Exercise series no. 4

Exercise 01

1. Convert the following binary notation to dotted-decimal notation:

    a) 01101111 00111000 00101101 01001110

    b) 11111111 00000000 11111111 00000000

2. Convert from dotted-decimal to binary notation: 129.11.5.27

3. Identify the address classes for the following IP addresses:

    a) 192.168.10.5

    b) 71.224.183.10

    c) 140.25.1.100

    d) 10001111 00001100 11001010 00000000

    e) 00110001 00001011 00000101 00011011

Exercise 02

Assume the IP address of an interface is 128.12.34.71 and the subnet mask is 255.255.240.0 Find the following values:

    a) Subnet address

    b) Host ID

    c) Broadcast address of the subnet

Exercise 03

1. Write the following IP address: 222.1.1.20 with the mask 255.255.255.192 in CIDR notation.

2. Given the IP address of a host: 172.30.0.141/25 in CIDR notation:

    a) Find the network address of the subnet this host belongs to.

    b) What are the valid host addresses within the same subnet?

    c) How many hosts are available within the same subnet?

Exercise 04

A company wants to use the network address 192.168.90.0 for 4 subnets. If the maximum number of hosts per subnet is 25, what subnet mask should be used to solve this problem?

Exercise 05

You have the Class A network address 10.0.0.0. Propose a subnet mask that allows defining at least 500 subnets, each with at least 10,000 host addresses.

Exercise 06

Which IP address belongs to the same subnet as the machine with the IP address 130.12.127.231 if the subnet mask is 255.255.192.0 ?

   a) 130.12.130.1
   b) 130.22.130.1
   c) 130.12.64.23
   d) 130.12.167.127

Exercise 07

A RIP router contains the entries from the table below in its routing table. A RIP update from a neighboring router (145.108.1.9) is received.

What is the new content of the routing table? What is the default route?

Routing table		
Destination	**Distance / Cost**	**Next Hop Router**
134.33.0.0	1	(directly connected)
145.108.0.0	1	(directly connected)
0.0.0.0	1	134.33.12.1
34.0.0.0	4	145.108.1.9
141.12.0.0	3	145.108.1.9

Update received from 145.108.1.9	
Destination	**Distance / Cost**
199.245.180.0	3
34.0.0.0	2
141.12.0.0	4

Exercise 08

The routing table of a RIP router contains the entries in the table below. For each of the following destinations, specify whether it is possible to route to the destination, and if so, specify the next hop.

   a) 202.10.10.12
   b) 201.12.5.28
   c) 203.4.3.11
   d) 202.10.10.33
   e) 202.10.13.100

Router's Routing Table	
Destination	**Next Hop router**
200.1.1.0	Direct connection
201.12.5.27	200.1.1.11
202.10.10.33	200.1.1.12
202.10.13.43	200.1.1.15
201.12.5.0	200.1.1.10
202.10.10.0	200.1.1.11
203.4.0.0	200.1.1.12