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SEMESTER : 4<sup>th</sup> BS (SE)

SECTION : A

SUBJECT : COMPUTER COMMUNICATION AND  
NETWORKS

INSTRUCTOR : MANSUOR QADIR

QUESTION : 1 :-

In a block of addresses,  
we know the IP - - - - -  
- - - in this block?

SOLUTION:-

My Roll Number : 14596

Sum of Roll Number : 25

Sum of 4<sup>th</sup> and 5<sup>th</sup> digit (9+6) = 15

Network addresses :

101.1.11.0 (Network IP)

101.1.11.25 (First IP)

101.1.11.26

101.1.11.27

101.1.11.28

101.1.11.29

101.1.11.30

101.1.11.31

101.1.11.32



107.7.11.33

107.7.11.34

107.7.11.35

107.7.11.36

107.7.11.37

107.7.11.38

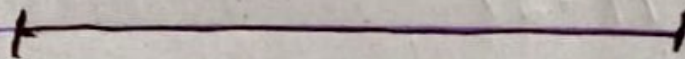
107.7.11.254 (LAST IP)

107.7.11.255 (BROADCAST IP)

FIRST IP = 107.7.11.25

LAST IP = 107.7.11.254

BROADCAST IP = 107.7.11.255





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QUESTION : 2

Take your roll no as decimal notation, now --- has been positive..

SOLUTION :-

My Roll Number = 14596  
Now to convert it into binary notation

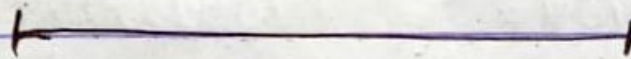
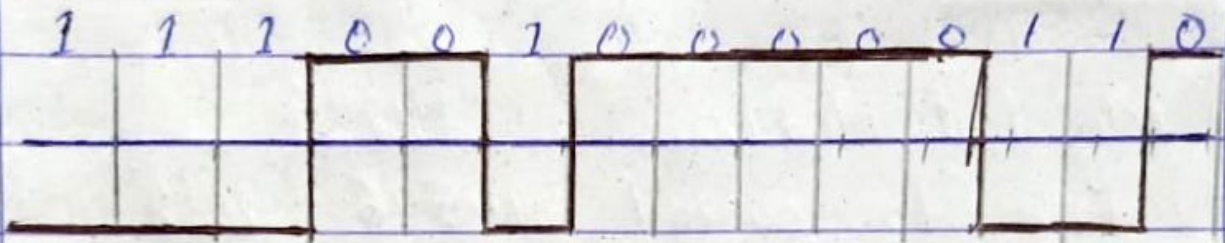
$$14596 = 11100100000110$$

2	14596	0	2	28	0
2	7298	1	2	14	0
2	3649	1	2	7	1
2	1824	0	2	3	1
2	912	0	2	1	
2	456	0			
2	228	0			
2	114	0			
2	57	1			

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NRZ-L Scheme Graph :-



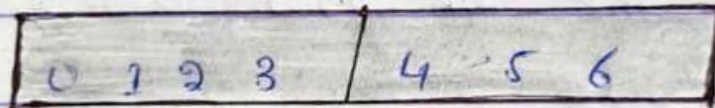


QUESTION : 3

Two neighbouring nodes (A and B) use a sliding window  
 ----- ACK received by A.

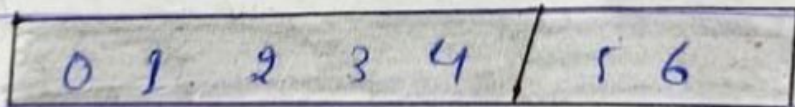
SOLUTION:-

A) Before A send any frames :-  
 Sender :-



Window of PDU that may transmitted 4 bit window.

Receiver :-



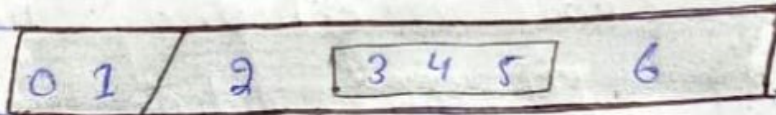
B) Sender :-

A has shrunk its window as it has transmitted three PDUs but has received ack for two



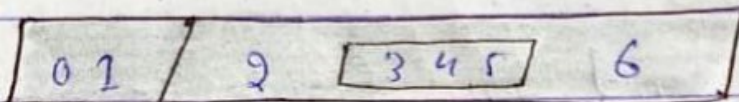
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PDUS hence it is :-



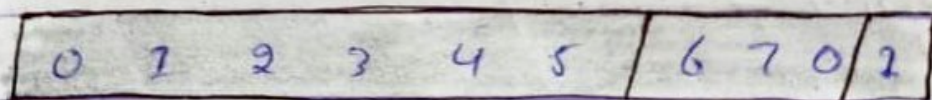
Acknowledgment receive for two bits.

Receiver :-

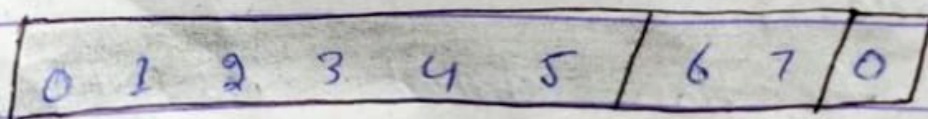


Receiver has received all data hence the window remains in 4 bit size.

c) Sender :-



Receiver :-



Acknowledgment received for 3 bit.

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So window size :

$$ID = 14596$$

By formula :

$$\boxed{ID \text{ last } / 2}$$

Since

$$ID \text{ last} = 6$$

$$\text{so } \frac{6}{2} = 3 \text{ window size.}$$





QUESTION : 4

An ISP is granted a block of \_\_\_\_\_  
 - how many addresses are still available after these allocations.

SOLUTION:-GROUP A:-

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

The addresses are

$$1^{st} = 160.25.17.0/26$$

$$2^{nd} = 160.25.17.1/26$$

$$3^{rd} = 160.25.17.2/26$$

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

Total = 1024
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In this group each customer needs 32 addresses.

This means that  $6(\log_2 32)$  bits are needed to each host.

The prefix length is then  $32 - 6 = 26$ .

The addresses are:

$$1^{\text{st}} = 160.25.17.6/26$$

$$2^{\text{nd}} = 160.25.17.1/26$$

$$3^{\text{rd}} = 160.25.17.8/26$$

$$\text{Total} =$$

$$16 \times 64 = 1024$$

$$\text{Total} = 1024$$

GROUP C :-

For this group each customer needs 16 addresses.

This means that  $6(\log_2 16)$  bits are needed to each host



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The prefix length is  $32 - 6 = 26$

The addresses are:

$$1^{st} = 160.25.17.6/28$$

$$2^{nd} = 160.25.17.11/28$$

$$3^{rd} = 160.25.17.8/28$$

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

$\text{Total} = 1024$

