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UCS1501 Computer Networks

Assignment

1. Given

3 CDMA Users A, B, C (Data bit 0 → -1)

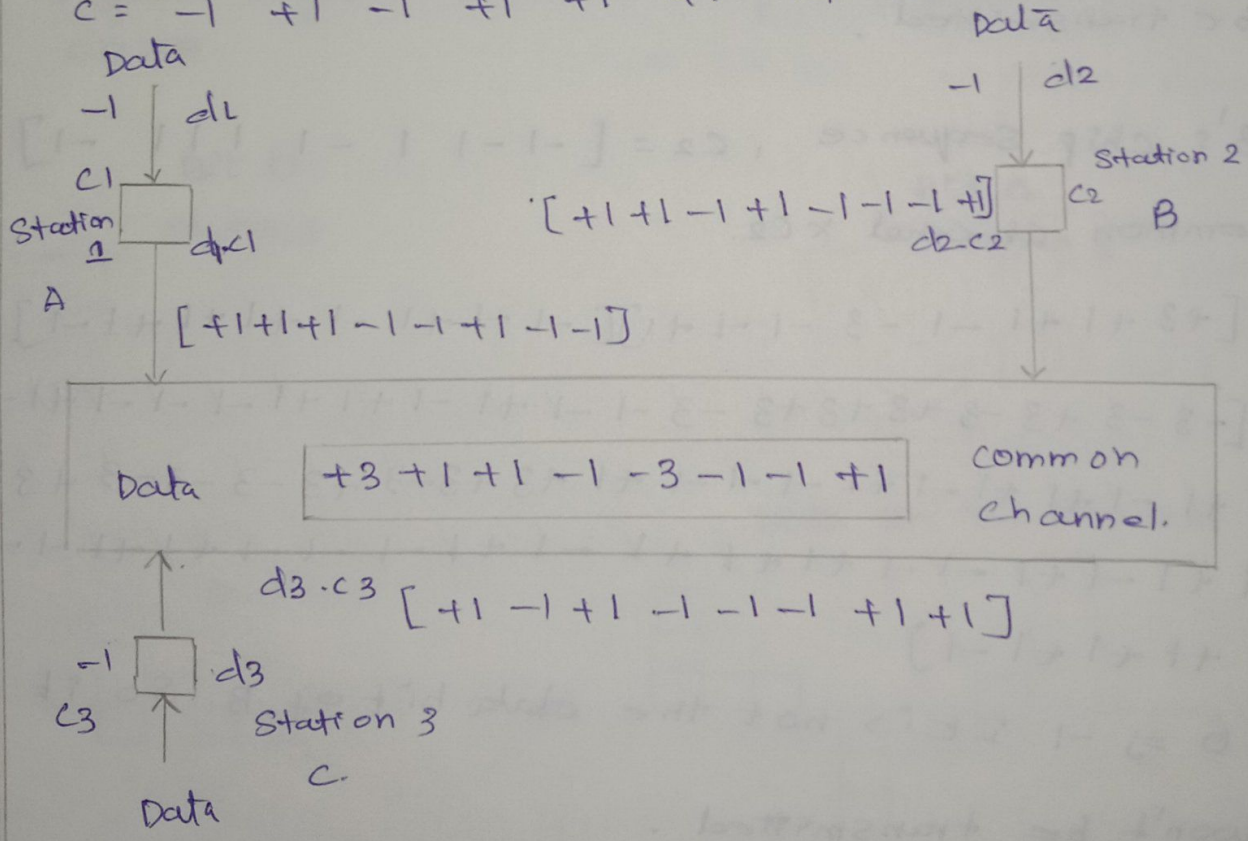
Data bit = 0

chip sequence for A, B, C

A = -1 -1 -1 +1 +1 -1 +1 +1

B = -1 -1 +1 -1 +1 +1 +1 -1

C = -1 +1 -1 +1 +1 +1 -1 -1



common channel:

[+3 +1 +1 −1 −3 −1 −1 +1]

Receiver side:

A's chip sequence c_1 = [−1 −1 −1 +1 +1 −1 +1 +1]

common channel × c_1

⇒ [+3 +1 +1 −1 −3 −1 −1 +1][−1 −1 −1 +1 +1 −1 +1 +1]

⇒ [−3 −3 −3 +3 +3 −3 +3 +3 −1 −1 −1 +1 +1 −1 +1 +1
−1 −1 −1 +1 +1 −1 +1 +1 +1 +1 −1 −1 +1 −1 −1 +3 +3 +3
−3 −3 +3 −3 −3 +1 +1 +1 −1 −1 +1 −1 −1 +1 +1 +1 −1 −1
+1 −1 −1 −1 −1 −1 +1 +1 −1 +1 +1]

= −1 +1 −1 +1 +3/8 = +1 Total station = 8.0

0 ⇒ −1 ≠ 0 It is the data bit of A. so, it will not be transmitted.

B's chip sequence, c_2 = [−1 −1 1 −1 1 1 1 −1]

common channel × c_2.

⇒ [+3 +1 +1 −1 −3 −1 −1 +1][−1 −1 +1 −1 +1 +1 +1 −1]

⇒ [−3 −3 +3 −3 +3 +3 +3 −3 −1 −1 +1 −1 +1 +1 −1 −1 −1 +1 −1 +1
+1 +1 −1 +1 +1 −1 +1 −1 −1 −1 +1 +3 +3 −3 +3 −3 −3 −3 +3
+1 +1 −1 +1 −1 −1 +1 +1 +1 −1 +1 −1 −1 −1 +1 +1 −1 −1 +1
−1 +1 +1 +1 −1]

= 0 ⇒ −1 It is not the data bit of B. So it won't be transmitted.

C's chip sequence $c_3 = [-1 +1 -1 +1 +1 +1 -1 -1]$

common channel $\times c_3$

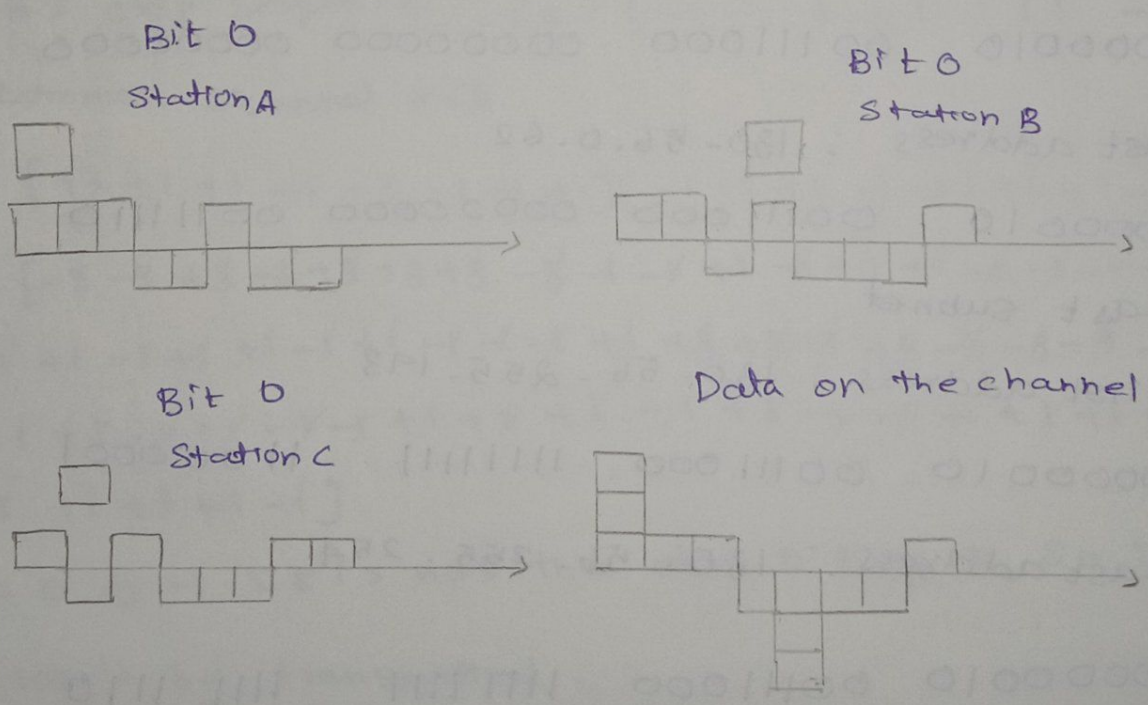
$\Rightarrow [+3 +1 +1 -1 -3 -1 -1 +1][-1 +1 -1 +1 +1 +1 -1 -1]$.

$\Rightarrow [-3 +3 -3 +3 +3 +3 -3 -3 -1 +1 -1 +1 +1 +1 -1 -1$
$-1 +1 -1 +1 +1 +1 -1 -1 +1 -1 +1 -1 -1 +1 +1$
$+3 -3 +3 -3 -3 -3 +3 +3 +1 -1 +1 -1 -1 -1 +1$
$+1 +1 -1 +1 -1 -1 -1 +1 +1 -1 +1 -1 +1 +1 -1]$

$0 \Rightarrow -1$ bit 0 it is the data bit of C. so it will not be transmitted stations. A and C are transmitted.

Bit -1 & 0 are each one end.

Digital signal created by for 3 stations in CDMA.



2 Given :

The block = 130.56.0.0/16

Needed subnets = 1024

Fixed length prefix 16 so it is a classfull address => class B.

a) Number of address in each subnet.

$2^{10} = 1024 = 10$

Subnet mask is : 16 + 10 = 26

No. of bits for Host are : 32 − 26 = 6

Hence, No. of addresses in each subnet $= 2^6 = 64$ //.

b) Subnet prefix

16 + 10 = 26

26 slash notation.

c) First Subnet

First address : 130.56.0.1

10000010 00111000 00000000 00000001

Last address : 130.56.0.62

10000010 00111000 00000000 00111110

d) Last subnet

First address : 130.56.255.193

10000010 00111000 11111111 11000001

Last address : 130.56.255.254

10000010 00111000 11111111 11111110

3. Given:

The ISP is granted the block = 80.70.56.0/21

2 organizations with 500 addresses

2 organization with 250 addresses

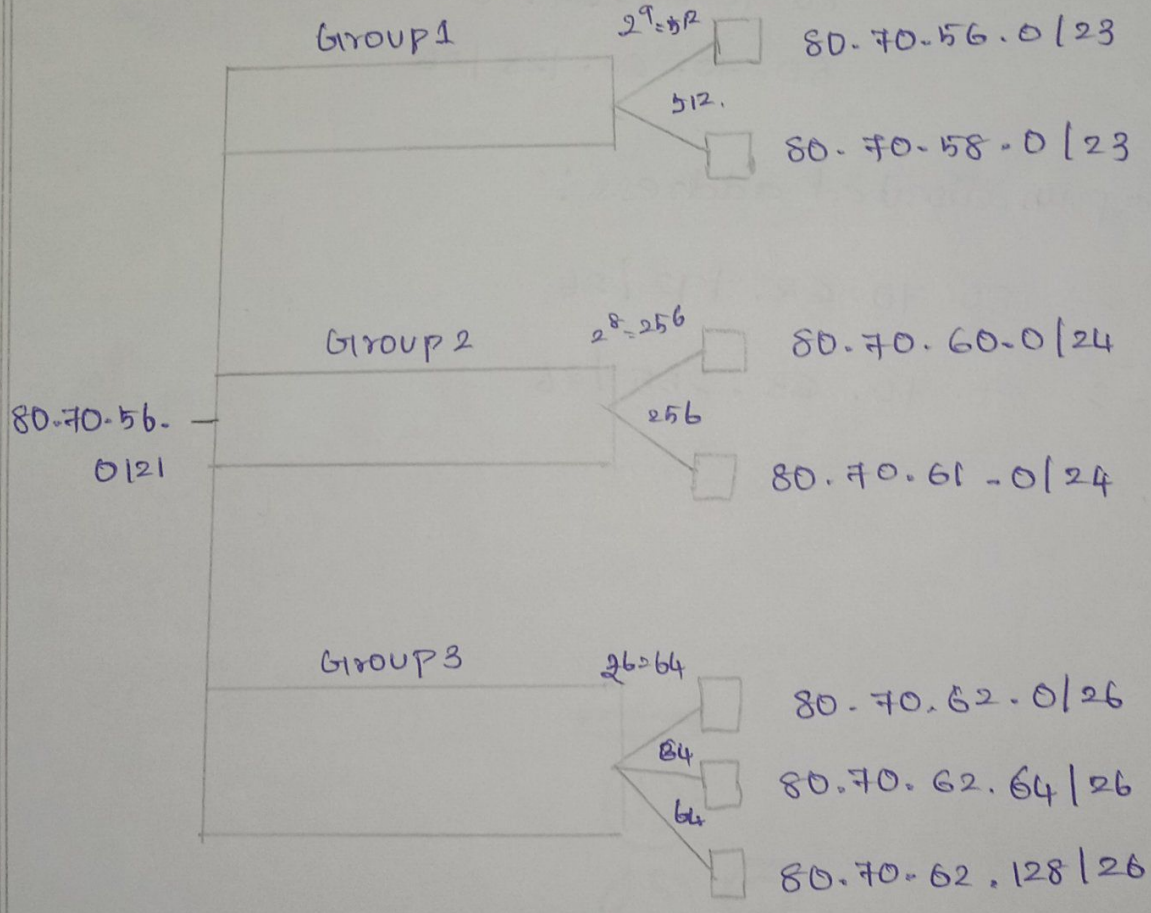
3 organizations with 50 address.

Range of addresses in the ISP block:-

Start - 80.70.56.0/21

End - 80.70.63.255/21

Number of addresses in the ISP block: $2^{11} = 2048$ addresses



Group 1

For this group, each 2 organization each will 500 addresses.

range of address 80.70.56.0/23 to 80.70.58.0/23

Group 2

For this group, each 2 organization each with 250 addresses

range of address 80.70.60.0/24 to 80.70.61.0/24

Group 3

For this group, each 3 organization each will 50 addresses

range of address 80.70.52.0/26 to
80.70.62.64/26 to
80.70.62.128/26

Range of unallocated address:

Start -> 80.70.62.192/26

End -> 80.70.63.255/26