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Sec B

Semester : summer

Department : BSSE

Subject : CCN

Final exam

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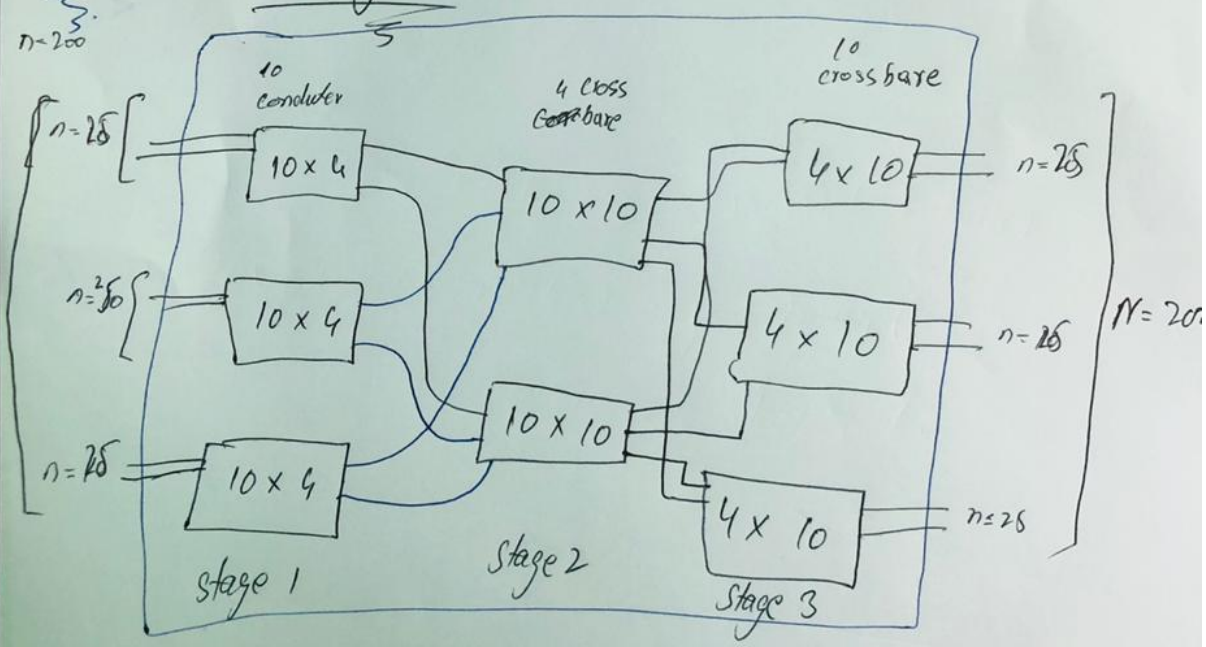
Q NO: 01

We need three stage space division switch with N = 200 we use 25 crossbar at the ist and third stages.

Sol

Diagram



Total Number of crosspoint:

$$2kN + K(N/n)2 \text{ or } 2000$$

$$\text{Crosspoint} = (200 \times 200 = 40,000)$$

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CONO: 02

Explain and show graphically what will happend when frame 1 is lost using Selective-Repeat ARQ

Ans:

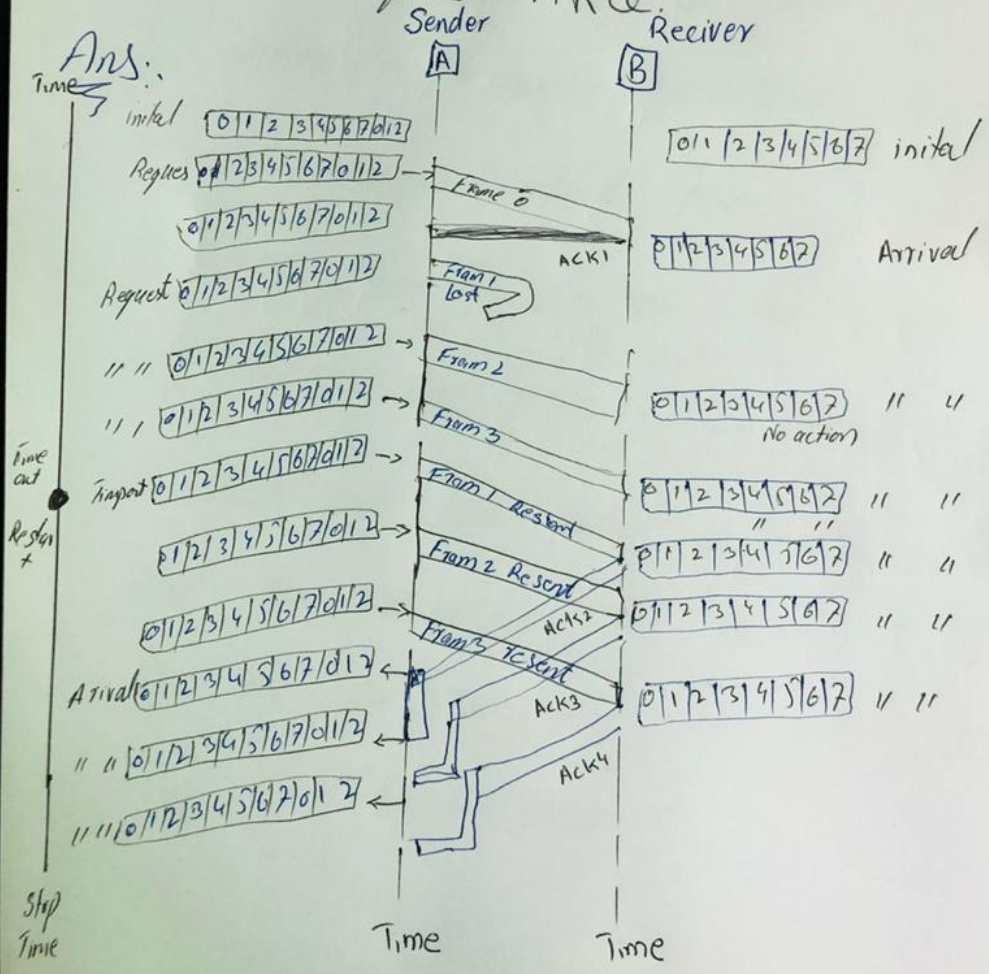

Figure diagram shows what happens a frame is lost. Frames 0, 1, 2 and 3 are sent However frame 2 is lost. The receiver receives frames 2 and 3, but they are discarded because they are received out of order. The sender received no acknowledgment about frames 1, 2 or 3,. Its timer finally expires. The sender send all outstanding frams (1, 2 and 3) because it does not know what is worng. Note that the resending of frames 1, 2 and 3 is the response to one single event.

When the sender is responding to this event it cannot accept the triggering of other events. This means that when ACK 2 arrives the sender is still ~~busy~~ busy with sending frame 3 the physical layer must wait until this event is completed.

Note that before the second timer expires all outstanding frames have been sent and the timer is stopped.

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CONO: 03

4-1khz bandwidth analog voice signal we need to simple the signal - - - .

we assume that each sample required 16 bits what is the required bits rate ?

Sol:

Give data

Bandwidth analog voice signal = 4. kHz

One Sample requires = 16 bits

Required:

Bit rate = ?

The bit rate can be calculated as:

Two samples per Hertz x Bandwidth x give bits.

= 2 x 4000 x 16

= 8000 x 16

= 128,000 bps

= 128 kbps

Bit rate will be 128 kbps.

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CONO: 04

An ISP is granted a block of addresses starting with 10.100.10.0/16
The ISP needs to distribute these addresses to three groups of customer.

Ans:-

The First Group has 64 customer, each need 128 addresses.

For this group each customer need 128 addresses. This means that 7 (log, 128) bit are needed to define each host. The prefix 32-7 = 25 The address are

1st customer :— > 10.100.10.0/25

10.100.10.121/25

2nd customer. —— > 10.100.10.128/25

10.100.10.255/25

64th customer — > 10.100.127.125/25

10.100.127.255/25

Total = 64 × 128 = 8192

Group 2: For this group each customer needs 128 addresses. This means the suffix ~~host~~ length is 7 ($2^7 = 128$). The prefix length is then 32 - 7 = 25

001 :→ 10.100.64.0/25

10.100.64.127/25

002 :→ 10.100.64.128/25

10.100.64.255/25

003 :→ 10.100.127.128/25

10.100.127.255/25

Total = 128 × 128 = 16,384

Group 3:

For this group customer needs 64 addresses. This means the suffix length is 6 ($2^6 = 64$) the prefix length is then 32 - 6 = 26

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001 ⟶ 10.100.128.0/26

10.100.128.63/26

002 ⟶ 10.100.128.64/26

10.100.128.127/26

128 ⟶ 10.100.159.192/26

10.100.159.255/26

Total = 128 x 64 = 8,192

Note: Number of granted addresses = 65,536

Number of allocated addresses = 40,960

Number of available addresses = 24,576

Q No: 05

Two routers connecting three lans. Each device has a pair of address for each connection. - - - - -

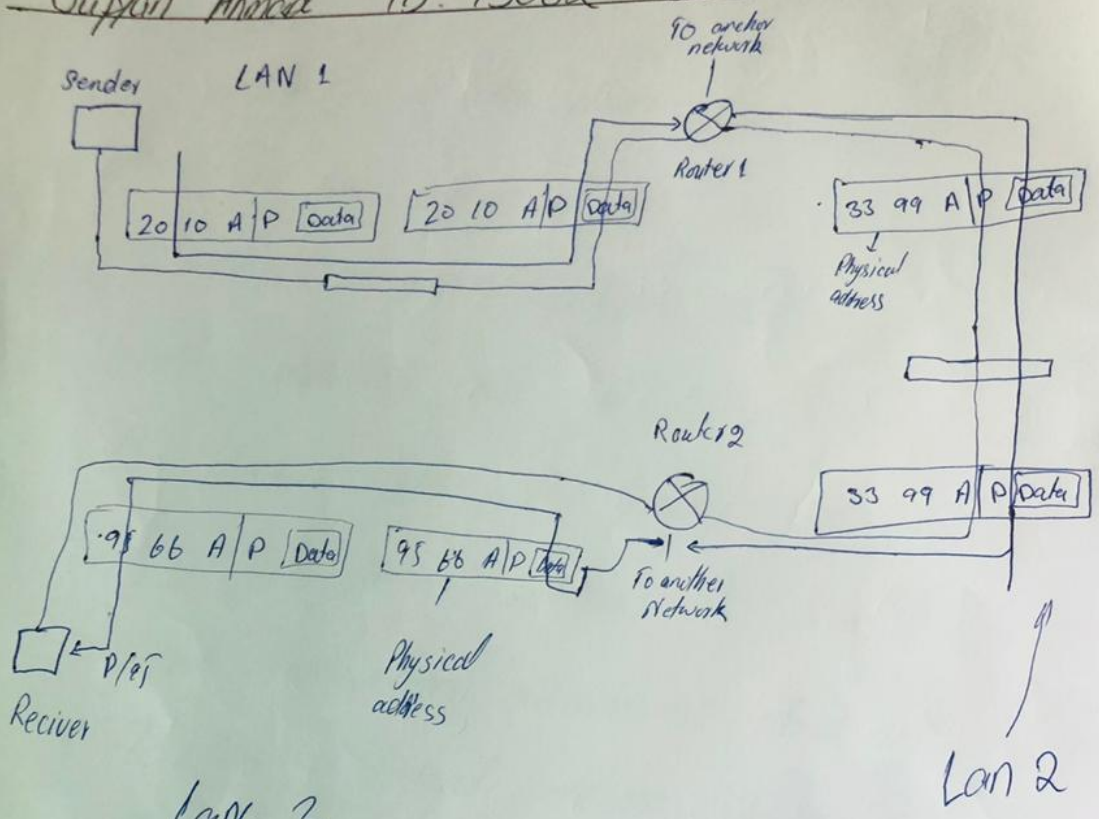
Explain Each Step.

Ans:-

Explaination:-

The computer with logical adress A and physical adress 10 needs to Send a packet to the computer with logical adress P and physical adress 95. The sender encapsulates its data in a packet at the network layer and adds two logical

adresses (A and P). Note that in most Protocols the logical source address comes before the logical destination address. The network layer however needs to find the physical address of the next hop before the packet can be delivered. The network layer consults its routing table and finds the logical address of the next hop (router1) to be F.



Another protocal, Address Resolution Protocol (ARP) finds the physical address of router 1 that corresponds to its logical IP address (20). Now the network layer passes the

the address to the data link layer. which in turn encapsulates the packet with physical destination address 20 and physical source address 10. The router decapsulates the packet from the frame to read the logical destination address P. Since the logical destination address does not match the router. logical address. The router knows that the packet needs to be forwarded the router consults a new frame encapsulates the packet and send it to router 2.