



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned				
		L	T	P	L	T	P	Total	
CEL921	PG Laboratory –III (Network Analysis and Design Laboratory)	--	--	2	--	--	1	1	
		Examination Scheme							Total
		ISE		ESE			20		
		40		Practical		Oral		60	

Pre-requisite Course Codes	Computer Networks, CE921(Network Analysis and Design)	
At the end of successful completion of the course, students will be able to		
Course Outcomes	CO1	Classify network services, protocols and architectures, explain why they are layered.
	CO2	Choose key Internet applications and their protocols, and apply to develop their own applications using the sockets API.
	CO3	Clarify develop effective communication mechanisms using techniques like connection establishment, queuing theory, recovery Etc.
	CO4	Clarify various congestion control techniques.

Exp. No.	Experiment Details	Ref.	Marks
1	PART A: Implement the following using C/C++: 1. Write a program to transfer the contents of a requested file from server to the client using TCP/IP Sockets (using TCP/IP Socket programming). 2. Write a program to archive Traffic management at Flow level by implementing Closed Loop Control technique. (Leaky Bucket Algorithm) 3. Write a program to implement dynamic routing strategy in finding optimal path for data transmission. (Bellman ford algorithm). 4. Write a program to implement Link State Routing (Dijkstra Algorithm). 5. Write a program for implementing the error detection technique while data transfer in unreliable network code using CRC (16-bits) Technique. 6. Write a program for providing security for transfer of data in the network. (RSA Algorithm) 7. Write a program for encrypting 64 bit playing text using DES algorithm.	1,2	20



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2	PART B: Simulation Programs using OPNET /NS2 or any other equivalent software 1. Simulate a 3 node point to point network with duplex links between them. Set the Queue size and vary the bandwidth and find the number of packets dropped. 2. Simulate a four-node point-to-point network, and connect the links as follows: n0->n2, n1->n2 and n2->n3. Apply TCP agent changing the parameters and determine the number of packets sent/received by TCP/UDP 3. Simulate the different types of internet traffic such as FTP and TELNET over network and analyze the throughput.	1,2,3	20
Total Marks			40

References:

- [1] **Douglas E Comer**, "Internetworking with TCP/IP, Principles, Protocols and Architecture" 6th Edition, PHI - 2014
- [2] **Uyless Black** "Computer Networks, Protocols , Standards and Interfaces" 2nd Edition - PHI
- [3] **Behrouz A Forouzan** "TCP/IP Protocol Suite" 4th Edition – Tata McGraw-Hill
- [4] **Larry Peterson and Bruce S Davis** "Computer Networks :A System Approach" 5th Edition, Elsevier -2014