IBM – Advanced Diploma on IT, Networking and Cloud Computing
Core Module – 02 (PRACTICAL)

1. Crimp a CAT 6 cable using a crimping tool. Describe the steps involved and test the cable for connectivity using a cable tester.
2. Configure a static IP address on a Windows computer. Outline the steps required to complete this task.
3. Set up a basic home network using a router. Describe how to connect multiple devices and ensure they can communicate with each other.
4. Connect a network printer to a LAN. Document the steps involved in configuring it for network access on Windows.
5. Use the Command Prompt to check the IP configuration of a Windows computer. What command do you use, and what information can you find?
6. Change the Wi-Fi password on a home router. Provide the steps to access the router settings and update the password.
7. Perform a factory reset on a router. Describe the steps you would take to reset the device and reconfigure it afterward.
8. Set up a basic firewall on a home router. Explain how to enable and configure firewall settings to enhance security.
9. Install and configure a simple DHCP server in a simulated environment (e.g., Cisco Packet Tracer) and verify that IP addresses are being assigned to devices.
10. Create a simple subnetting scheme for a small office network. Calculate subnet masks and IP address ranges for the subnets.
11. Configure a wireless network using a wireless router. Describe the steps to secure the network with WPA2 encryption.
12. Use a network cable to connect two computers directly. What settings do you need to adjust to allow them to communicate?
13. Document the steps to troubleshoot a basic connectivity issue on a local area network. What tools and commands would you use?
14. Set up a simple peer-to-peer file sharing system between two Windows computers. Describe the steps to enable file sharing.
15. Configure a home network using multiple devices (e.g., PCs, tablets). Explain how to assign unique IP addresses to each device.
16. Set up an access point to extend the range of an existing Wi-Fi network. Describe how to configure it and connect it to the main router.
17. Create a simple network diagram for a home network, including devices like routers, switches, and computers.
18. Identify the types of network cables (e.g., Ethernet, coaxial) used in your home or office. Explain their typical uses.

19. Configure parental controls on a home router. Document the steps to restrict access to specific websites or content.
20. Set up an email client on a computer to send and receive emails. Describe how to configure the email settings correctly.
21. Create VLANs (Virtual Local Area Networks) on a Cisco switch in Packet Tracer. Describe how to verify VLAN configuration and test connectivity between VLANs.
22. Install and configure a DHCP server in Cisco Packet Tracer. Ensure that devices can obtain IP addresses automatically and verify the configuration.
23. Set up FTP services in Cisco Packet Tracer. Create user accounts and demonstrate how to upload and download files.
24. Configure static routing between two routers in a simulated environment. Verify the routing table and test connectivity between the networks.
25. Implement RIP (Routing Information Protocol) in a Cisco Packet Tracer simulation. Explain how to verify that the routes are being advertised.
26. Configure dynamic routing using OSPF (Open Shortest Path First) on a router. Verify the route advertisements and ensure proper communication between routers.
27. Create a simple school network in Cisco Packet Tracer, including a router and three departments (Office, Computer Lab, Accounts). Ensure devices can communicate across departments.
28. Install and configure a DNS service on a Windows Server. Test domain name resolution by creating and accessing a test domain.
29. Set up a secure FTP (SFTP) server on a Linux machine. Demonstrate how to transfer files securely using SFTP clients.
30. Implement port forwarding on a router to allow access to an internal web server. Document the steps and verify that external access works.
31. Implement QoS (Quality of Service) settings on a Cisco router. Describe how to prioritize traffic for VoIP services and demonstrate the configuration.
32. Set up a site-to-site VPN (Virtual Private Network) connection between two Cisco routers. Verify the VPN connection and test secure access to resources.
33. Configure a firewall on a server to restrict access to specific services. Document the rules implemented and test the effectiveness of the firewall.
34. Set up BGP (Border Gateway Protocol) between two routers in a simulated environment. Verify BGP neighbor relationships and route advertisement.
35. Configure and implement HSRP (Hot Standby Router Protocol) on two routers for redundancy. Test the failover functionality to ensure it works correctly.
36. Set up SNMP (Simple Network Management Protocol) on network devices. Demonstrate how to monitor device performance using SNMP tools.

37. Create a load balancer configuration in a simulated environment. Document how it distributes traffic between multiple web servers and verify its functionality.
38. Set up an email server and configure it to handle incoming and outgoing emails. Test sending and receiving emails from multiple clients.
39. Install and configure an IDS/IPS (Intrusion Detection/Prevention System) in a network environment. Explain how to monitor and respond to potential threats.
40. Configure a proxy server to manage internet traffic for a network. Document how it enhances security and controls access to the internet.