COMP 3203 Assignment 4

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1.

a.

Distance Address Range	List Interface
00000000	0
Through	
00111111	
01000000	1
Through	
01011111	
01100000	2
Through	
01111111	
10000000	2
Through	
10111111	
11000000	3
Through	
11111111	

Number of addresses for interface 0 = $2^6 = 64$
Number of addresses for interface 1 = $2^5 = 32$
Number of addresses for interface 2 = $2^6 + 2^5 = 96$
Number of addresses for interface 3 = $2^6 = 64$

b.

Destination Address Range	Link Interface
11000000	0
Through	
11011111	
10000000	1
Through	
10111111	
11100000	2
Through	
11111111	
00000000	3
Through	
01111111	

Number of addresses for interface 0 = $2^5 = 32$
Number of addresses for interface 1 = $2^6 = 64$
Number of addresses for interface 2 = $2^5 = 32$
Number of addresses for interface 3 = $2^7 = 128$

2.

a. /23
=> 32-23 = 9 (calculator)
=> $2^9 = 512\ IP\ addresses$
However the first and last IP address cannot be used therefore
=> 512 - 2 = 510 IP address

b. Yes
IP address and their equivalent binary value

108.17.154.0	01101100 00010001 10011010 00000000

Subnet 1 -> 60 interfaces
Subnet 2 -> 60 interfaces
Subnet 3 -> 125 interfaces
Subnet 4 -> 250 interfaces

Subnet 1
=$2^6 = 64$ we need 6 bits for host portion, hence subnet mask will be /26 i.e 32 – 6 = 26
108.17.154.0/26 -> can be used for subnet 1

Subnet 2
=$2^6 = 64$ we need 6 bits for host portion hence subnet mask will be /26 I,e, 32 - 6 =26
108.17.154.64/26 -> can be used for subnet 2

Subnet 3
= $2^7 = 128$ we need 7 bits for host portion hence subnet mask will be /25 i.e 32 - 7 = 25
108.17.154.128/25 -> can be used for subnet 3

Subnet 4
= $2^8 = 256$ we need 8 bits for host portion hence subnet mask will be /24 i.e. 32 – 8 = 24
108.17.155.0/24 -> can be used for subnet 4

Subnet 1	108.17.154.0/26
Subnet 2	108.17.154.64/26
Subnet 3	108.17.154.128/25
Subnet 4	108.17.155.0/24

c. No, since the subnet number 2 will need 9 host bits thereby making subnet mask /23. The given ip address is 108.17.154/23, hence the entire IP range has to be used for subnet 2.