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**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** |
| --- | --- |
|  | **Configuration of Network Devices using Packet Tracer tools Hub, Switch, Ethernet and Broadcast** |
|  | **Design and Configuration of Star Topologies using Packet Tracer** |
|  | **Design and Configuration of BUS Topologies using Packet Tracer** |
|  | **Design and Configuration of RING Topologies using Packet Tracer** |
|  | **Design and Configuration of Mesh Topologies using Packet Tracer** |
|  | **Design and Configuration of Tree Topologies using Packet Tracer** |
|  | **Design and Configuration of Hybrid Topologies using Packet Tracer** |
|  | **Data Link Layer Traffic Simulation using Packet Tracer Analysis of ARP** |
|  | **Data Link Layer Traffic Simulation using Packet Tracer Analysis of LLDP** |
|  | **Data Link Layer Traffic Simulation using Packet Tracer Analysis of CSMA/CD & CSMA/CA** |
|  | **To design the two different network with Static Routing techniques using Packet Tracer** |
|  | **To design the Network with Dynamic Routing using Packet Tracer (Distance vector & OSPF)** |
|  | **Design the Functionalities of TCP using Packet Tracer** |
|  | **Design the Functionalities of UDP using Packet Tracer** |
|  | **Design the TCP Exploration Solution using Packet Tracer** |
|  | **Design the UDP Exploration Solution using Packet Tracer** |
|  | **Design the network model for Subnetting – Class C Addressing using packet tracer** |
|  | **Simulating X, Y, Z Company Network Design and simulate using Packet Tracer** |
|  | **Make a Computer Lab to transfer a message from one node to another to design and simulate using Cisco Packet Tracer** |
|  | **Transport layer protocol header analysis using wire shark- TCP** |
|  | **Network layer protocol header analysis using wire shark- IP** |
|  | **Network layer protocol header analysis using wire shark- ICMP** |
|  | **Transport layer protocol header analysis using wire shark- UDP** |
|  | **Network layer protocol header analysis using wire shark- ARP** |
|  | **Network layer protocol header analysis using wire shark- HTTP** |
|  | **Implementation of TCP Echo reply** |
|  | **Implementation of UDPLite** |
|  | **Implementation of ARTNET** |
|  | **Implementation of Aruba IAP Packet Capture** |
|  | **Implementation of SMTP** |
|  | **Implementation of DNS Server** |
|  | **Implementation of Post Office Protocol** |
|  | **Implementation of Border Gateway Protocol(BGP) using Cisco Packet Tracer** |
|  | **Implementation of Telnet on Router in Cisco Packet Tracer** |
|  | **Implementation of Configuration of Http server in Cisco Packet Tracer** |
|  | **Implementation of Wireshark - WLAN** |
|  | **Implementation of Wireshark - FTP** |
|  | **Implementation of IGMP using Wireshark** |
|  | **Configuring RIP** |
|  | **Configuring Cisco Router as a DHCP Server** |

**INTERNAL EXAMINER EXTERNAL EXAMINER**