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



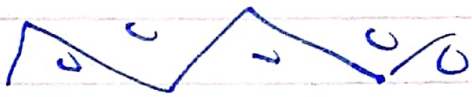
Data link layer detect and correct any error in transmitted data.
it partition a raw bit stream of physical layer into frames and performs error detection and correction for each frame independently it is also perform flow controls of frames b/w two nodes.

Q 2:-

b)

Flow control:-
specifies the amount of data can be transmitted by sender befor reciving permission to continue from reciver.

Error control:-
* Allows Reciver to find damaged or lost frame during transmition.
* to coordinate re-transmition of those frames by sender



c)

HDLC	VS	PPP
standard HDLC and Cisco HDLC		standard PPP
No Authentication		Authentication with PAP and CHAP
No protocal field		Has protocol field
No multiplexing		multiplexing
No-link quality check		check link quality

1))

Go-Back-N-ARQ

→ whenever error/lost of frame. it retransmits the previous N frames.

→ it requires more bandwidth if high error rate.

→ less complicated

→ sorting is not required

Selective repeat ARQ protocol.

→ whenever error occure it retransmits only that frame that have errors/lost.

→ less bandwidth required.

→ it complex.

E)

Ans

Circuit switching	packet switching
Physical path b/w source and distination	No physical path
All packets use same path	packet travel independently
Reserve the entire bandwith in advance	Does not reserve
Bandwidth wastage	No Bandwith wastage
No store and forward transmition	Supports store and forward transmission.

Q3 :-

Ans :-

Noiseless channels :-

An ideal channels in w/c no frames are lost, duplicated, or corrupted. Here are two protocols for this type of channel..

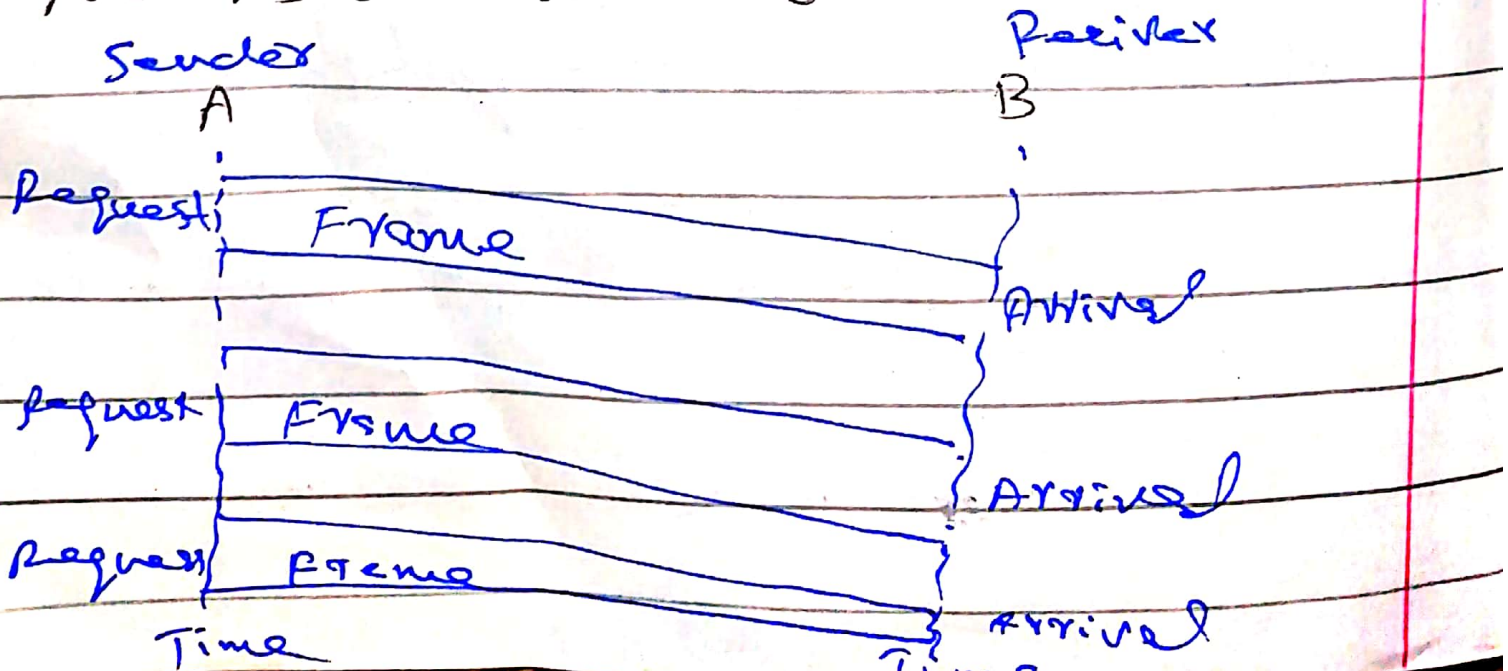
Simplest protocol :-

Stop-and-wait protocol..

2) Noisy channels:

Although the stop-and-wait protocol gives us an idea of how to add flow control to it's predecessor noiseless channels are nonexistent. we discuss three protocols in this section that use error control.

Noiseless and Noise channel



Q4).

Ans: Piggybacking:-
in a wireless Communications Context. is the unauthorized access of a wireless ~~LAN~~ LAN... the usual purpose of piggybacking is simply to gain Network access rather then any malicious intent. but it can slow down data transfer for legitimate users of the network.

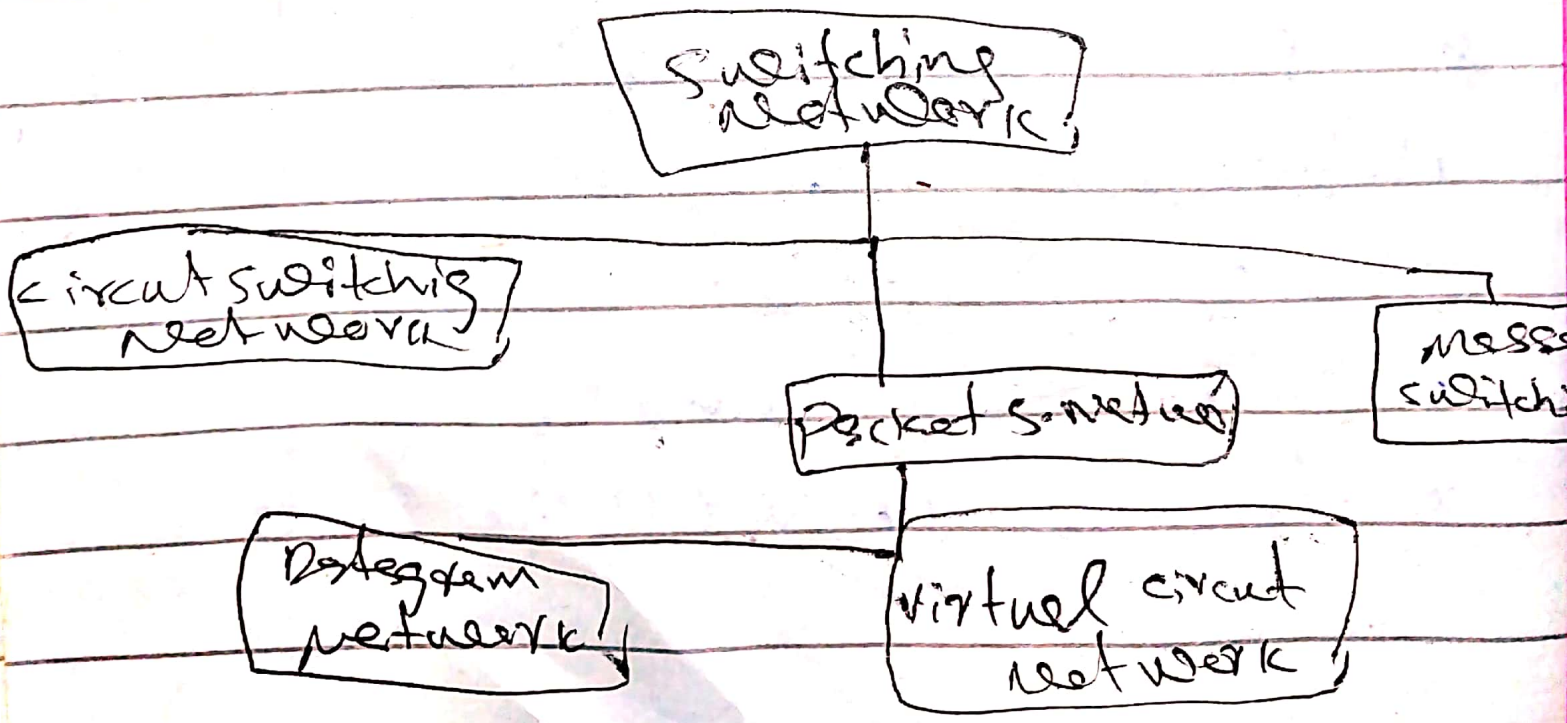
HDLC:-

High-level Data link Control.

* Widely used and influential standard (1979)
* Default protocol for Serial link on cisco routers.
* PPP is based on a variant of HDLC.
* HDLC in public Networks that uses X.25 protocal.
* ISDN D channel.
* llc in LAN (IEEE 802.3)

Switching Network:-

A switching network consist of of a set of switch connected by physical links. A connection bw two stations is a selected path made of one or more links.



Q5:

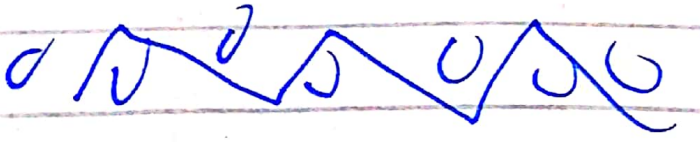
Ans:

Blocking refers to when an input terminal connot be connected to an output terminal becuse there is no path available btw them i.e all possible inter-mediate switches are occupied.

Q6)

Ans

Two neighboring nodes (A and B) use a sliding window protocol with a 3-bit sequence number. As the ARQ mechanism go-back-N is used with a window size of 7. Assuming A is transmitted and B is reciving. Both the sliding windows of the sender and reciver have frame 0, 1, 2, 3, 4, 5, 6 at the begening.



Q7:

Page 13

Ans:

List three techniques of digital to digital conversion.

The three different techniques are line coding. block coding and scrambling.

Digital-to-digital encoding is the representation of digital information by a digital signal. When binary 1's and 0's generated by the computer are translated into a sequence of voltage pulses that can be propagated over a wire. this process is known as digital-to digital encoding.

Q8:

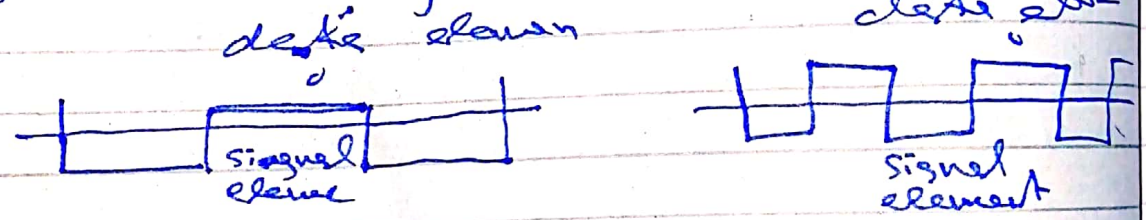
Ans: Signal elements.

Let us distinguish b/w a single element an a data element. In data communications our goal is to send data element

* A data element is the smallest entity that can represent a piece of information - this is the bit.

* in digital data communication a signal element carries data elements.

* A signal element is the shortest unit (time wise) of a digital signal.



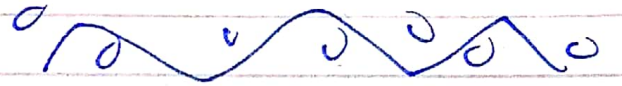
Q2.

Ans Data rate: Number of data ~~rate~~ element transmitted ~~or~~ per second.

Signal rate: Number of signal elements transmited per second.

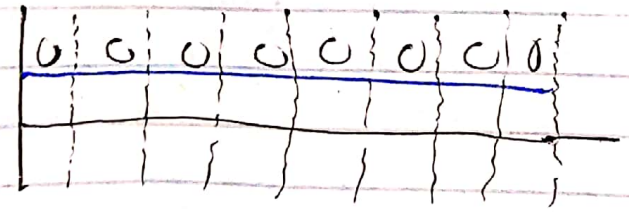
Now the unit of data rate is bit rate.

and the unit of signal rate is pulse rate. baud rate or simply baud. from the previous example. We can see that. a carriage in a train can carry more than one person so. if you consider the number of person is more than one per carriage you can see that bit rate is greater the baud rate ~~for~~ for the signal.

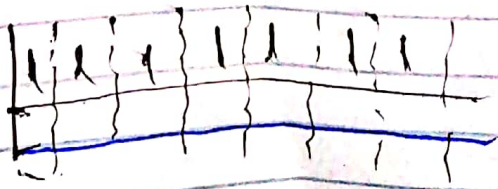


Q10).

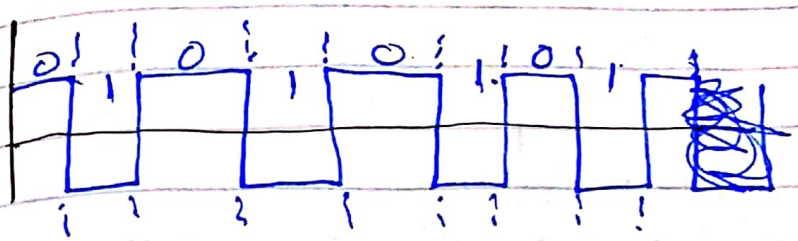
Ans) (a) 00000000



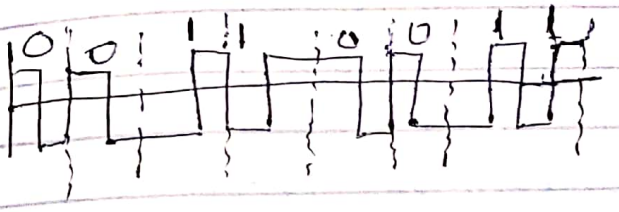
b) 11111111

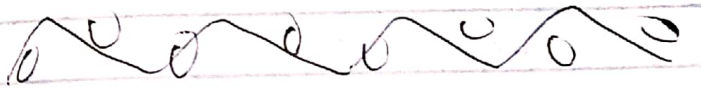


c) 0101010101



d) 0011001100





Q11:-

Ans: IPV6 Address

An IPV6 address is 128 bits in lenght and consists of eight. 16-bit fields. With each field bounded by a colon. Each field must contain a hexadecimal number. in contrast to the dotted decimal notation of IPV6 addresses.

e.g.:- 2001:0DB8:AC10:FE01:0000:0000:0000:0000

2001:0DB8:AC10:FE01 (zero cannot be omitted)

0010000000000001:0000110110111000:1010110000100000:1111111000000000:0000000000000000.

Q122.

Ans:

classless addressing and classful addressing refer to two different way to think about ip address. Both return refers to a perpective on the structure of a supnetted ip address classful addresing uses a two part view with classful adressing adress has in 8-16 or 24-bit network bit. based on the class A, B and C addressing rules. the third part. namely the subnet part of the address part from the classful view are combined into a single part often called the subnet or prefix. with the address ending in the host part.

Q13:

Ans: Classes A, B and C are used for unicast communication. class D is for multicast communication and class E addresses are reserved for Special purpose.

* unicast may be saying used to go into detail communication when a bit of data is mailed derived from one of point to the other point.

* Multicast is the term used to describe communication where a Piece of information is sent from one are more points to a set of other points.

Q1(c).

(iv) IPv4 addressing:

IPv4 address space has been structured into several classes

An ip address has two components the network address and the host address.

Subnet mask.

A Subnet mask is a 32-bit number that masks an ip address. and devided the ip address into network address and host address Subnet mask is made by setting network bit to all 1s and setting host bit to all 0.s.

Q15:

Ans:

- The Network address in a block of address is the first address.

- the mask can be ANDed with any address in the block to find the network address

- A mask is a 32-bit binary number that gives the first address in the block. when bitwise ANDed with an address in the block.

- If one of the address is 167.199.170.8227 then

⇒ the prefix lenght is 27 bits as it is and change the remining bit.

⇒ the last byte is 01011010

⇒ + change the last 5 bits to 0's, we get 01000000 or 64.

⇒ the network address is 167.199.170.64/27

Q16:

Ans:

NAT:

- Nat is a process used to translate network addresses.
- Nat's primary use is to conserve public ipv4 addresses.
- Nat is usually implemented at border network devices such as a firewall or routes.

there are two type of NAT.

i) static NAT
ii) Dynamic NAT

A NAT (Network address translation) or Network address translator is the virtualization of ip address. NAT help improve security and decrease the number of ip address an organization needs. NAT gateways sit btw two networks. the inside network and the outside Network.

Q17:

Ans:

one address addresses one byte. using 16 bits. you can write 65536 addresses (from addressess), and address 65536 bytes. 65536 bytes is 64kB. if memory were organized in bits. this would be 64kb (kilobits) if memory is organized in 16-bit or 20-bit or 32-bit words. then addressable space would be 64kb of these words.

Q18:

Ans: To be divisible by 1024. the rightmost byte of an address should be zero (0) and the second rightmost byte must be divisible by 4 (2 bits of 2nd byte needed) only the address 17.17.32.0 meets this condition.

Q 19:

Ans:

i) 129.14.6.8

2 | 129
2 | 64 — 1
2 | 32 — 0
2 | 16 — 0
2 | 8 — 0
2 | 4 — 0
2 | 2 — 0
1 — 0

2 | 14
2 | 7 — 0
2 | 3 — 1
1 — 1

2 | 6
2 | 3 — 0
1 — 1

2 | 8
2 | 4 — 0
2 | 2 — 0
1 — 0

129.14.6.0

10000001.00001110.00001100.00001000

ii) 208.34.54.12

2 | 208
2 | 104 — 0
2 | 52 — 0
2 | 26 — 0
2 | 13 — 0
2 | 6 — 1
2 | 3 — 0
1 — 1

2 | 34
2 | 17 — 0
2 | 8 — 1
2 | 4 — 0
2 | 2 — 0
1 — 0

2 | 54
2 | 27 — 0
2 | 13 — 1
2 | 6 — 0
2 | 3 — 0
1 — 1

208.34.54.12

11010000.00100010.00110110.00001100

Q 20)

Ans :-

a) 01111111 11110000 01100111 01111101

01111111 - 127
11110000 - 240
01100111 - 103
01111101 - 125

127.240.103.125

Dotted - decimal notation of
01111111111100000001100111011111101
is 127.240.103.125

b) 10101111 11000000 11111000 00011101

10101111 - 175
11000000 - 192
11111000 - 248
00011101 - 29

Dotted - decimal notation
10101111 11000000 11111000 00011101
is

175.192.248.29

(5) 21.

Ans

in a block of address we know the ip address of the host is 25.34.12.56/16 one host. first address 25.34.0.1

network address. 25.34.0.0

last address: 25.35.255.255

limitted address: 25.34.255.255 in the block.