

**Computer Networks**  
**2<sup>nd</sup> Year, 1<sup>st</sup> Semester**  
**2020**

**Tutorial 2**

- 1) State the three types of addresses, operating layer and number of bits used to represent the address used in TCP/IP.
- 2) What is the version of the current IP addressing scheme and the version of the next IP addressing scheme that will be using in the future?
- 3) For IP addresses in each class show network bits and host bits by a diagram.

Class A

Class B

Class C

- 4) Write down the ranges of the IP address classes.

Address Class	Range of the first octet
Class A	
Class B	
Class C	
Class D	

- 5) Write the class, net ID and the host ID of the following addresses.

Network Address	Class	Net ID	Host ID	Network address	Broadcast Address
101.2.3.4					
200.20.10.5					
192.168.16.100					
25.10.100.200					
180.2.150.2					

- 6) Find the network address and the subnet mask for the following IP addresses.
  - a. 172.19.67.3
  - b. 205.90.46.234
  - c. 123.65.89.0
- 7) State the type of the following IP addresses.
  - a. 172.16.25.9
  - b. 192.168.89.0
  - c. 127.0.0.90
  - d. 255.255.255.0
  - e. 255.255.255.255
  - f. 0.0.26.8

8. What are two main components of an IP address?

9. Analyze the following IP addresses.

Find out which of the following addresses belong to the same network (no sub-netting / classful IP addressing). Explain why.

- |      |              |              |              |              |
|------|--------------|--------------|--------------|--------------|
| I.   | 123.4.6.2    | 123.4.78.9   | 132.14.56.12 | 123.4.0.0    |
| II.  | 10.0.0.1     | 10.1.1.1     | 10.1.2.2     | 11.0.0.1     |
| III. | 172.16.16.16 | 172.17.16.16 | 173.16.16.16 | 173.16.16.20 |

10. You are given the network address 180.150.0.0; you are required to have 5 subnets. What is the minimum number of Host Bits can you take in to the Network Bits for this purpose?  
Write down the addresses of 5 subnets. (Write in binary where necessary). Write the subnet mask for the network.

11. A company is granted the network address 203.80.64.0 The company needs six subnets. Design the subnets and subnet mask. Also write the first 2 and last 2 IP addresses of the hosts in each of those subnets.

12. Show the 8 subnets obtained by subnetting the address 172.16.0.0/16 , the resulting subnet mask, the corresponding broadcast addresses, and the range of valid host addresses.

13. An organization is granted the block 211.17.180.0 in class C. The administrator wants to create 32 subnets.

- I. Find the subnet mask and the number of addresses in each subnet.
- II. Find the first and the last address in the first subnet.
- III. Find the first and the last address in the last subnet (subnet 31)

14. compute the sub-network address for the following IP addresses, given the subnet mask,

- |      |               |                 |
|------|---------------|-----------------|
| I.   | 201.14.78.65  | 255.255.255.224 |
| II.  | 180.25.21.172 | 255.255.255.192 |
| III. | 18.250.31.14  | 255.254.0.0     |
| IV.  | 10.30.36.12   | 255.255.255.0   |
| V.   | 10.6.24.20    | 255.255.240.0   |

15. Compute the available number of sub networks and possible host addresses in each subnet.

- g. The subnet mask for a class C network is 255.255.255.192
- h. The subnet mask for a class B network is 255.255.224.0
- i. The subnet mask for a class C network is 255.255.255.248
- j. The subnet mask for a class A network is 255.255.248.0

16. RH company has 9 branches in Colombo district. The company network has the network address of 152.16.0.0.

- a. Write subnet addresses which can be given to the branches.
- b. How many hosts can be existed in a branch?
- c. Calculate the total number of available hosts in all the branches.
- d. Write the 10<sup>th</sup> available IP address of the 5<sup>th</sup> branch.
- e. Write the last 4 IP addresses of the 9<sup>th</sup> branch.