IV/IV B.TECH. SECOND SEMESTER

TCP/IP (Elective- IV)

Course Code: CS8T3B **Credits: 3**
Lecture: 3 periods/week **Internal assessment: 30 marks**
Tutorial: 1 period /week **Semester end examination: 70 marks**

Prerequisite : Computer Networks

Course Objectives :

1. This course provides a solid foundation for understanding the communication process of the Internet.
2. The student will understand the fundamental concepts of computer networking in the context of the TCP/IP model and protocols.
3. To study classful and classless addressing, IPV4,IPv6, UDP, TCP, congestion control and flow control.

Course Outcomes :

At the end of this course student will:

CO1) Summarize basic principles of IPv4 and its Addressing mechanisms

CO2) Understand UDP Services and Applications in Transport Layer

CO3) Describe the services, and features of TCP

CO4) Discuss various Flow , Error and Congestion control mechanisms of TCP

CO5) Understand the Principles of IPv6 Addressing ,IPv6 and ICMPv6 Protocols

Syllabus

UNIT – I

The OSI Model and the TCP/IP Protocol Suite - Protocol Layers, The OSI Model, TCP/IP Protocol suite and Addressing.**IPV4 Addresses**- Introduction, Classful and Classless Addressing, **Internet Protocol Version4(IPv4)** – Datagrams, Fragmentation, Options, Checksum, Security, IP Package.

UNIT- II

Introduction to the Transport Layer – Transport Layer Services and Protocols. **User Datagram Protocol(UDP)** – Introduction, User Datagram, UDP Services and Applications, UDP Package.

UNIT – III

Transmission Control Protocol – I : TCP Services, Features, Segment, TCP Connection, Windows in TCP.

UNIT – IV

Transmission Control Protocol – II : Flow Control, Error Control, Congestion Control, TCP Timers, Options and TCP Package.

UNIT – V

IPv6 Addressing – Introduction, Address Space Allocation, Global Unicast Addresses, Autoconfiguration and Renumbering. **IPv6 Protocol -** Introduction , Packet Format, Transition from IPv4 to IPv6. **ICMPv6 -** Introduction, Error Messages, Informational Messages, Neighbor-Discovery Messages, Group Membership Messages.

Learning Resources

Text Book :

1. TCP/IP Protocol Suite , Behrouz A. Forouzan, 4th Edition, Tata McGraw-Hill Edition.