

# GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

## COMPUTER NETWORKS LAB

Course Code: GR22A3050

L/T/P/C:0/0/3/1.5

### III Year I Semester

#### Prerequisites:

Basics in Network Models, connectors, Network cables, crimping tool, etc

#### Course Outcomes:

1. Implement the Data link layer framing methods and protocols.
2. Illustrate routing, security and congestion control algorithms,
3. Analyze how network and Internetwork devices are configured using Packet Tracer.
4. Demonstrate Virtual LANs, Network Address Translation and routing protocols.
5. Demonstrate how to connect and monitor IOT devices.

#### Task-1

Implement the following Data Link Layer framing methods

- a) Bit stuffing b) Character-stuffing c) Character count.

#### Task-2

Implement the following Data Link layer protocols

- a) Simplex protocol b) Stop and Wait protocol c) Sliding Window protocol

#### Task-3

Design a program to implement the following:

- a) Shortest Path routing protocol b) Distance Vector routing protocol c) Token Bucket algorithm

#### Task-4

Develop a program to implement the following:

- a) DES algorithm b) RSA algorithm

#### Task-5

a). Configure network devices, such as hubs and switches within a network topology using Packet Tracer software.

b).Construct a single LAN and understand the concepts and operation of ARP.

#### Task-6

a). Configure and implementation of a Switch within a Network using Packet Tracer.

b). Learn and implement basic commands of Computer network like PING, traceroute, nslookup etc.

#### Task-7

a). Configure and implementation of a Router within a Network using Packet Tracer.

b). Configure and examine Network Address Translation (NAT)

#### Task-8

a).Configure network topology to implement VLANs with using Packet Tracer software.

b).Configure network topology and implement static routing using Packet Tracer Software.

**Task-9**

a). Configure network topology and implement dynamic routing protocol such as RIP, OSPF etc. using Packet Tracer.

**Task-10**

a) Configure DHCP Server in the Network using packet tracer software.

b) Configure a remote login using SSH and Telnet.

**Task-11**

a) Establishing a Web Server Connection Using the PC's Web Browser

b) Install Wireshark and view

i). Network Traffic. ii).Wired and wireless NIC information. iii).Examine Ethernet Frames

**Task-12**

a). Adding IoT devices to Smart Homes using Packet Tracer

b). Connect and Monitor IoT Devices using Packet Tracer

**TEXT BOOKS:**

1. Packet Tracer Network Simulator, Jesin A, O'REILLY, Packt Publishing
2. Introduction to Networks Companion Guide (CCNAv7), Cisco Press, Cisco Networking Academy

**REFERENCE BOOKS:**

1. Routing and switching Essentials Companion guide, Cisco Press, Cisco Networking Academy.
2. CISCO PACKET TRACER LABS: Best practice of configuring or troubleshooting Network Kindle Edition, Mulayam Singh.