Faculty of Computing



**[Computer Communications & Network]**

**Lab No 6 Tasks**

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**Task 1:** Write the IP address 222.1.1.20 mask 255.255.255.192 in CIDR.

Ans: The IP address 222.1.1.20 with a subnet mask of 255.255.255.192 can be expressed in CIDR notation as **222.1.1.20/26**.

This is because the subnet mask 255.255.255.192 corresponds to 26 bits used for the network portion of the address.

**Task 2:** Write is the IP address 135.1.1.25 mask 255.255. 248.0 in CIDR notation.

Ans: The IP address 135.1.1.25 with a subnet mask of 255.255.248.0 can be expressed in CIDR notation as **135.1.1.25/21**. This means the first 21 bits are used for the network portion of the address.

**Task 3:** You have been allocated a class C network address of 201.1.1.0 how may hosts can you have?

Ans: In a Class C network, the default subnet mask is 255.255.255.0, which corresponds to /24 in CIDR notation. This means there are 24 bits for the network and 8 bits for host addresses.

To calculate the number of usable hosts in a Class C network:

1. **Total host bits:** 8 bits
2. **Total addresses:** 28=2562^8 = 25628=256
3. **Subtract network and broadcast addresses:** 256 - 2 = 254

So, you can have **254 usable hosts** in the Class C network 201.1.1.0.

**Task 4:** You have been allocated a class A network address of 21.0.0.0. You need create at least 10 networks and each network will support a maximum of 100 hosts. Would the following two subnet masks Work.

255.255.0.0 and or 255.255.255.0

Ans: **1. Subnet Mask: 255.255.0.0 (/16)**

* **Subnetting:**
  + This subnet mask uses 16 bits for the network portion and 16 bits for the host portion.
  + Number of subnets: 2(16−8)=28=2562^{(16-8)} = 2^8 = 2562(16−8)=28=256 subnets (since the default for Class A is /8)
  + Total host bits: 16
  + Total addresses: 216=65,5362^{16} = 65,536216=65,536
  + Usable hosts per subnet: 65,536−2=65,53465,536 - 2 = 65,53465,536−2=65,534 (subtracting network and broadcast addresses)

**Conclusion:** This mask supports way more than 100 hosts and allows for more than 10 networks.

**2. Subnet Mask: 255.255.255.0 (/24)**

* **Subnetting:**
  + This subnet mask uses 24 bits for the network portion and 8 bits for the host portion.
  + Number of subnets: 2(24−8)=216=65,5362^{(24-8)} = 2^{16} = 65,5362(24−8)=216=65,536 subnets.
  + Total host bits: 8
  + Total addresses: 28=2562^8 = 25628=256
  + Usable hosts per subnet: 256−2=254256 - 2 = 254256−2=254

**Conclusion:** This mask also supports more than 100 hosts and allows for more than 10 networks.

**Task 5:** You have been allocated a Class B network address of 129.1.0.0. You have subnetted it using the subnet mask 255.255.255.0 How many networks can you Have and how many hosts can you place on each network?

Ans: With the Class B network address **129.1.0.0** and a subnet mask of **255.255.255.0 (/24)**:

1. **Number of Networks:**
   * The subnet mask uses 8 bits for subnetting (since it extends from the default /16 to /24).
   * This creates **256 subnets** (282^828).
2. **Hosts per Network:**
   * The remaining 8 bits are used for hosts.
   * Each subnet can accommodate **254 usable hosts** (256−2256 - 2256−2, accounting for the network and broadcast addresses)

* **Total Networks:** 256
* **Usable Hosts per Network:** 254