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ID = 14539

Computer Communication and
Network

①

Q1

(A) ID = 14539

$$X = 22$$

$$4^n = 3$$

$$5^n = 9$$

$$4^n + 5^n = 12$$

In a block of address
we know the IP address
101.10.11.22/12

On host first address 101.10.0.2
Network address:- 101.10.0.1
LAST address:- 101.10.11.447
Limited address:- 101.10.11.448

ID = 1453^a

performing And operation

(2)

101.10.11.27

255.0.0.0

101.0.0.0

IP address = 101.00.0

Limited broadcast address

As limited broadcast does not change from router to another and send message to limited people at an organization so it is always either All one's OR all zero's

limited broadcast address = 255.255.255.255

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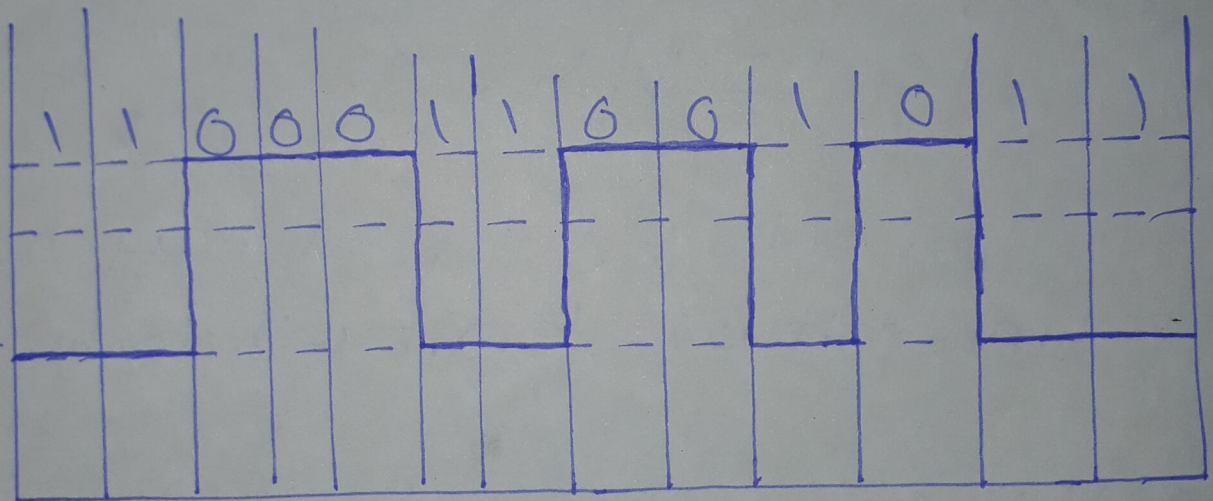
③

(12)

Binary ID = 14539

1100011001011

NRZ-L



$$ID = 14539$$

(4)

(Q3) $ID = 14539$ $9/2 = 4$

(A(a)) = Before A sends any Frames

Sender

| 0 1 2 3 | 4 5 6

Window at PDU that may be transmitted = 4 bit window

Receiver

| 0 1 2 3 | 4 5 6

Answer (b)

After A sends frame 0, 1, 2, 3, 4 and receives Acknowledgment from B for 0, 1 and 2

Sender

A has shrunk its window as it has transmitted ~~five~~ ^{Five} PDUs but has received ack for 3 PDUs hence it is keeping copy at one PDU.

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5

0 1 2 | 3 4 5 6

Acknowledgment received for two bits

Receiver

0 1 2 | 3 4 5 6

Receiver has received all data hence the window remain 4 bits size

Answer C

After A sends frames 5, 6 and B Acknowledges 5 and the ACK is received by A

Senders

0 1 2 3 4 5 | 6 7 0 1

Receiver

bit Ack received for one

0 1 2 3 4 5 | 6 7 0 1

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(6)

Q4

Group 1

For this group, each customer needs 64 address. This means that that 8 ($\log_2 64$) bits are needed to define each host. The prefix length is then $32 - 8 = 24$. The address are

1st customer: $160.22.0.0/24$ | $160.22.7.255/24$

2nd customer: $160.22.1.0/24$ | $160.22.1.255/24$

16th customer: $160.22.16.0/24$ | $160.22.16.255/24$

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

Group 2

For this group each customer needs 32 address. This means that 7 ($\log_2 32$) bits are needed to define each host. The prefix length is then $32 - 7 = 25$. The address are

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(7)

1st customer 160.22.16.0/25
160.22.16.31/25

2nd customer: 160.22.16.32/25
160.22.16.63/25

64th customer: 160.22.⁶³64/25
160.22.63.64/25

$$\text{Total} = 64 \times 32 = 2048$$

Group 3

for this group each customer needs 16 address. This means 6 ($\log_2 16$) bits are needed to each host. The prefix length is then $32 - 6 = 26$. The address are

1st customer:- 160.22.64.0/26

160.22.64.63/26

2nd customer:- 160.22.64.64/26

160.22.64.127/26

64th customer 160.22.63.192/26

160.22.63.255/26

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

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Number of available address are (8)
 $= 3072$

Number of allocated address are
 $= 4096$