National University of Sciences & Technology

School of Electrical Engineering and Computer Science

Department of Computing

EE 353: Computer Networks (3+1): BSCS-5AB Fall 2017

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| Assignment: 3 | |
| CLO: Apply the knowledge of Computer networking to understand contemporary networking issues | |
| Maximum Marks: 10 | Instructor: Dr. Arsalan Ahmad |
| Announcement Date: 3rd January 2018 | Due Date : 10th January 2018 11:55 pm on LMS |

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**Instructions:**

This is an individual assignment. Fill in your details as listed above. Each student will attempt all the questions in this document and upload the complete document to the course LMS site by the deadline. Please avoid plagiarism; any such case would result in award zero marks both to the “sharer” and the “acquirer”. You may note that submitted assignment would be checked through turnitin that would check similarly with not only internet resources but also with other submitted assignments.

**Tasks:**

**Q1.**

You are designing the network for your new startup company “BSCS5ABNet”. You have the following logical layout where the oval is your router and squares are the hosts. You also need two servers WebServer and FileServer.

WebServer

FileServer

Internet

Net2

Net1

Net3

Assume that each host and server must be assigned a global IP address, how many total IP addresses would you buy from your ISP (the least that can support your network)? Assume the ISP uses CIDR and has the block 210.20.10.0/25. What is the block assignment corresponding to your requirement that the ISP will issue to you? Give the assignment of IP addresses for all the interfaces in the layout diagram (in slash notation). How many IP addresses are left with you after this assignment?

6(hosts+broadcast+net for net1)+10(hosts+broadcast+net for net2)+4(hosts+broadcast+net for net3) =

20 total IP addresses.

**11010000.00010100.00001010.0**0000000 --> **11010000.00010100.00001010.0**0000000 to (subnet 1)

**11010000.00010100.00001010.0**0011111

OR

210.20.10.0/27 to 210.20.10.31/27

--> **11010000.00010100.00001010.0**0100000 to (subnet 2)

**11010000.00010100.00001010.0**0111111

OR

210.20.10.33/27 to 210.20.10.63/27

--> **11010000.00010100.00001010.0**1000000 to (subnet 3)

**11010000.00010100.00001010.0**1011111

OR

210.20.10.64/27 to 210.20.10.95/27

--> **11010000.00010100.00001010.0**1100000 to (subnet 4 not required)

**11010000.00010100.00001010.0**1111111

OR

210.20.10.96/27 to 210.20.10.127/27

*Subnet 1 (one IP address for one host )*

210.20.10.1/27

210.20.10.2/27

210.20.10.3/27

210.20.10.4/27

*Subnet 2 (one IP address for one host )*

210.20.10.33/27

210.20.10.34/27

210.20.10.35/27

210.20.10.36/27

210.20.10.37/27

210.20.10.38/27

210.20.10.39/27

210.20.10.40/27

*Subnet 3*

210.20.10.65/27 (web server)

210.20.10.66/27 (file server)

Wasted addresses(whilst using addresses for broadcasting and net) = 32(for subnet 4) + (32-6)subnet1 + (32-10)subnet2 +(32-4)subnet3 = 108