DAYANANDA SAGAR COLLEGE OF ENGINEERING

An **Autonomous Institute** affiliated to **Visvesvaraya Technological University** (VTU)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

22CS52 – COMPUTER NETWORK LAB INTERNAL QUESTION

1. a) A small office has four computers that need to share files through a switch. Design the LAN, assign appropriate IP addresses, configure connections, and verify communication using ping.
   b) A small training center has four computers connected through a hub to share files and communicate.
   Design the network in Cisco Packet Tracer, assign appropriate IP addresses, configure the connections, and verify communication between all computers

2. The Admin and Accounts departments are located on different floors and require network communication. Connect both LANs using a router, assign static IP addresses, and verify inter-department connectivity.

3. Two small offices are located in different network segments and need to communicate with each other.Design the topology in Cisco Packet Tracer using a router to connect the two LANs, assign suitable IP addresses to all devices, configure the router interfaces, and verify end-to-end connectivity using the ping command.

4. A technician wants to compare data transmission using a hub and a switch.
   Create two separate networks in Packet Tracer — one with a hub and one with a switch — and observe how data transfer differs.

5. The network administrator wants to divide the network 192.168.10.0/24 into two subnets for two different departments.Calculate the subnet mask, assign IP addresses, and verify communication between both subnets using routers.

6. A college wants to assign separate subnets for four labs.
   Subnet the network 200.10.10.0 into four subnets and connect them using routers to enable communication across labs.

7. A branch office requires a network that supports at least 32 hosts in the network 220.20.20.0.Determine the correct subnet mask, assign IPs, and test end-to-end communication in Packet Tracer.

8. The IT team wants to automate IP address assignment for multiple computers in a LAN. Configure a DHCP server using a router, verify that each client receives an IP automatically, and display the assigned IP.

9. A network faces a temporary DHCP server failure. Demonstrate how client systems automatically receive an APIPA (169.x.x.x) address when the DHCP server is unavailable.

10. The organization hosts a web server inside its private network and wants it to be accessible externally. Configure Static NAT to map the internal web server IP to a public IP and test connectivity from an external host.

11. Three office branches are connected through routers, and dynamic routing is required. Configure RIP on all routers, verify automatic route updates.

12. Two departments in the same company want to communicate using IP phones instead of landlines. Configure VoIP in Packet Tracer using a router as the Call Manager and establish a voice call between two IP phones.

13. The HR and Admin departments are connected through a network and need internal voice communication. Implement a VoIP setup in Packet Tracer and demonstrate a successful call between IP phones.

14. Demonstrate NAT inside/outside interface configuration for a small organization that connects and translate the address from inside to outside. Show packet flow and address translation between private and public networks.

15. Construct a Client–Server network using Cisco Packet Tracer and analyze the packet flow from the client to the server. Configure appropriate IP addressing and verify the communication

16. Design a network topology in Cisco Packet Tracer to implement and verify Network Address Translation (NAT). Configure NAT to allow devices from a private network to access an external public network and analyze the address translation process.