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

Sl.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.	Implementation of Bit stuffing mechanism using C	**CO2**
12.	To design the two different network with Static Routing techniques using Packet Tracer	**CO3**
13.	To design the Network with Dynamic Routing using Packet Tracer (Distance vector & OSPF)	**CO3**
14.	Design the Functionalities and Exploration of TCP using Packet Tracer	**CO4**
15.	Design the Functionalities of Exploration UDP using Packet Tracer	**CO4**
16.	Design the network model for Subnetting – Class C Addressing using packet tracer	**CO4**
17.	Implementation of server – client using TCP socket programming	**CO4**
18.	Implementation of server – client using UDP socket programming	**CO4**
19.	Simulating X, Y, Z Company Network Design and simulate using Packet Tracer	**C06**

20.	Configuration of DHCP (dynamic host configuration protocol) in packet tracer	**CO4**
21.	Configuration of firewall in packet tracer.	**C05**
22.	Make a Computer Lab to transfer a message from one node to another to design and simulate using Cisco Packet Tracer	**CO6**
23.	Transport layer protocol header analysis using Wireshark- TCP	**CO4**
24.	Network layer protocol header analysis using Wireshark - SMTP	**CO3**
25.	Network layer protocol header analysis using Wireshark - ICMP	**CO3**
26.	Transport layer protocol header analysis using Wireshark - UDP	**CO4**
27.	Network layer protocol header analysis using Wireshark - ARP	**CO2**
28.	Network layer protocol header analysis using Wireshark - HTTP	**CO5**
29.	Identify and monitor the IP, network address, Trace the router information, how to take remote system and Check the node connection in network.	**CO4**
30.	Demonstration of PING operation using ICMP in Wireshark	**CO3**