Experiment No: 10 (a).

Ex. No. 10. **Configure Host IP, Subnet Mask and Default Gateway in a System in**

LAN (TCP/IP Configuration).

➢ **Aim:**
     To Configure IP Address in a system in LAN (TCP/IP Configuration) and Configure DNS to establish interconnection between systems

➢ **Principle:** Following is required to be study under this practical.

· Classification of IP address

Class A 1.0.0.1 to 126.255.255.254 Supports 16 million hosts on each of 127 networks. **Class B** 128.1.0.1 to 191.255.255.254 Supports 65,000 hosts on each of 16,000 networks. **Class C** 192.0.1.1 to 223.255.254.254 Supports 254 hosts on each of 2 million networks. **Class D** 224.0.0.0 to 239.255.255.255 Reserved for multicast groups.
Class E 240.0.0.0 to 254.255.255.254 Reserved.

· Sub netting
Why we Develop sub netting and How to calculate subnet mask and how to identify subnet address.

· Super netting
Why we develop super netting and How to calculate supernet mask and how to identify supernet address.

Procedure:
(a)   Steps to configure IP address, Subnet mask and Default Gateway:

1. Click on the Start button and select Control Panel then Network and Internet Connections.

2. Click Network and Internet Connections.

3. Right click on the Local Area Connection icon and select Properties.

4. Select Internet Protocol (TCP/IP).

5. Click on the Properties button.

6. Uncheck that Obtain an IP address automatically and Obtain DNS server address automatically and put IP, Subnet mask & Default Gateways.

7. Click on the Advanced button and select the DNS tab in the Advanced TCP/IP Settings window.

8. Ensure that Register this connection's addresses in DNS is not selected.

9. Click OK, OK, then Close to close all boxes.

Result :

Configuration of IP Address in a system in LAN (TCP/IP Configuration) and Configuration to establish interconnection between systems have been done successfully

Experiment No: 10 (b).

Configure Internet connection and use IPCONFIG, PING:

1. Open Command Prompt, and then type ipconfig. From the display of the ipconfig command, ensure that the network adapter for the TCP/IP configuration you are testing is not in a Media disconnected state.

2. At the command prompt, ping the loopback address by typing ping 127.0.0.1.

3. Ping the IP address of the computer.

4. Ping the IP address of the default gateway. If the ping command fails, verify that the default gateway IP address is correct and that the gateway (router) is operational.

5. Ping the IP address of a remote host (a host that is on a different subnet).
If the ping command fails, verify that the remote host IP address is correct, that the remote host is operational, and that all of the gateways (routers) between this computer and the remote host are operational.

6. Ping the IP address of the DNS server.
If the ping command fails, verify that the DNS server IP address is correct that the DNS server is operational, and that all of the gateways (routers) between this computer and the DNS server are operational.

Tracer to debug the network issues

Tracer network:
Open Command Prompt, and type the following:

tracert host_name
Or
tracert ip_address
where host_name or ip_address is the host name or IP address, respectively, of the remote computer.

If you do not want the tracert command to resolve and display the names of all routers in the path, use the
-d parameter. This expedites the display of the path. For example, to trace a path from this computer to www.microsoft.com without displaying the router names, type the

following at a command prompt:

Net stat utilities to debug the network issues:

Displays active TCP connections, ports on which the computer is listening, Ethernet statistics, the IP routing table, IPv4 statistics (for the IP, ICMP, TCP, and UDP protocols), and IPv6 statistics (for the IPv6, ICMPv6, TCP over IPv6, and UDP over IPv6 protocols). Used without parameters, netstat displays active TCP connections

Syntax
netstat [-a] [-e] [-n] [-o] [-p *Protocol*] [-r] [-s] [*Interval*]
Parameters
-a
Displays all active TCP connections and the TCP and UDP ports on which the computer is listening.
-e
Displays Ethernet statistics, such as the number of bytes and packets sent and received. This parameter can be combined with -s.
-n
Displays active TCP connections, however, addresses and port numbers are expressed numerically and no attempt is made to determine names.
-o
Displays active TCP connections and includes the process ID (PID) for each connection. You can find the application based on the PID on the Processes tab in Windows Task Manager. This parameter can be combined with -a, -n, and -p.
-p Protocol
Shows connections for the protocol specified by Protocol. In this case, the Protocol can be tcp, udp, tcpv6, or udpv6. If this parameter is used with -s to display statistics by protocol, Protocol can be tcp, udp, icmp, ip, tcpv6, udpv6, icmpv6, or ipv6.
-s
Displays statistics by protocol. By default, statistics are shown for the TCP, UDP, ICMP, and IP protocols. If the IPv6 protocol for Windows XP is installed, statistics are shown for the TCP over IPv6, UDP over IPv6, ICMPv6, and IPv6 protocols. The -p parameter can be used to specify a set of protocols.

-r
Displays the contents of the IP routing table. This is equivalent to the route print command.
Interval

Redisplays the selected information every Interval seconds. Press CTRL+C to stop the redisplay. If this parameter is omitted, netstat prints the selected information only once.
/?
Displays help at the command prompt

Result:

Thus the Configure Internet connection and use IPCONFIG, PING / Tracer and Net stat utilities to establish interconnection between systems have been done successful