

Subject Title : <b>NETWORKS LAB</b>		
Subject Code : CSL58	No. of Credits : =0 : 0 : 1.5 (L-T-P)	No of Lecture Hour/week : 3
Exam Duration : 3 Hours	CIE + SEE = 50 + 50 =100	Total No. of Contact Hours :

Course Objectives:

1. To understand the fundamental concepts of simulation of communication networks
2. To evaluate the UDP, TCP protocols through simulation
3. To analyze the algorithms for congestion control, shortest path routing, error checking and correction
4. To understand and evaluate the parameters to be configured for wired and wireless communication.
5. To apply socket programming and implement client-server communication.

<b>PART – A</b>	
1	Simulate a three nodes point-to-point network with duplex links between them. Set the queue size, vary the bandwidth and find the number of packets dropped.
2	Simulate a four node point-to-point network with the links connected as follows: n0 – n2, n1 – n2 and n2 – n3. Apply TCP agent between n0-n3 and UDP between n1-n3. Apply relevant applications over TCP and UDP agents changing the parameter and determine the number of packets sent by TCP / UDP.
3	Simulate an Ethernet LAN using n nodes (6-10), change error rate and data rate and compare throughput.
4	Simulate an Ethernet LAN using n nodes and set multiple traffic nodes and determine collision across different nodes.
5.	Simulate simple ESS and with transmitting nodes in wire-less LAN by simulation and determine the performance with respect to transmission of packets.
6.	Simulate the transmission of ping messages over a network topology consisting of 6 nodes and find the number of packets dropped due to congestion.
<b>PART – B</b>	
7	<b>Implement the following in C/C++:</b> Write a program for error detecting code using CRC-CCITT (16- bits).
8	Write a program for distance vector algorithm to find suitable path for transmission.
9	Write a program for congestion control using leaky bucket algorithm.
10	From a given vertex in a weighted connected graph, find shortest paths to other vertices using Link state algorithm.

11	Using TCP/IP sockets, write a client - server program to make the client send the file name and to make the server send back the contents of the requested file if present
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**Course Outcomes:**

- CO1: Understand the simulation of communication networks and measure and evaluate the error rate, throughput, data rate, packet drop.
- CO2: Understand and analyze the transport layer protocols.
- CO3: Analyze the algorithms for congestion control, shortest path routing, error checking and correction.
- CO4: Evaluate the parameters to be configured for wired and wireless communication
- CO5: Apply the knowledge of socket programming.

COs	Mapping with POs
CO1	PO1,PO2,PO3,PO4,PO5
CO2	PO1,PO2,PO3,PO4,PO5
CO3	PO1,PO2,PO3,PO4,PO5
CO4	PO1,PO2,PO3,PO4,PO5
CO4	PO1,PO2,PO3,PO4,PO5

**Note:**

**Simulation Exercises:**

**Experiments 1 to 6 shall be conducted using either NS-2/OPNET or any other suitable simulator**

In the examination, a combination of one problem has to be asked from Part A for a total of 25 marks and one problem from Part B has to be asked for a total of 25marks. The choice must be based on random selection from the entire lots.