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CLASS : BS (SE)

ID : 14943

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Question No 1

In Block of addresses, we know the IP address (limited broadcast address)

Ans:- IP address on host:

$$101.10.11.X / ID_{4+5}$$

Convert this IP address into binary

$$id = 14943$$

$$1+4+9+4+3$$

$$X = 21$$

IP address :

$$101.10.11.21 / 7$$

$$\begin{aligned} 4^{th} \text{ digit} &= 4 \\ 5^{th} \text{ digit} &= 3 \\ &= 7 \end{aligned}$$

1110100101111

Address mask = 13

$$N = 32 - 7 = 25$$

2	21	-	1
2	10	-	0
2	5	-	1
2	2	-	0

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first ip address:

10101

by Convert 25 to binary
ip address

2	7	1
2	3	1
	1	

101.10.11.0

Last ip address

Convert eight binary most 4 bit
in to binary Code

1100101 1010 1011 1000 11

Convert this binary code into
decimal

101.10.11.21

this is the last Address

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Question No # 2

Take a Roll No as decimal notation, now convert, now convert it to binary notation, Draw the graph of NRZ-L scheme Using the binary notation of your roll no as data stream, assuming that the last signal level has been positive.

My Roll No is 14943

$$14943 = 1110100101111$$

2	14943	1
2	7471	1
2	3735	1
2	1867	1
2	933	1
2	466	0
2	233	1
2	116	0

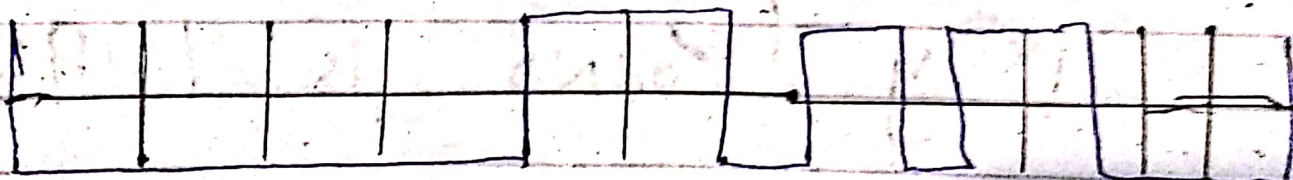
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0	58	0
0	29	1
0	14	0
0	7	1
0	3	1
0	1	

NRZ-L Scheme Graph

1 1 1 1 1 0 1 0 0 1 0 1 1



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Question No # 3

Two neighboring nodes (A and B). Use Sliding-window Protocol with a 3-bit Sequence number. As the ARQ mechanism go back-N is used with window size of 1. Assume A transmitting and B is receiving, show the window position for the following.

- Before A sends any frames.
- After A sends frames 5, 6 and B acknowledge 5 and the Ack is received.

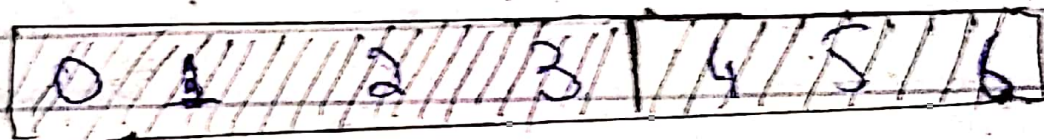
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ANSWER is

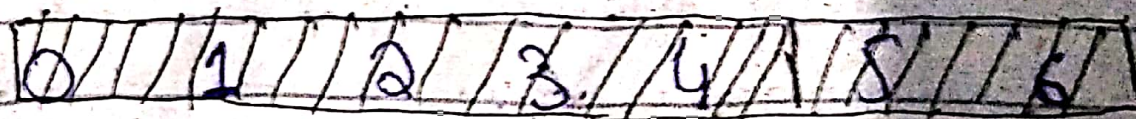
Before A Sends any
frames.

Sender :-



Window of PDU that may be
transmitted = 4 bit window

Receiver



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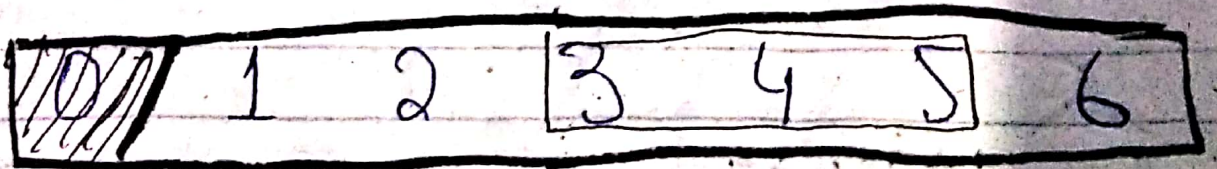
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Answer b;

After A sends frame 0, 1, 2 and receives acknowledgment from B for 0 and 1 (Suppose B received all three frames).

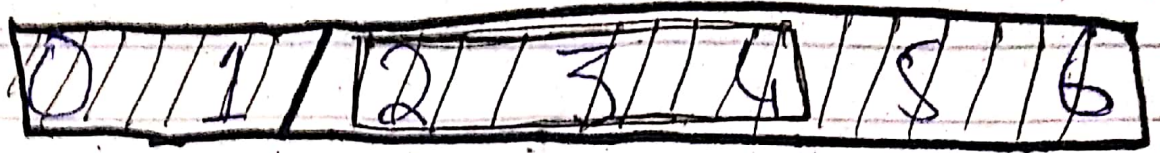
Sender :-

A has shrunk its window as it has transmitted three PDUs has received ack for 2 PDUs hence its keeping copy of one PDU



Acknowledgment received from
for two bits

Receiver



Receiver has received all the data hence the window remains in 4 bits size.

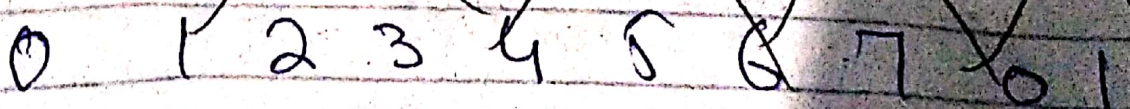
ANSWER C;

After A sends frame 3, 4, and 5 and B acknowledge 4 and the ACK is received by A.

Sender :-



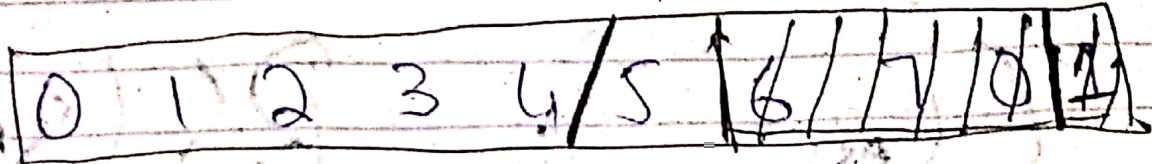
Receiver :-



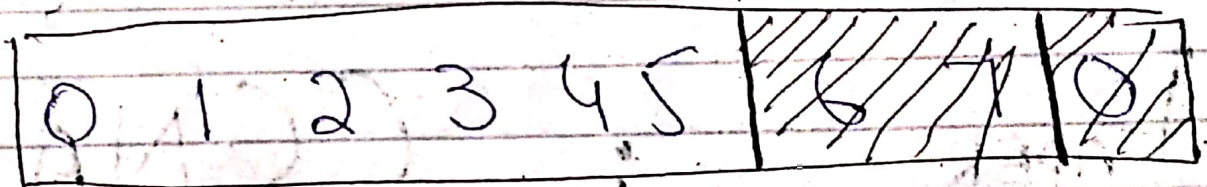
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Sender



Receiver



Acknowledgment received for 3
bit now window size

ID: 14943

by formula

ID last / 2

Since ID last = 3

$3/2 = 1$ window size

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Question no 4

A ISP is granted a block of addresses starting with 160.17.17.0/16. The ISP after these allocation.

Group a:-

For this group each customer needs 64 addresses this means that 6 ($\log_2 64$) bits are needed to ~~map~~ each host. The prefix length is the $32 - 6 = 26$ the addresses are

$$1^{st} = 160.21.17.0/26$$

$$2^{nd} = 160.21.17.1/26$$

$$3^{rd} = 160.21.17.6/26$$

$$\text{total} = 16 \times 64 = 1024$$

Group b:-

For this group each customer needed 32 addresses, this means that 6 (log₂ 64) bits are needed to each host. The prefix length is then $32 - 6 = 26$ the addresses are

$$1^{st} = 160.27.17.6/27 \quad 190$$

$$2^{nd} = 160.21.17.1/27$$

$$3^{rd} = 160.28.17.6/27$$

$$\text{total} = 160 \times 64 = 1024$$

Group C:-

For this group each customer needs 16 addresses this means that 6 (log₂ 16) bits are needed to each host. The prefix length is then $32 - 6 = 26$ the

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addresses are

1st = 160.21.17.6/28

2nd = 160.21.17.1/28

3rd = 160.21.17.6/28

total = 16 x 64 = 1024