COMPUTER NETWORKS
Course Code: 16CS308

Module 1

Overview of the Internet: Protocol, Layering Scenario,TCP/IP Protocol Suite: The OSI Model, Internet history standards and administration; Comparison of the OSI and TCP/IP reference model.

Physical Layer: Introduction to Guided transmission media and wireless transmission media. Transmission mode, Classification of networks. Parallel & Serial Transmissions, Analog & Digital Signals, Periodic & Aperiodic Signals, Nyqvist criteria and Shannon theorem Modulation---Amplitude Modulation, Frequency Modulation, Phase Modulation

Data Link Layer – Design issues, CRC codes, Elementary Data Link Layer Protocols, stop and wait, sliding window, go-back-N protocols .

Module 2

Multi Access Protocols – ALOHA, CSMA, Collision free protocols, Ethernet-Physical Layer, Ethernet Mac Sub layer, data link layer switching & use of bridges, learning bridges, spanning tree bridges, repeaters, hubs, bridges, switches, routers and gateways.

Module 3

Network Layer: Network Layer Design issues, store and forward packet switching connection less and connection oriented networks-routing algorithms-optimality principle, shortest path, flooding, Distance Vector Routing, Control to Infinity Problem, Hierarchical Routing, Congestion control algorithms, admission control.

Module 4

The Internet Transport Protocols: UDP,RPC, Introduction to TCP, The TCP Service Model, The TCP Segment Header, The Connection Establishment, The TCP Connection Release, The TCP Connection Management Modelling, The TCP Sliding Window, The TCP Congestion Control, The future of TCP.

Module 5

Application Layer– Introduction, providing services, Applications layer paradigms, Client server model, Standard client-server application-HTTP, FTP, electronic mail, TELNET, DNS, SSH, SNMP. Socket Programming.