Cpr E 489 Spring 2023
Homework #4
Due Date: 4/4/2023 (Tue) by 11:59 PM
Type your answers and submit on Canvas

1. (40 points) Suppose a router has the following routing table:

Destination	*Next-Hop Router*
205.36.0.0/16	205.36.0.1
205.36.128.0/19	205.36.128.1
205.36.136.0/21	205.36.136.1
0.0.0.0/0	205.36.1.1

   Describe how the router looks up this routing table and makes the routing decision on where to forward a packet with the following **destination IP address**:
   a. 205.36.140.1;
   b. 205.36.150.2;
   c. 205.77.160.3.
   d. 205.36.170.4

2. (30 points) IP Addresses

   a. A host in an organization has an IP address of 150.160.170.180 with a network mask of "/19. What is the **network address of the subnet** that this IP address belongs to? (5 points) What is the **directed broadcast address of the subnet**? (5 points) What is the **range** of the IP addresses that an **individual** host can have on this subnet? (10 points) Justify your answers.

   b. A host in another organization has an IP address of 200.150.100.50 with a network mask of "/19". What is the **network address of the supernet** that this IP address belongs to? (5 points) **How many Class-C address blocks** does this supernet include? (5 points) Justify your answers.

3. (30 points) An organization is assigned a Class-C network 200.137.66.0 and wants to form subnets for its three departments: D1 (90 hosts), D2 (75 hosts), and D3 (75 hosts). Describe a **possible arrangement of subnets** (i.e., describe the network address and the subnet mask of each subnet) to make this possible. Justify your answer. Note that a department may be assigned multiple subnets; subnets may have different sizes and they shall not overlap.