Online Final – Term Examination Summer Semester 2020

COMPUTER COMMUNICATION & NETWORK

Total Marks :50

Submitted to :

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ID = 6844
BS (SE) Section B

Question No 1 :→

We need a Three stage Space-division Switch with N = 200, we use 25 crossbars at The first .....

Solution :→

Given data

$N = 200$

$n = 25$

In the first stage we have

N/n

Put The value In This formula

$N/n \rightarrow 200/25 = 8$ so k is 8

In The second stage we have 8 Crossbars, each of size is

$8 \times 8 = 64$

In The third stage, we have 8 Crossbars, each of size is 8×25

$= 200$

→ The total Number of Crosspoints is

$$2kN + k(N/n)^2$$

Put The value In This

$$= 2(8)(200) + 8(200/25)^2$$

$$= 3,200 + 8(8)^2$$

$= 3,200 + 8(8)^2$

$= 3,200 + 8(64)$

$= 3,200 + 512$

$= 3712$

Total Number of Crosspoints is 3712

→ The total Number of Crosspoint using clos criteria, formula is

$$n = (N/2)^{1/2}$$

Put The value $= n = (200/2)^{1/2}$

$= n = (100)^{1/2} = 10$

$K = 2n - 1$

$= 2(25) - 1 = 50 - 1 = 49$

Crosspoint is $4N[(2N)^{1/2} - 1]$

$= 4(200)[(2(200)^{1/2} - 1]$

$= 800[(400)^{1/2} - 1]$

$= 800[(40) - 1]$

$= 800[39]$

$= 3,200$ → clos criteria.

Ans

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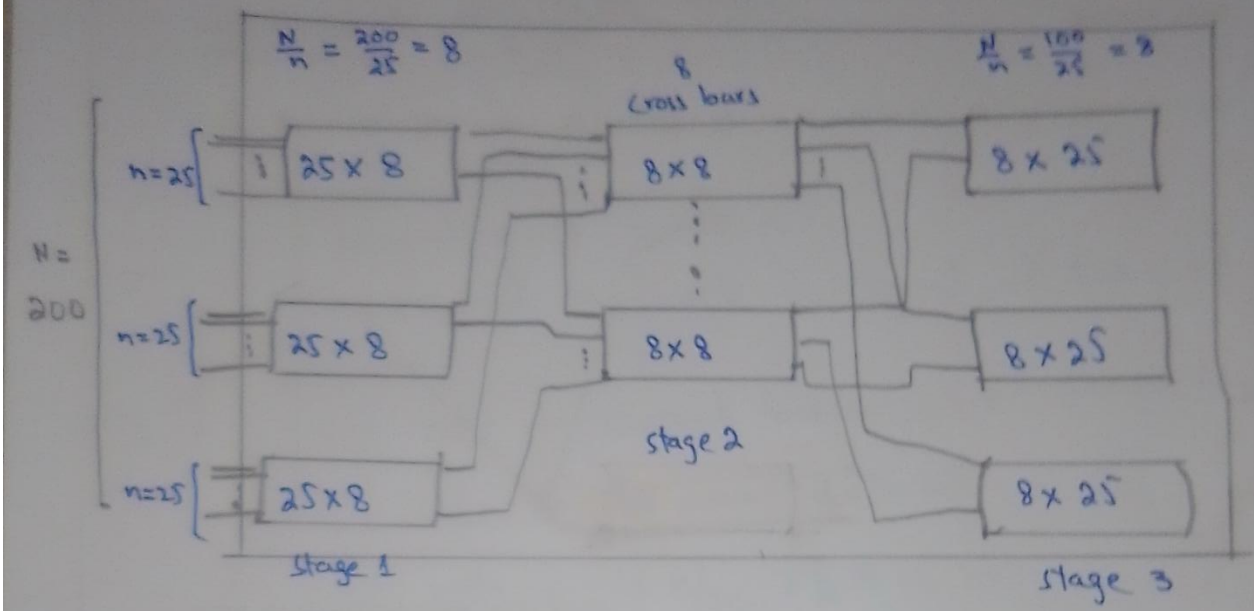
Configration diagram :→



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Question No 2 :→

Solution :→

* In Selective Repeat ARQ, only the erroneous or Lost Frames are retransmitted while correct frames are recieved and buffered.

* The reciever while keeping track of Sequence number, buffers are frames in memory and sends NACK for only frame which is missing or damaged.

* The Sender will send retransmit Packet for NACK is recieved.

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Question No 3 :→

A digitized voice 4 KHz

Solution :→

According to question:
it is required to sample the signal at twice at highest frequency

So bit rate = current bandwidth × 2 × Sample Size

bit rate = 4 KHz × 2 × 16 bit

bit rate = 4 K/sec × 2 × 16 bit

= 128 Kb/sec

So bit rate is 128 Kbps.

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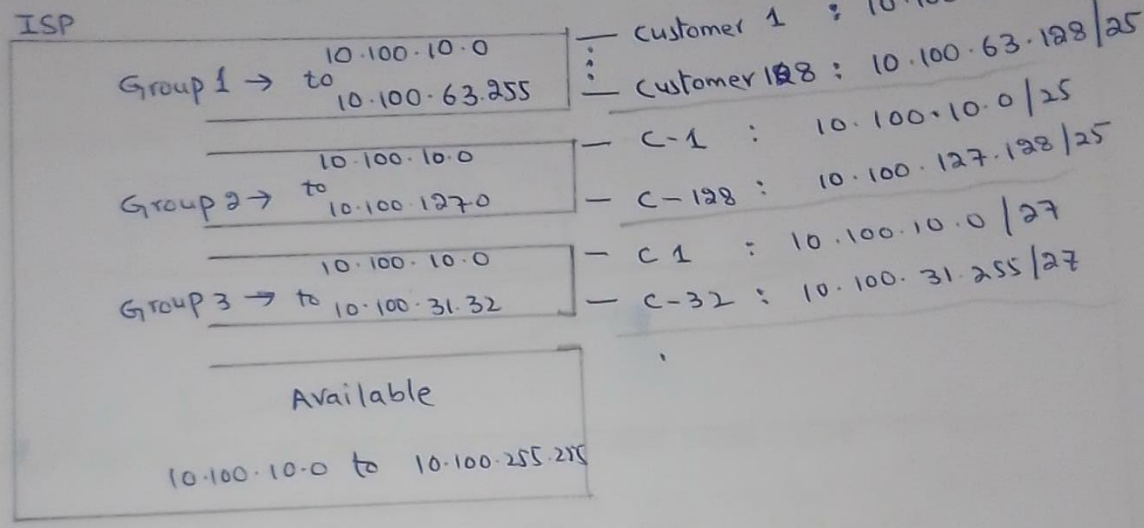
Question No 4 :→

An ISP is granted a block of address starting with 10.100.10.0/16 - - - - - - -

Solution :→



Group 1 :→

For This group customer need 128 address This means That 7 (Log 2 128) bits are needed to defined each host The Prefix legth is Then 32-7 = 25 The address are

1st customer : 10.100.10.0/25 → 10.100.10.127/25

2nd Customer : 10.100.10.127/25 → 10.100.10.255/25

⋮

64th Customer : 10.100.63.128/25 → 10.100.63.255/25.

Total = 64 × 128

= 8,192

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Group 2 :→

For this group, each customer needs 128 address. This means that 7 (log 2 128) bits are needed to define each host. The prefix length is 32-7=25.

The address are

1st customer = 10.100.10.0/25 → 10.100.10.127/25

2nd " = 10.100.10.128/25 → 10.100.10.255/25

⋮

128 customer = 10.100.127.128/25 → 10.100.127.255/25

Total = 128×128
= 16,384

Group 3 :→

For this group, each customer needs 32 Address. This means that 5 (Log 2 32) bits are needed to define each host. The Prefix length is 32-5 = 27.

The address are

1st Customer = 10.100.10.0/27 → 10.100.10.31/27

2nd Customer = 10.100.10.32/27 → 10.100.10.255/27

⋮

32 customer = 10.100.31.32/27 → 10.100.31.255/27

Total = 32×128
= 4096

For Number of granted address to the ISP = 65,536

Number of allocated address by the ISP = 28,672

Number of available address = 36,864

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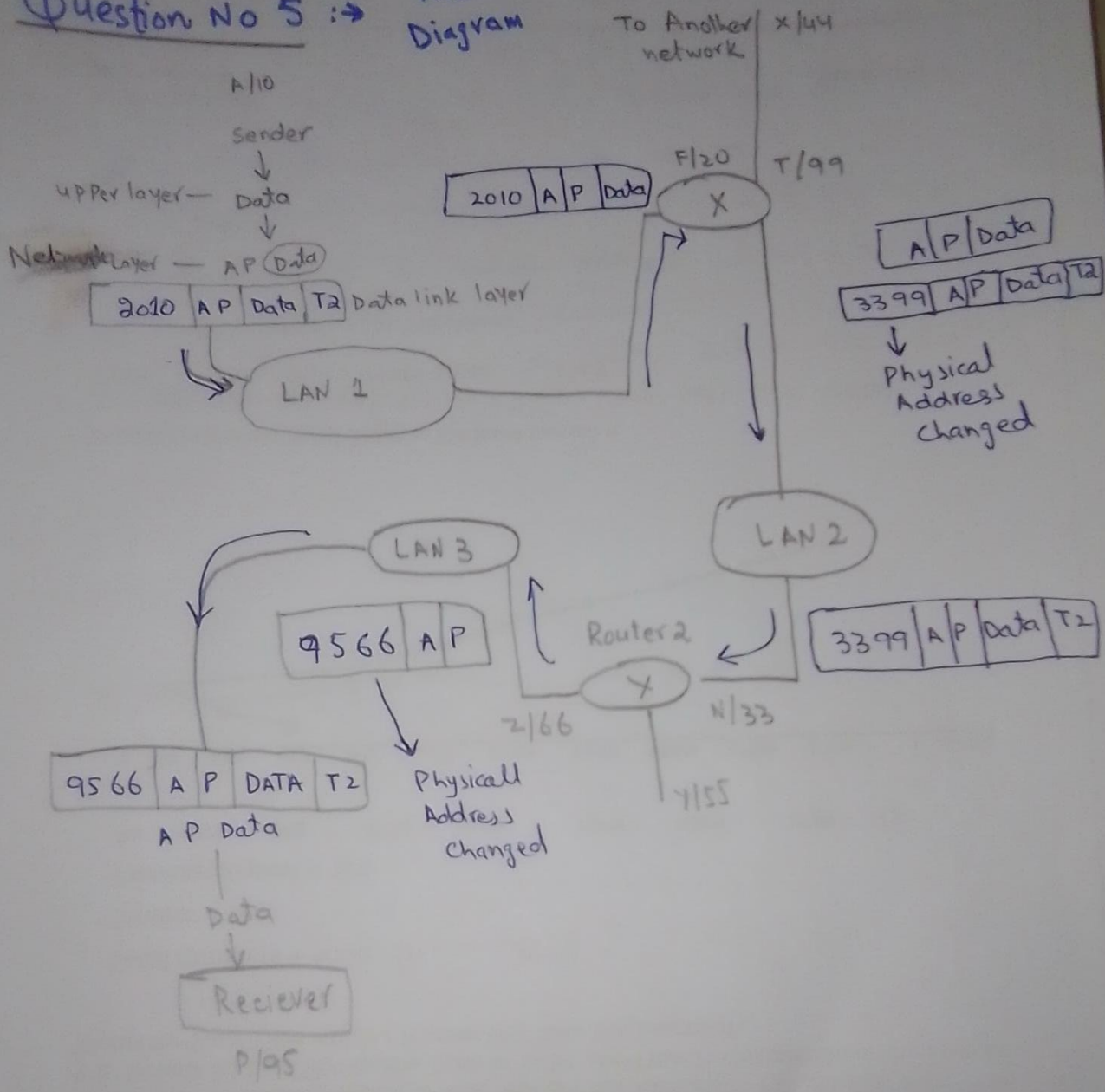
Question No 5 :→ Answer Diagram



Explanation :→

Each device has a pair of address (Logical or physical) for each Connection. In This case each computer is Connected

to only one link and there fore only one pair of address. All the Device (A/10) thier is the computer Physical address is 10 is the Sender and the computer with Physical address (20) is the reciver.

At the router send address is (99) and reciever is 33

Now at router 2 the sender address is (66). The data will be send to ~~resiver~~. reciever.

In last the diagram is fully data sender to Reciever In the diagram.