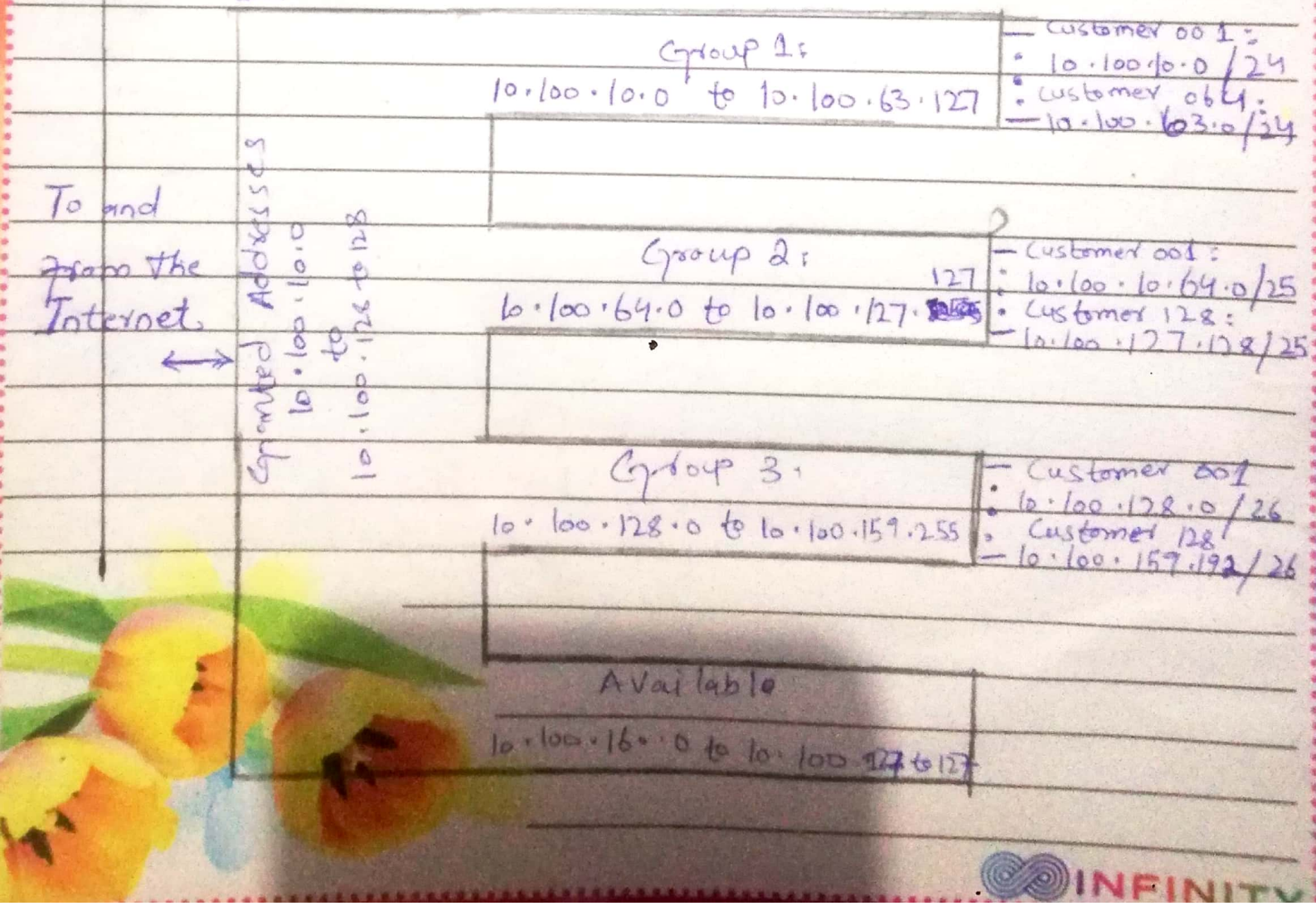
Date: 28/9/20

NAME : M. SAMEED KHAN
ID : 6843
SUBJECT : COMPUTER COMMUNICATION & NETWORKING
SECTION : 'B'
BS (SE)

Q4 AN ISP is granted a block of addresses starting with 10.100.10.0/16. The ISP needs to distribute these addresses to three group of Customers as follows.

SOLUTION:



Date: 28/9/20

- The first group has 64 customers, each needs 128 addresses.

1. Group 1

For this group, each customers need 128 addresses. This means that 7 (log 2 128) are needed to define each host. The prefix length is then 32-7=25

The addresses are

1st Customer : 10.100.10.0/25 10.100.10.127/25

2nd Customer : 10.100.11.0/25 10.100.11.127/25

64 Customer : 10.100.63.0/25 10.100.63.128/25

Total = 64 x 128 = 8192

- The Second group has 128 customers, each need 128 addresses

2. Group 2.

For this group, each customers 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 : 10.100.127.128/25 10.100.127.255/25

Total = 128 x 128 = 16384

Date: 28/9/20

- The third group has 128 customers, each needs 32 addresses

3. Group 3

For this group, each customers need 32 addresses. This means that 5 ($\log_2 32$) bits are needed to each host. The prefix length is then 16 - 5 = 11 The addresses are

1st Customer 10.100.128.0/11

2nd Customer 10.100.128.32/11

128 Customer: 10.100.159.192/11

Total = 128 x 32 = 4096

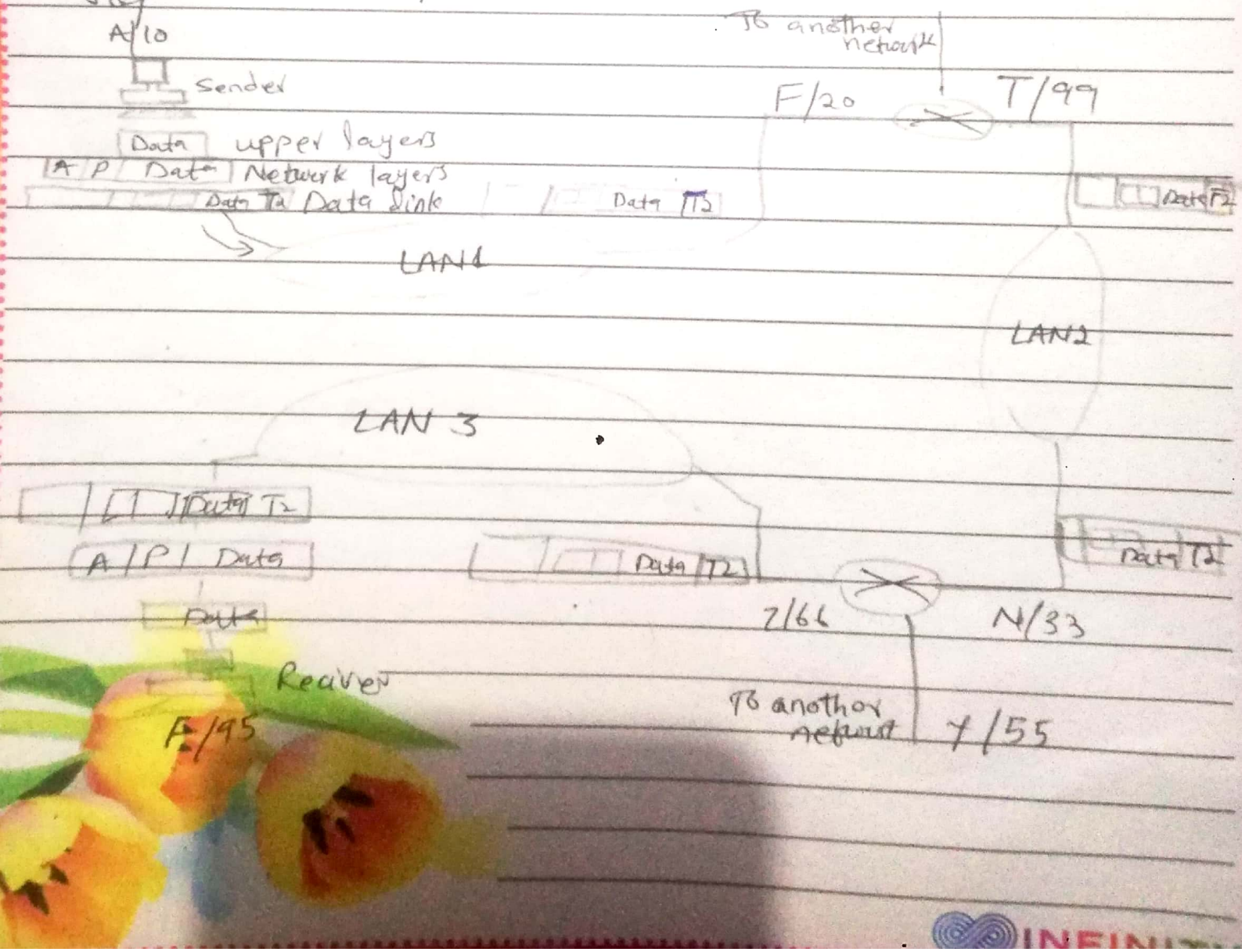
Number of granted addresses to the ISP=65,536

Number of allocated addresses to The ISP=40960

Number of Available addresses = 24,576

Date: 24/9/20

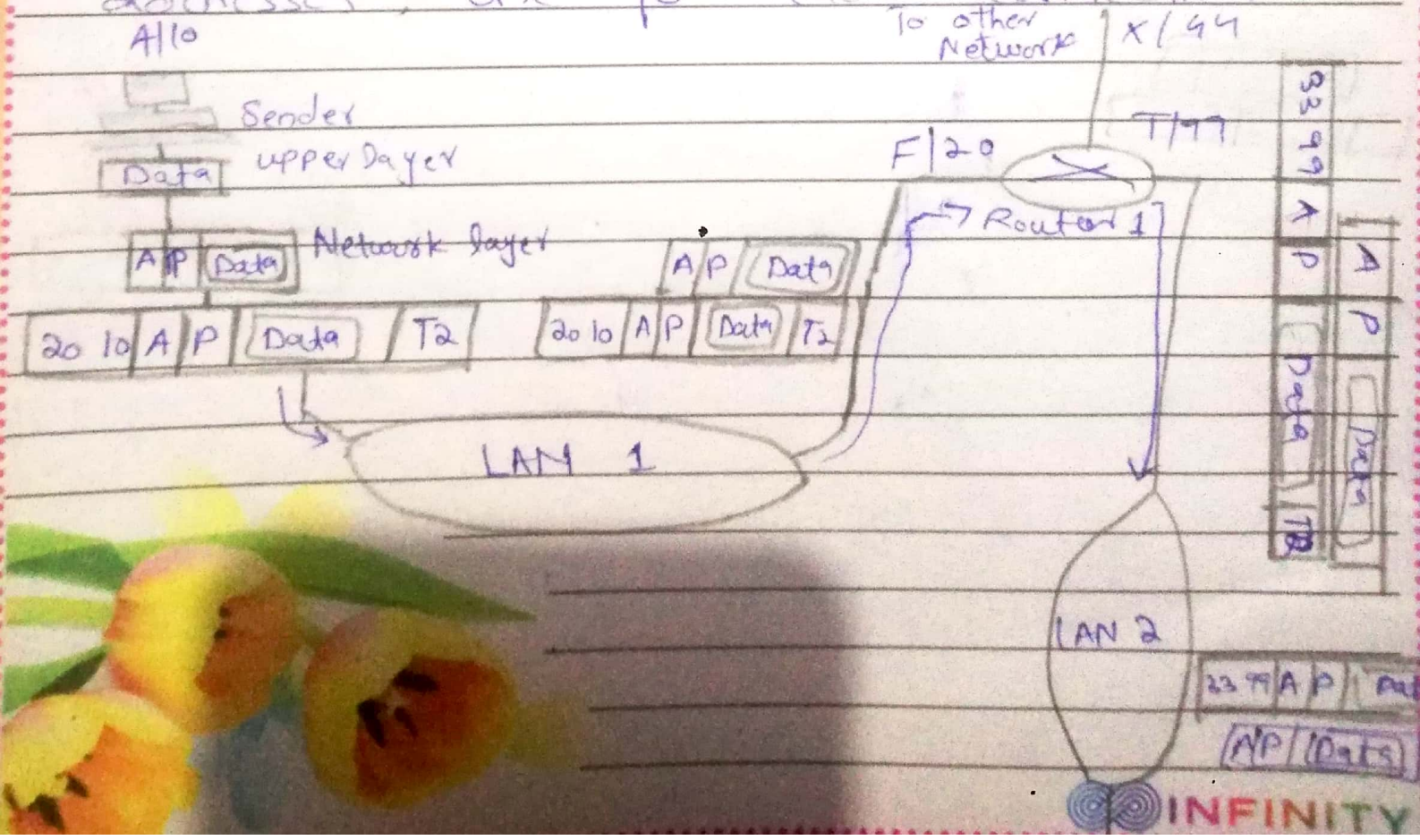
Q5: Below show a part of an internet with two routers connecting three LANs. Each device (computer or router) has a pair of addresses (logical and physical) for each connection. Each router, however, is connected to three networks (only two are shown in the figure). So each router has three pairs of addresses, one for each connection. Using the figure below fill in the missing information. Also explain each step.

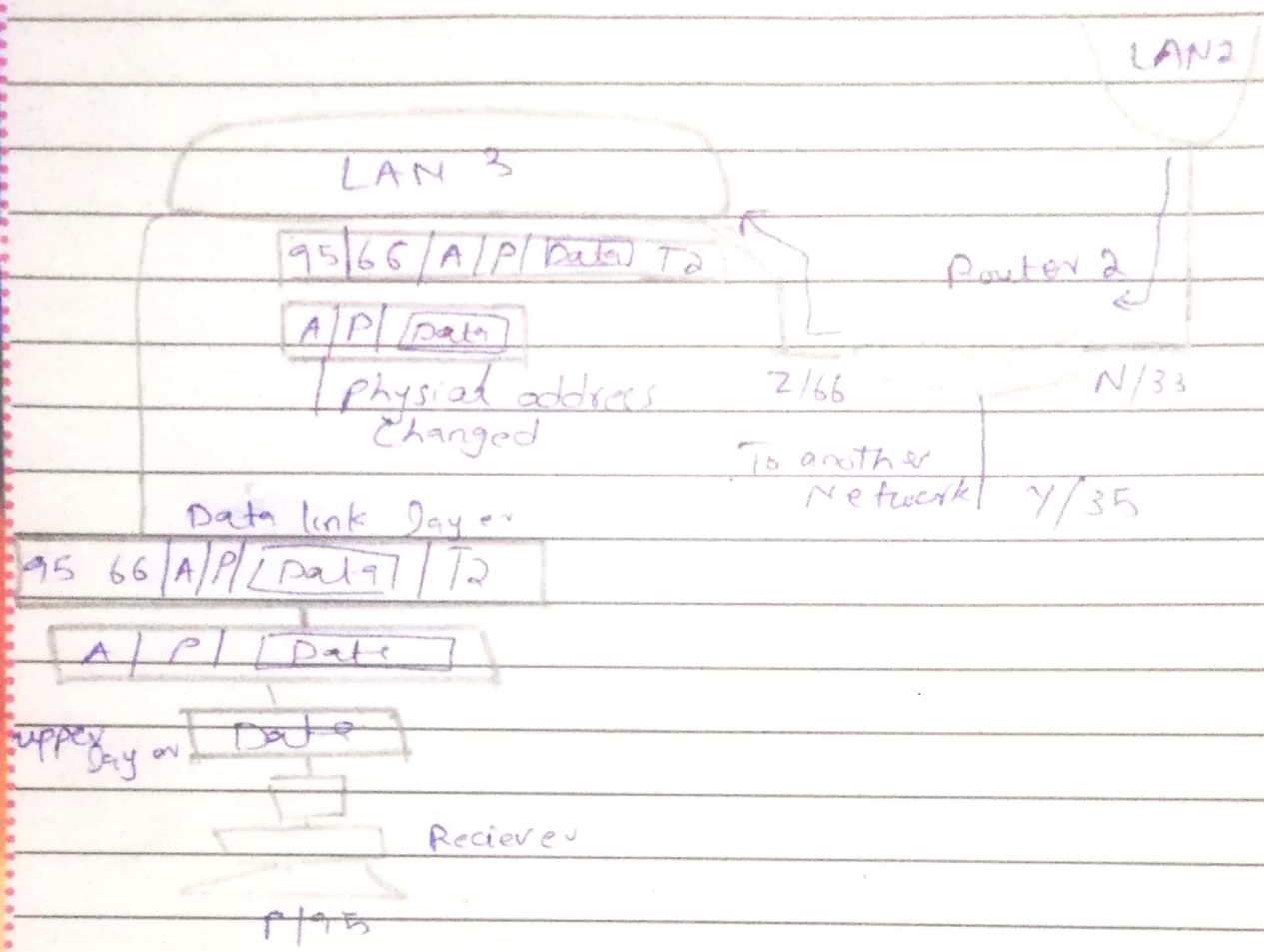


Date: 28/9/20

ANSWER

In the figure shows a part of an internet with two routers connecting three LAN's. Each device (Computer or router) has a pair of addresses (logical and physical) for each connection. In this case, each Computer is connected to only one link and therefore has only one pair of addresses. Each router, however, is connected to three networks (only two are shown in the figure. So each router has three pairs of addresses, one for each connection.





Note: The physical addresses in the frame. The source physical address changes from 10 to 99. The destination physical address changes from 20 (Router 2 physical address). The logical Source and distination addresses must remain the same, otherwise the packet will be lost. A router 2 we have a Similar Scenario. The physical addresses are changed. And a new frame is sent to the distination Computer we have reaches the distination the packet is discapsulat

Date: 28/9/20

Q3: A digitized voice channel is made by digitizing a 4-kz 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?

ANSWER

SOLUTION:

The required bit rate can be calculated as

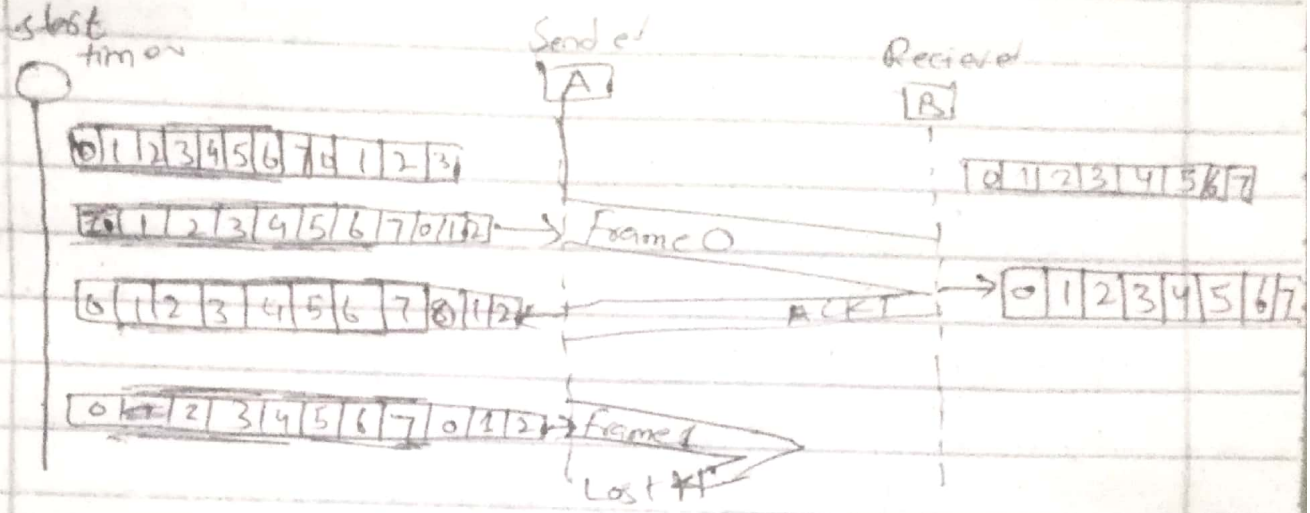
$2 \times 4000 \times 16 = 128{,}000 \text{ bps} = 128 \text{ Kbps}$

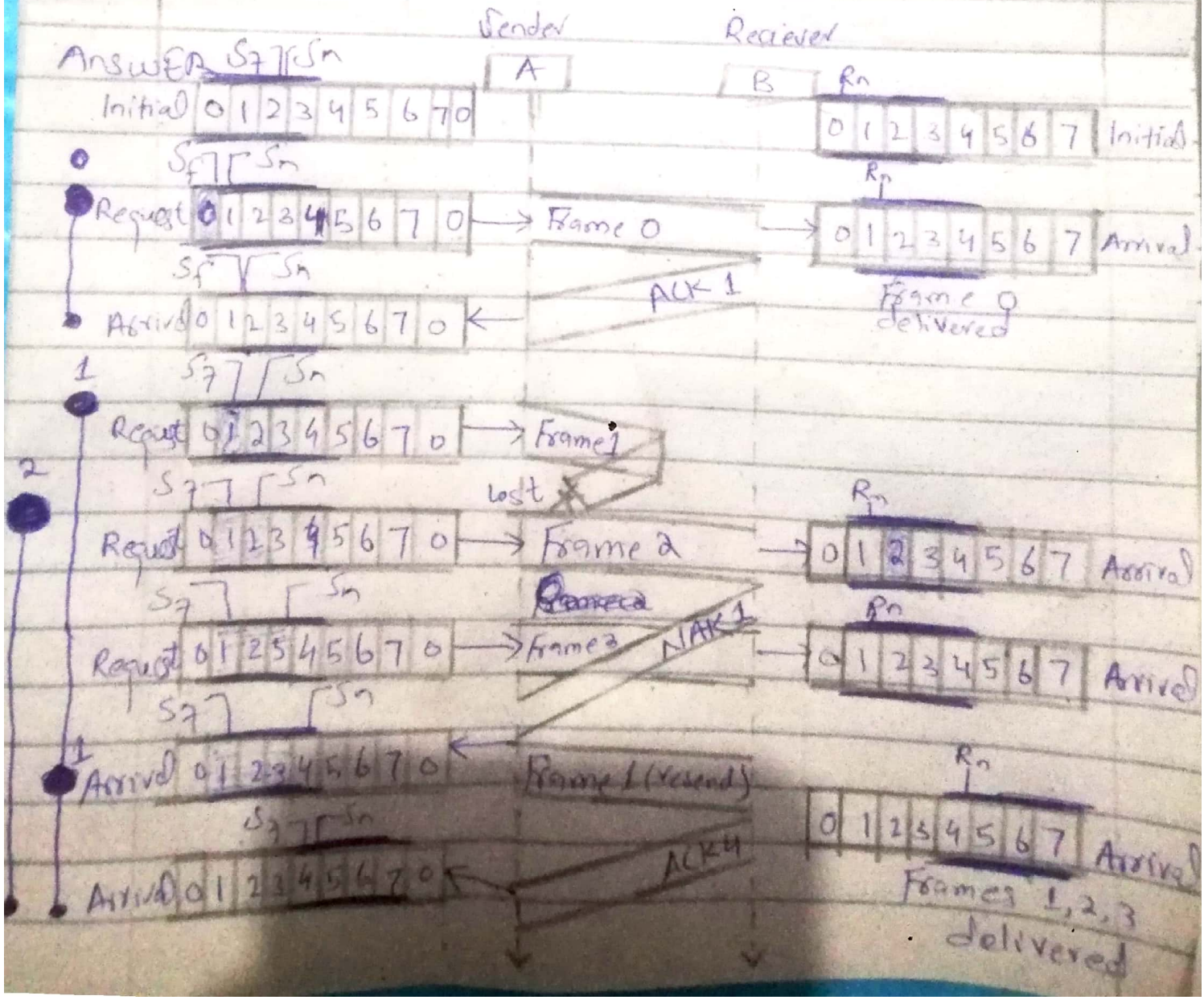
the bandwidth allocation of a telephone voice grade channel, which is classified as narrowband, is normally about 4,000 Hz, but the voice channel actually uses frequencies from 300 to 3,400 Hz, yielding a bandwidth that is 3,100 Hz wide.

The bit rate calculated using the formula Frequency x bit depth x channels = bit rate.

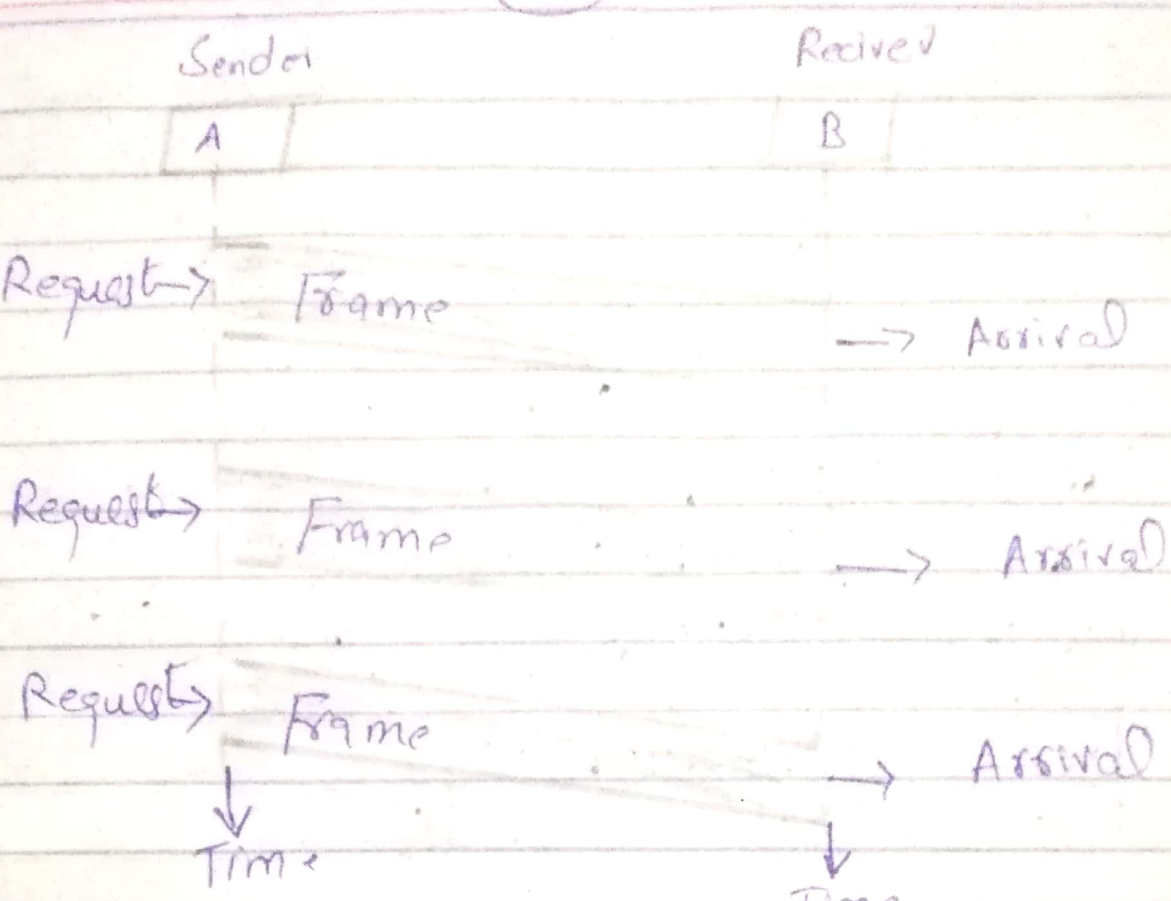
28/7/20

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





(9)



In Selective Repeat ARQ only the erronous or lost frames are recieved retransmitted while correct frames are recieved and buffered

- The reciever while keeping track of sequence number, buffers the frames in memory and sends NACK for only frames which is missing or damaged
- The Sender will send /retransmit packet for NACK is recieved.