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National University of Computer and Emerging Sciences, Lahore

Campus Quiz .....4 [BCS: Section 5A] Fall 2024

Computer Networks (Code: CS3001) **Quiz Date: October 31, 2024**

Total Marks: 20 **Duration: 20 -Minutes**

Name _____ -- Roll #----- _____

Instructions: Attempt all questions on this sheet. You can make use of a rough sheet (do not attach to this sheet). Cutting/Overwriting will be considered incorrect.

Q1: For each of the following IP address ranges, specify the network address, broadcast address, and maximum number of host IPs available at the space provided in the Table. **[12 Marks] (CLO 3)**

assumption: usable host IPs

CIDR	Network Address	Broadcast Address	Maximum Hosts
192.168.100.0/24	192.168.100.0/24 ✓	192.168.100.255/24 ✓	256 = 2^8 - 2 = 254
100.10.8.0/22	100.10.8.0/22 ✓	100.10.11.255/22 ✓	2^{10} = 1024 - 2 = 1022
202.1.0.0/16	202.1.0.0/16 ✓	202.1.255.255/16 ✓	2^{16} = 65536 - 2 = 65534
101.51.192.0/18	101.51.192.0/18 ✓	101.51.255.255/18 ✓	2^{14} = 16384 - 2 = 16382

Q2: An organization is granted a block of addresses starting with 132.100.24.0/23 (512 addresses). The organization needs to have four sub-blocks of addresses to use in its four subnets. Sub-blocks are designed in such a way that 1st one can accommodate 256 addresses, 2nd can accommodate 128 addresses and remaining two sub-blocks can accommodate 64 addresses each (including network address and broadcast address). With reference to this scenario, answer the following: **[8 Marks] (CLO 3)**

A. Write the subnet mask for each sub-block.

Subnet mask for the 1st sub-block:
255.255.255.0 ✓

Subnet mask for the 2nd sub-block:
255.255.255.128 ✓

Subnet mask for the 3rd sub-block:
255.255.255.192 ✓

Subnet mask for the 4th sub-block:
255.255.255.192 ✓

B. Write the 25th and 50th host address for 1st and 3rd sub-blocks.

25th host address for 1st sub-block:
132.100.24.25 ✓

50th host address for 1st sub-block:
132.100.24.50 ✓

25th host address for 3rd sub-block:
132.100.25.153 ✓

50th host address for 3rd sub-block:
132.100.25.178 ✓

132.100.24.0/23

10000100.01100100.00011000.00000000

A: 132.100.24.0 (network address)

C: 132.100.25.128 (network address)

A: 256 → 0
B: 128 → 1 → 10
C: 64 → 11 → 110
D: 64 → 111