Advanced Computer Network
Solution Assignment-3A
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Question 1

Class B network having IP Address 128.12.0.0 is divided into 8 subnets, Answer the followings

(a) Find the Subnet mask of Network after subnetting.

8 subnets require 3 bit from host bits,so the subnets address ;
128.12.00000000.00000000 $\rightarrow$ 128.12.0.0
128.12.00100000.00000000 $\rightarrow$ 128.12.32.0
128.12.01000000.00000000 $\rightarrow$ 128.12.64.0
128.12.01100000.00000000 $\rightarrow$ 128.12.96.0
128.12.10000000.00000000 $\rightarrow$ 128.12.128.0
128.12.10100000.00000000 $\rightarrow$ 128.12.160.0
128.12.11000000.00000000 $\rightarrow$ 128.12.192.0
128.12.11100000.00000000 $\rightarrow$ 128.12.224.0

(b) How many maximum number of of hosts are possible in a subnet.
number of host is $2^{13} - 2 = 8190$ host.

(c) Find the Network ID and Broadcast address of third, Fourth , Seventh Subnetwork.
third subnets : 128.12.64.0
net id: 128.12.64.0
broadcast id : 128.12.96.0

fourth subnets : 128.12.96.0
net id : 128.12.96.0
broadcast id : 128.12.96.0

seventh subnets : 128.12.192.0
net id : 128.12.192.0
broadcast id : 128.12.223.225

(d) Find the First IP Address of third Subnetwork 128.12.64.1

(e)Find the 350th, Last and First IP Address of sixth Subnetwork the 350th ip address of sixth subnets is : 128.12.161.94
this last is : 128.12.161.25
this first is : 128.12.161.1

(f) Find the 760th, Last and First IP Address of fifth Subnetwork fifth subnets 128.12.128.0
$760^{th} ipaddress$: 128.12.130.228
last ip address : 128.12.130.248
first ip address: 128.12.130.1

(g) A subnetwork have IP address 128.12.85.89 Find the First and last IP address of this Subnetwork.
190.13.220.45 is class b address so they can assume that first ip address is 128.12.0.1 and because default mask is 225.255.0.0 and last ip is 128.12.225.254

(h) A subnetwork have IP address 128.12.85.89 Find the First and last IP address of this Subnetwork.
190.13.220.45 is class b address so they can assume that first ip address is 128.12.0.1 and because default mask is 225.255.0.0 and last ip is 128.12.225.254

Question 3
Subnet ID of last subnet of a class B network is 190.13.224.0 , Answer the followings.
(a) Find the Subnet mask of Network after subnetting.

it is the last subnet of class b address let look that third octet 224 converted in binary 11100000 we can canceled that only 3 but is from host part. so subnet mask is 225.225.224.0

(b) How many maximum number of of hosts are possible in this subnet.

maximum number of host is $2^{13} - 2 = 8190$ host.

(c) Find the Network ID and Broadcast address of third, Fourth , Seventh network.
third subnets : 190.13.64.0
net id: 190.13.64.0
broadcast id : 190.13.95.225

fourth subnets : 190.13.96.0
net id : 190.13.96.0
broadcast id : 190.13.127.255

seventh subnets : 190.13.192.0
net id : 190.13.192.0
broadcast id : 190.13.223.225

(d) Find the First IP Address of third Subnetwork.
first ip address of third subnet is 190.13.64.1

(e) Find the 412th Last and First IP Address of sixth Subnetwork.
sixth subnets is : 190.13.160.00
the 412th ip address : 190.13.161.156 this last is : 190.13.191.254
this first is : 190.13.160.1

(e) Find the 345th Last and First IP Address of fifth Subnetwork.
sixth subnets is : 190.13.128.00
the 345th ip address : 190.13.129.89 last ip address : 190.13.159.254
first ip address : 190.13.128.1

(g) A subnetwork have IP address 190.13.220.45 Find the First and last IP address of this Subnetwork.
190.13.220.45 is class b address so they can assume that first ip address is 190.13.0.1 and because default mask is 225.255.0.0 and last ip is 255.225.0.0 and the last ip address is 190.13.255.254

(h) A subnetwork have IP address 190.13.175.123 Find the First and last IP address of this Subnetwork.
as we did at $q3 - (g)$
first ip is 190.13.0.1
first ip is 190.13.255.254

(5) **Find the subnet mask (atleast 3) of subnet which have following pairs of ip address.Every pair belong to same network**

(a) 175.120.95.245 and 175.120.112.232

170.120.95.245 and 175.120.112.232 are class B address mask is 255.255.0.0

If we borrow 1 bit from host IP, they will be part of second subnet so mask is 25.255.192.0

for borrowing 3 bits ,they will also be part of the fourth subnet, so mask is 255.255.224.0 and so on but from 4 bits they will be a part of different network there for these following mask ,on connect for the both address

(1)255.255.0.0

(2)255.255.128.0

(3)255.255.192.0

(4)255.255.224.0

(b)178.156.49.234 and 178.156.56.123

178.156.49.234 and 178.156.56.123 are also in class B address so default mask is 255.255.0.0 get think as we subnetting as we did at question 3(a) but here tehy will be part of different network when we will borrow 5 bits so there are the correct answers

(1)255.255.0.0

(2)2550255.128.0

(3)255.255.192.0

(4)255.255.224.0

(5)255.255.240.0

(c)189.13.40.123 and 189.13.50.245

As we think at question 5 (b) and (a) here 189.13.40.123 and 189.13.50.245 are also class B address ,when we will borrow 5 bit for host part so the answer is

(1)255.255.0.0

(2)255.2550128.0

(3)255.255.192.0

(4)255.255.224.0

(5)255.255.240.0

(d)120.15.234.234 and 120.145.123.234

As we think at question (5).a but here the both address are Class address so default mask is 255.0.0.0

120.15.234.234 and 120.145.123.234 as we see the 2nd oclet ,these cannot be in the same network ,If we do subnetting.

only one mask is the default mask255.0.0.0

Q7. The routing table of a router is shown below

Destination	Subnet Mask	Interface
128.75.96.0	255.255.255.0	Eth0
128.75.96.0	255.255.224.0	Eth1
128.75.160.0	255.255.240.0	Eth5
192.12.17.128	255.255.255.192	Eth3
192.12.17.128	255.255.255.240	Eth4
Default	-	Eth2

Suppose router receive 10 packet with destination IP address as given below , find the destination Interface for each data packet .

(a) 128.75.112.126

(b) 128.75.125.234

(c) 128.75.190.24

(d) 128.75.178.173

(e) 128.75.241.153

(f) 128.75.135.124

(g) 128.75.169.217

(h) 192.12.17.231

(i) 192.12.17.43

(j) 192.12.17.142

(k) 192.12.17.68

(a) 128.75.112.126

ANDING with subnet mask 255.255.224.0

128.75.112.126 AND 255.255.224.0 = 128.75.96.0 (Eth 0)

(b) 128.75.125.234

ANDING with subnet mask 255.255.224.0

128.75.125.126 AND 255.255.224.0 = 128.75.96.0(Eth 0)

(c) 128.75.190.24

ANDING with subnet mask 255.255.224.0

128.75.190.126 AND 255.255.224.0 = 128.75.160.0(Eth 5)

(d) 128.75.178.173

ANDING with subnet mask 255.255.224.0

128.75.178.173 AND 255.255.224.0 = 128.75.160.0 (Eth 5)

(e) 128.75.241.153

128.75.241.153 AND 255.255.224.0 = 128.75.224.0 no match

128.75.241.153 AND 255.255.240.0 = 128.75.241.0 no match

not able to find a match so it would be default (Eth 2)

(f) 128.75.135.124

128.75.135.124 AND 255.255.240.0 = 128.75.128.0 no match

128.75.135.124 AND 255.255.224.0 = 128.75.128.0 no match

not able to find a match so it would be default (Eth 2)

(g) 128.75.169.217

128.75.169.217 AND 255.255.224.0 = 128.75.160.0 (Eth 5)

(h) 192.12.17.231

192.12.17.231 AND 255.255.255.240 = 192.12.17.224 no match

192.12.17.231 AND 255.255.255.192 = 192.12.17.192 no match

not able to find a match so it would be default (Eth 2)

(i) 192.12.17.43
192.12.17.43 AND 255.255.255.240 = 192.12.17.32 no match

192.12.17.43 AND 255.255.255.192 = 192.12.17.0 no match

not able to find a match so it would be default (Eth 2)

(j) 192.12.17.142
192.12.17.142 AND 255.255.255.240 = 255.255.255.128 (Eth 5)

(k) 192.12.17.68

192.12.17.68 AND 255.255.255.240 = 255.255.255.128 (Eth 5)