COMPUTER NETWORKS - CSA07

COURSE SYLLABUS

CSA07   **COMPUTER NETWORKS**   **3 0 2 4**

Prerequisite: NIL

Course Objectives

The course on Computer Networks aims to provide the students with the following:
1. Knowledge on different network topology, mode of network communication and various types of network devices deployed between source and destination systems
2. Understand how seamless communication happens in a MPLS and ATM networks.
3. Create systems under various subnets and route packets between them using appropriate protocols.
4. Efficient management of congestion in a network based on various transport layer protocols, using different service mechanisms and QoS Parameters.
5. Understand and configure application layer protocols such as RTP, RTCP, RSVP, DHCP and DNS for ease of operation of networks.

Course Outcomes

On successful completion of the course, the student will be able to:

1. Demonstrate the different types of network topology using network devices with appropriate cables.
2. Analyze the operating mechanisms of various data link layer technologies.
3. Demonstrate different routing protocols and IP addressing schemes in heterogeneous networks.
4. Develop and deploy socket based applications using TCP, UDP and improve QoS with Congestion control algorithms.
5. Configure and implement various application layer protocols.
6. Design different aspects of networks, protocols and network design models using Simulation Tools.

LIST OF EXPERIMENTS

S.No.	Experiment	CO
1.	Configuration of Network Devices using Packet Tracer tools (Hub, Switch, Ethernet, Broadcast).	CO1
2.	Design and Configuration of Star Topologies using Packet Tracer.	CO1
3.	Design and Configuration of BUS Topologies using Packet Tracer.	CO1
4.	Design and Configuration of RING Topologies using Packet Tracer.	CO1
5.	Design and Configuration of Mesh Topologies using Packet Tracer.	CO1
6.	Design and Configuration of Tree Topologies using Packet Tracer.	CO1
7.	Design and Configuration of Hybrid Topologies using Packet Tracer.	CO1
8.	Data Link Layer Traffic Simulation using Packet Tracer Analysis of ARP.	CO2
9.	Data Link Layer Traffic Simulation using Packet Tracer Analysis of LLDP.	CO2
10.	Data Link Layer Traffic Simulation using Packet Tracer Analysis of CSMA/CD & CSMA/CA.	CO2
11.	Designing two different networks with Static Routing techniques using Packet Tracer.	CO3
12.	Designing two different networks with Dynamic Routing techniques (RIP & OSPF) using Packet Tracer.	CO3
13.	Design the Functionalities and Exploration of TCP using Packet Tracer.	CO4
14.	Design the Functionalities and Exploration of UDP using Packet Tracer.	CO4
15.	Design the network model for Subnetting – Class C Addressing using Packet Tracer.	CO3
16.	Simulating X, Y, Z Company Network Design and simulate using Packet Tracer.	C05
17.	Configuration of DHCP (dynamic host configuration protocol) in packet Tracer.	CO4
18.	Configuration of firewall in packet tracer.	C05
19.	Make a Computer Lab to transfer a message from one node to another to design and simulate using Cisco Packet Tracer.	CO5
20.	Simulate a Multimedia Network in Cisco Packet Tracer.	CO4
21.	IoT based smart home applications.	CO3
22.	Implementation of IoT based smart gardening.	CO2
23.	Implementation of IoT devices in networking.	CO4
24.	IOT Based Smart building using WPA Security & Radius Server.	CO4
25.	Transport layer protocol header analysis using Wire shark- TCP	CO4
26.	Transport layer protocol header analysis using Wire shark- UDP	CO4

27.	Network layer protocol header analysis using Wire shark – SMTP	CO5
28.	Network layer protocol header analysis using Wireshark - ICMP	CO3
29.	Network layer protocol header analysis using Wire shark – ARP	CO2
30.	Network layer protocol header analysis using Wire shark – HTTP	CO5
31.	Identify and monitor the IP, network address, Trace the router information, how to take remote system and check the node connection in network	CO5
32.	Demonstration of PING operation using ICMP in Wireshark	CO3
33.	Implementation of Bit stuffing mechanism using C.	CO2
34.	Implementation of server – client using TCP socket programming.	CO4
35.	Implementation of server – client using UDP socket programming.	CO4