III B.Tech I Semester

15ACS20-COMPUTER NETWORKS

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Course Objectives:

- *Study the evolution of computer networks and future direction*
- *Study the concepts of computer networks from layered perspective*
- *Study the issues open for research in computer networks*

UNIT -I

Data Communications, Network, Business and Home applications of Computer Network, Internet history, Standards and Administration, Network hardware, Network Software: Protocol Hierarchies- Design Issues for the Layers- Connection-Oriented Versus Connectionless Service, Reference Models. Data and Signals, Periodic Analog Signals, Digital Signals, Transmission Impairment, Data rate Limits, Performance, Circuit-Switched Networks, Packet Switching, Guided Transmission Media.

UNIT -II

Data Link Layer Design Issues, Error Detection and Correction, Elementary Data Link Protocols, Sliding Window Protocols, The Channel Allocation Problem, Multiple Access Protocols, Ethernet

UNIT -III

Data Link Layer Switching, Routing algorithms: The Optimality Principle-Shortest path Algorithm-Flooding-Distance Vector Routing-Link State Routing-Hierarchical RoutingBroadcast Routing-Multicast Routing-Anycast Routing, Congestion Control Algorithms.

UNIT -IV

Internetworking, The Network Layer in the Internet: The IP Version 4 Protocol- IP AddressesIP Version 6- Internet Control Protocols- Label Switching and MPLS-OSPF-BGP, Elements of Transport Protocols, Congestion Control: Desirable bandwidth Allocation-Regulating the Sending Rate.

UNIT –V

The Internet Transport Protocols: UDP, The Internet Transport Protocols: TCP, World Wide Web and HTTP, FTP, Electronic Mail, TELNET, Secure Shell (SSH), Domain Name System (DNS).

Course Outcomes:

- *Use appropriate transmission media to connect to a computer network and Internet*
- *Work on the open issues for their project*
- *Start using the Internet effectively*

Able to design new protocols for computer network

TEXT BOOKS:

1. Andrew S. Tanenbaum, David J.Wetherall, "Computer Networks", Pearson Education, 5th ed., ISBN 978-81-317-8757-1
2. Behrouz A. Forouzan, "Data Communications and Networking", McGraw Hill Education, 5th ed., ISBN 978-1-25-906475-3.

REFERENCES:

1. Douglas E. Comer, "Internetworking with TCP/IP – Principles, protocols, and architecture- Volume 1", 5th ed., PHI
2. Peterson, Davie,"Computer Networks", 5th ed., Elsevier.
3. Chawan- Hwa Wu, Irwin,"Introduction to Computer Networks and Cyber Security", CRC Publications. Computer Networks and Internets with Internet Applications, Comer