23CS31P2 – COMPUTER NETWORKS & INTERNET PROTOCOLS LAB

Course Category:	Professional Core	**Credits:**	1.5
Course Type:	Practical	**Lecture-Tutorial-Practical:**	0-0-3
Prerequisite:	Nil	**Sessional Evaluation:** **Univ. Exam Evaluation:** **Total Marks:**	30 70 100
Course Objectives:	**Students undergoing this course are expected:** • To understand the working principle of various communication protocols. • To understand the network simulator environment and visualize a network topology and • observe its performance • To analyze the traffic flow and the contents of protocol frames. • Familiarize with the applications of Internet.		

Course Outcomes:	**Upon successful completion of the course, the students will be able to:**	
	CO1	To understand the working principle of various communication protocols.
	CO2	To understand the network simulator environment and visualize a network topology and
	CO3	observe its performance.
	CO4	To analyze the traffic flow and the contents of protocol frames.
	CO5	Critique the existing routing protocols
Course Content:	**LIST OF EXPERIMENTS:** 1. Implement the data link layer framing methods such as character, character-stuffing and bit stuffing. 2. Write a program to compute CRC code for the polynomials CRC-12, CRC-16 and CRC CCIP 3. Develop a simple data link layer that performs the flow control using the sliding window protocol, and loss recovery using the Go-Back-N mechanism. 4. Implement Dijkastra‘s algorithm to compute the shortest path through a network 5. Take an example subnet of hosts and obtain a broadcast tree for the subnet. 6. Implement distance vector routing algorithm for obtaining routing tables at each node. 7. Implement data encryption and data decryption 8. Write a program for congestion control using Leaky bucket algorithm. 9. Write a program for frame sorting technique used in buffers. 10. Programs using Wireshark	

	i. Packet Capture Using Wire shark ii. Starting Wire shark iii. Viewing Captured Traffic iv. Analysis and Statistics & Filters. 11. How to run Nmap scan 12. Operating System Detection using Nmap 13. Do the following using NS2 Simulator i. NS2 Simulator-Introduction ii. Simulate to Find the Number of Packets Dropped iii. Simulate to Find the Number of Packets Dropped by TCP/UDP iv. Simulate to Find the Number of Packets Dropped due to Congestion v. Simulate to Compare Data Rate& Throughput. vi. Simulate to Plot Congestion for Different Source/Destination vii. Simulate to Determine the Performance with respect to transmission of Packets
Text Books & References Books:	**Reference Books:** 1. Andrew S.Tanenbaum, David j.wetherall, Computer Networks, 6th Edition, PEARSON. 2. James F.Kurose, Keith W. Ross, Computer Networking: A Top-Down 6th edition, Pearson, 2019. **3.** Computer Networks: A Systems Approach-Bruce Davie, VMware-Larry Peterson, Princeton University-2019.
E-Resources:	1. Computer Networks–B. K. MathanNagan, T. Mahalakshmi- Charulatha Publications PrivateLimited-2019. 2. Computer Networks-Dr.Amol V. Dhumane Nitin N. Sakhare-NiraliPrakashan Publishers-2024 3. Data Communications and Networking with TCPIP Protocol Suite-Behrouz A. Forouzan- McGraw Hill-6th Edition