

National University of Computer and Emerging Sciences
Lahore Campus

Computer Networks

(CS3001)

Date: December 06, 2024

Course Instructor

Ms. Saba Tariq

Quiz 5(a)

Total Time (min): 20

Total Marks: 20

Total Questions: 2

Solution

Roll No

Section

Student Signature

Do not write below this line

Attempt all the questions.

Q1: You are the network administrator for a small organization that has been assigned the IP address block 192.168.1.0/24. Your task is to subnet this block to fulfill the following requirements:

1. Department A needs 50 hosts.
2. Department B needs 30 hosts.
3. Department C needs 20 hosts.
4. Department D needs 10 hosts.

$$2^5 = 32$$

- Calculate the subnet mask for each department based on the number of hosts required.
- Assign the appropriate subnet range to each department.
- Provide the **network address**, **broadcast address**, and **usable IP range** for each subnet.
- Ensure that no IP address is wasted and that the subnets do not overlap.

A/

A: Network address: 192.168.1.0/26
Usable IP Range: 192.168.1.1 - 192.168.1.62
Broadcast Address: 192.168.1.63/26
Subnet Mask: 255.255.255.192

B: Network add: 192.168.1.64/27
Usable IP Range: 192.168.1.65 - 192.168.1.94
Broadcast add: 192.168.1.95/27
Subnet mask: 255.255.255.224

C: Network add: 192.168.1.96/27
Usable IP Range: 192.168.1.97 - 192.168.1.126
Broadcast add: 192.168.1.127/27
Subnet mask: 255.255.255.224

D: Network add: 192.168.1.128/28
Usable IP Range: 192.168.1.129 - 192.168.1.142
Broadcast add: 192.168.1.143/28
Subnet mask: 255.255.255.240