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Experiment # 1: Internetworking Basics, Devices and Models. Configuration of TCP/IP Parameters and Troubleshooting Network Connectivity using DOS Networking Utilities.

1. Internetworking Basics and Devices
2. Internetworking Models; OSI Model
3. Network Cables; Categories and Types.
4. TCP/IP Model
5. DHCP Protocol.
6. Static Configuration of TCP/IP Parameters.
7. Dynamic Configuration of TCP/IP Parameters
8. Use *ipconfig* utility to view configured TCP/IP parameters.
9. Use *ping* utility to test TCP/IP communications.
10. Use *arp* command

Experiment # 2: IP Addressing and Subnetting: Establishing Elementary Networks using Hubs, Switches and Routers.

After this experiment, the students shall be able to explain the need and significance of assigning IP addresses statically or dynamically, its associated subnet mask, default gateway, and DNS servers. They shall be able to identify and use hubs, layer-2 switches, routers and layer-3 switches appropriately to establish an elementary network.

Experiment # 3: Point to Point Local Communications and Remote Access Service (RAS)

After this experiment, the students shall know how to connect two computers locally through, cross-over Unshielded Twisted Pair (UTP), Parallel and Serial Cables. They shall also know how to setup and configure the Remote Access Service (RAS) for dial-up modems.

Experiment # 4: Design of Simple and Complex Networks using ConfigMaker Tool

In this experiment students will learn ConfigMaker software tool and use it to design elementary and complex networks using different types of networking components e.g hosts/servers, hubs, switches and routers/gateways.

Experiment # 5: LAN Extension by Bridges and WAN Connectivity by Routers using HDSL Links

In this experiment students will learn the connectivity and configuration issues for a Point-to-point LAN extension by bridges and LANs connectivity over a WAN by routers using HDSL link. Students will have hands-on practice for the configuration of the involved network components i.e. HDSL equipment, bridges and routers.

Experiment # 6: Access Methods, Configuration and Monitoring of Layer-2 Switches

The objective of this experiment is to introduce to the students different types of methods of accesses (CLI, menu and web) and commands of layer-2 switches for the purpose of monitoring and basic configuration of these devices.

Experiment # 7: Configuration of Routers and Establishing Routed Networks

The objective of this experiment is to introduce to the students different access levels and commands of routers for the purpose of monitoring and basic configuration of these devices. They will also be establishing different types of networks with basic backbone connectivity using back-to-back routers.

Experiment # 8: Data Traffic Capture and Protocols Analysis using Sniffer Tool.

After this experiment, students shall be able to know how to use sniffers for capturing data packets and analyze their contents including the details associated with the protocols used.

Experiment # 9: KFUPM Data Network: Study of Real-World Networking Equipment and Servers

The objective of this demonstration is to familiarize students with the real-world network example in order to show them the network components working in place and to give an idea of how the actual networks are designed and maintained.

Experiment # 10: KFUPM Voice Network: Introduction to Voice Switches and Inter-System Links

The objective of this demonstration is to introduce students with the equipment and components of a voice network and explain the connectivity of intersystem links.