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BS(SE)

PAPER : CCN FINAL TERM

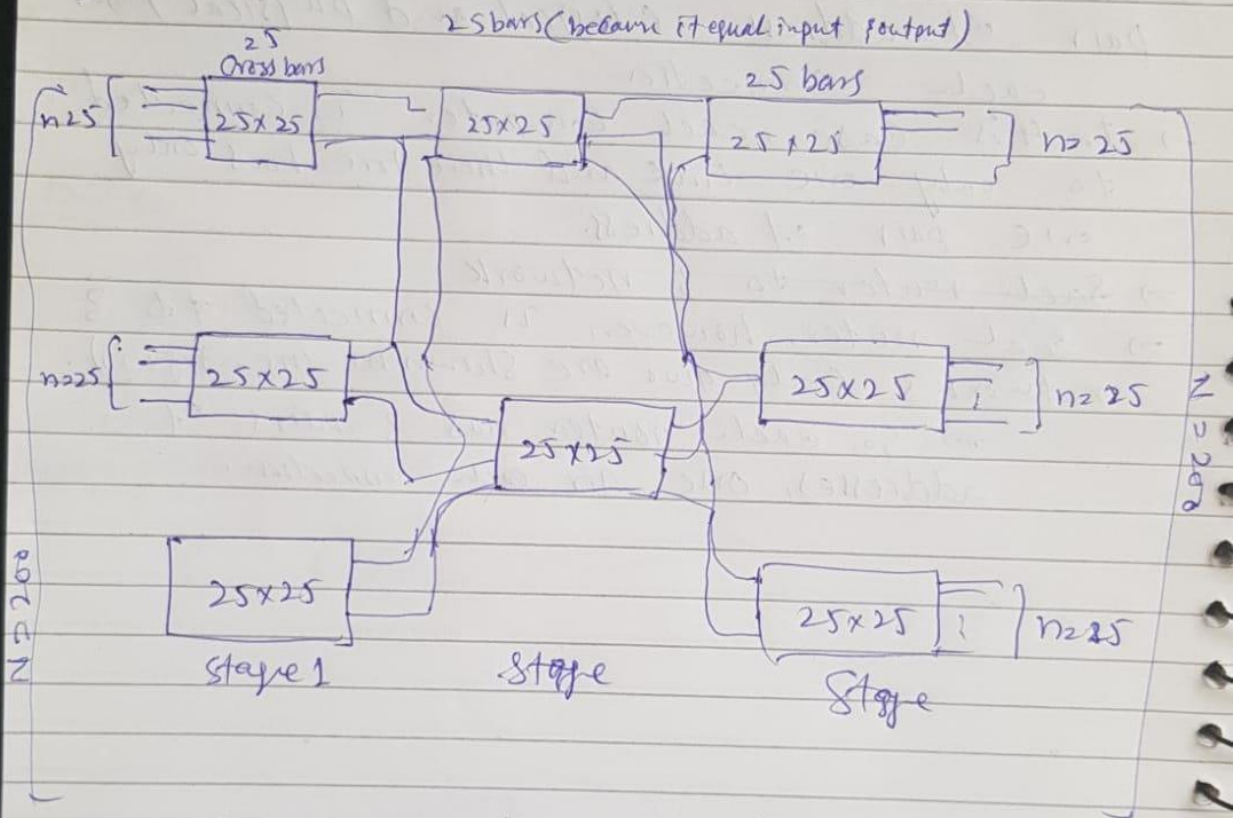
INSTRUCTOR : MANSOOR QADIR

Q1:

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Q18)

ANS 8)



Total Number of cross points.

$$= 25(25 \times 25) + 25(25 \times 25) + 25(25 \times 25)$$

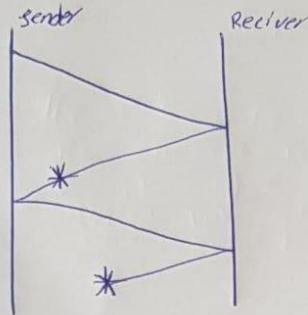
$$= 25(625) + 25(625) + 25(625)$$

$$= 15,625 + 15,625 + 15,625.$$

Q2:

Q2 Explain and show graphically what will happen when Frame 1 is lost using selective-Repeat ARQ,

Soln



Lets assume frame 1 is corrupted or lost so obviously the receiver will not send acknowledgment for frame 1 either the frame is lost or acknowledgment will lose it to go back in ARQ what the receiver will do. It is already receive frame but it discard this frame and the sender will re transmitting all the frames in current window like 0 are retransmit. In this case the receiver might have acknowledge frame 0, but the sender will not send further frame because it ~~to~~ knows that frame 1 is missing because the receiver would have send negative acknowledgment for frame 1. So the sender will re transmit frame 1. So the sender will re-transmit frame 1 alone and as usual other frame will transmit.

Q3:

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Q38 ⇒ A Digitized voice channel is made by digitizing a 4-KHz bandwidth analog voice signal. We need to sample the signal at twice the highest frequency. We assume that each sample requires 16 bits. What is the required bit rate?

Ans ⇒

Solution: The bit rate can be calculated as

$$2 \times 4000 \times 16 = 128,000 \text{ bps} = 128 \text{ Kbps.}$$

Q45) An ISP is granted a block of address starting with 10.100.10.0/16. The ISP needs to distribute these address to three groups of Customers as follows:

- The first group has 64 Customers; each needs 128 address.
- The second group has 128 Customers; each needs 128 address.
- The third group has 128 Customers; each needs 32 address.
- Design the sub blocks and find out how many address are still available after these allocations.

Ans) For this group, each Customer needs 128 address. this means that $7 (\log_2 128)$ are needed to define each host. the prefix length is then $32 - 7 = 25$ the address are:-

1st Customer :- 10.100.64.0/25 10.100.64.127/25
 2nd Customer :- 10.100.64.0/25 10.100.64.255/25

⋮

64th Customer :- 10.100.127.128/25 190.100.127.255/25

Total = $64 \times 128 = 8,192$

Group 2:- For this group each customer needs 128

addresses this means that $7 (\log_2 128)$ bits are needed to define each host. the prefix length

is then $32 - 7 = 25$ the addresses are:

1st Customer $10.100.64.0/25$ $10.100.64.127/25$

2nd Customer $10.100.64.128/25$ $10.100.64.255/25$

...

128th Customer $10.100.127.128/25$ $10.100.127.255/25$

Total $128 \times 128 = 16,384$

Group 3:- For this group each customer needs 32 addresses this means that $5 (\log_2 32)$ bits are needed to define each host. the prefix length is then $32 - 5 = 27$ the addresses are:

1st Customer: $10.100.32.0/27$ $10.100.32.63/27$

2nd Customer: $10.100.32.64/27$ $10.100.32.127/27$

32 Customer: $10.100.32.64/27$ $10.100.32.128/27$

total $32 \times 128 = 4,096$

Number of granted address to the ISP: 65,536

Number of allocated address by the ISP: 28,672

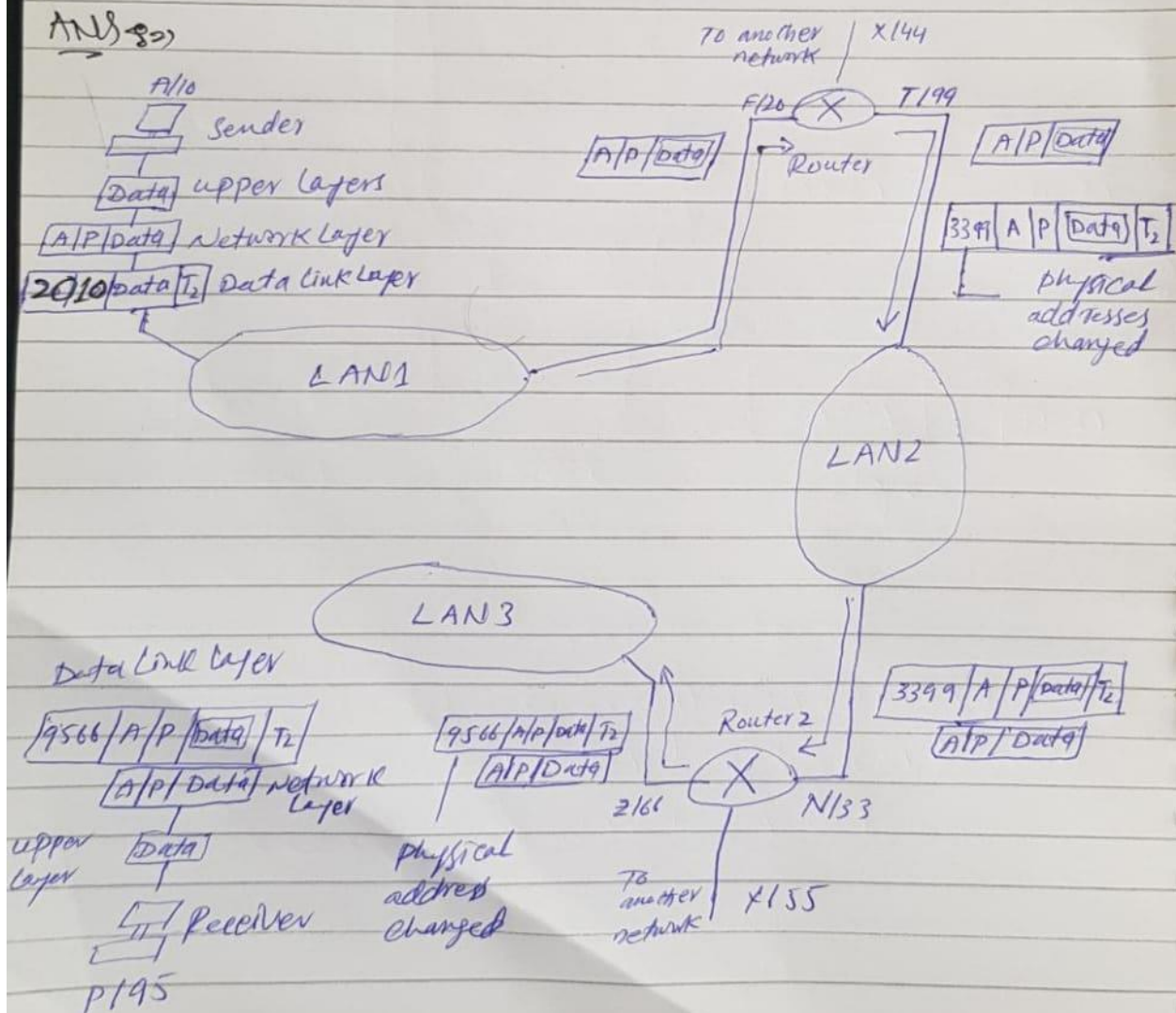
Number of Available address: 36,864

Q5:

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Q5:- Below shows a part of an internet with two routers connecting three LANs. Each device (computer or Router)



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Below figure shows a part of an internet with two routers connecting three LANs.

→ Each device (computer or Router) has a pair of address (logical and physical) for each connection.

→ In this case, each computer is connected to only one link and therefore has only one pair of address.

→ ~~Each router to 3 network~~

→ Each router, however, is connected to 3 networks (only two are shown in the figure).

⇒ So each router has 3 pairs of addresses, one for each connection.

THANK YOU

