Ahsanullah University of Science & Technology

Department of CSE

CSE 4102 Computer Networks Lab Fall 2020 Credit: 1.50

Midterm Quiz (Set-A)

Marks: **10** Time: **50 min.**

ID ……..

All questions are mandatory.

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1. Write the shortest compressed format of the two following IPv6 addresses: 1
   00eb:0000:abcd: 0000:abcd:abcd:abcd
   00ab:0000:0000:d8ca:0000:0000:0000:abcd
   ANS: eb::0:abcd:0:abcd:abcd:abcd
   ab:0:0:d8ca::abcd

2. Suppose, an organization contains **524,288** number of IP addresses with the network address ***ID.16.0.0***. What is the broadcast address of this network (Show the logic in your answer)? [Here, ID will be the last three digit of your ID.] 2
   ANS: 524,288/256 = 2048; 2048/256 = 8;
   So, 524,288 = 256*256*8
   ID.16.0.0 ~ 10.**23**.255.255 [16+(8-1) =**23**]
   ALTERNATIVE: Host ID = $\log_2$ (524,288) = 19; Net ID = 32-19=13;
   Mask Complement = 0.7.255.255
   So, last address = ID.16.0.0 + 0.7.255.255 = ID.23.255.255

3. An organization is granted the block ***192.168.ID.0***. The administrator wants to create 32 fixed-length subnets. [Here, ID will be the last three digit of your ID.] 3
   a. Find the subnet mask. And find the number of IP addresses in each subnet.
   b. Find the first and last IP addresses in subnet 20.
   c. Find the first and last IP addresses in subnet 31.

ANS: (b)[C Block given] Number of IPs in each subnet is: 256/32 = 8 (2^3).
So, Last 3 bits of the Mask IP will be the HOST part (11111 000).
(a) Therefore, Mask: 255.255.255.248; IP# = 8

(b) Subnet n=20 (base+(n-1)*8): 192.168.ID.152 ~ 192.168.180.159

(c) Subnet n=31 (base+(n-1)*8): 192.168.ID.240 ~ 192.168.ID.247

4. An organization is granted a block of addresses with the beginning IP address ***10.100.ID.0/24***. [Here, ID will be the last three digit of your ID.] 4

The organization needs to have 14 subnets as shown below:

a. One subnet with 128 IP addresses.
b. Two subnets, each with 32 IP addresses.
c. Two subnets, each with 8 IP addresses.
d. Two subnets, each with 4 IP addresses.

Write subnet mask, first address and last address for each subnet.

ANS:

1.1 Subnets (128): 10.100.ID.0/25 ~ 10.100.ID.127/25

2.1 Subnets (32): 10.100.ID.128/27 ~ 10.100.ID.159/27
2.2 Subnets (32): 10.100.ID.160/27 ~ 10.100.ID.191/27

2.1 Subnets (8): 10.100.ID.192/29 ~ 10.100.ID.199/29
2.2 Subnets (8): 10.100.ID.200/29 ~ 10.100.ID.207/29

2.1 Subnets (4): 10.100.ID.208/30 ~ 10.100.ID.211/30
2.2 Subnets (4): 10.100.ID.212/30 ~ 10.100.ID.215/30