FAST- National University of Computer and Emerging Sciences, Karachi.

FAST School of Computing

Bonus Assignment, Fall 2023

CS3001- Computer Networks

BONUS ASSIGNMENT (Subnetting)

Submission Guidelines:

- **This is an individual bonus assignment. Student ID and section must be mentioned clearly.**
- **Only HAND WRITTEN submission will be acceptable.**
- **Submission date: Monday, 23rd October 2023 in the lecture room.**
- **This assignment has hard deadline and any late submissions won't be accepted.**

Bonus Assignment (100 points)

Question #1: (40 points)

Identify:

- **Address Class**
- **Default Subnet Mask**
- **Custom Subnet Mask**
- **Total Number of Subnets**
- **Total Number of Host Addresses**
- **Number of Usable Addresses**
- **Number of Bit Borrowed**

For the problems mentioned below. (For each problem you have to show your calculations)

Problem 1:

Number of needed subnets = 14
Number of needed usable hosts = 14
Network Address = 192.10.10.0

Problem 2:

Number of needed subnets = 1000
Number of needed usable hosts = 60
Network Address = 165.100.0.0

Problem 3:

Network Address = 148.75.0.0 /26
(Note: /26 is CIDR Notation that indicates number of bits of network and sub network portion of the address. All bits remaining belong to the host portion of the address)

Question #2: (60 points)

Given below is a scenario in which there is an available IP Pool and IP's are to be assigned to 3 different companies. You have to perform sub-netting to efficiently assign IP's to each company. Show necessary calculations and result.

Following are the 3 Companies

1. Netcom

2. Cyber-Safe

3. CNSP-Zone

- **Netcom has 50 hosts (PCs)**
- **Cyber-Safe has 48 hosts (PCs)**
- **CNSP-Zone has 120 hosts (PCs)**

Available IP Pool is: 192.168.1.0/24 (255.255.255.0)

Your task is to make subnets of the IP given above and assign a range of IP addresses to all of these Companies.