

DCS-1-01T: Data Communication and Networks

Total Marks: 100

External Marks: 70

Internal Marks: 30

Credits: 4

Pass Percentage: 40%

Course: Data Communication and Networks	
Course Code: DCS-1-01T	
Course Outcomes (COs)	
After the completion of this course, the students will be able to:	
CO1	Understand the fundamental concepts in data communication and networking
CO2	Explore real-world applications of principles of network design, topology, and the OSI/TCP/IP model
CO3	Develop the ability to identify and formulate problems related to computer network
CO4	Apply networking knowledge to design and configure basic computer networks, addressing schemes and Routing Protocols
CO5	Describe the basic concepts, principles, and techniques for the development of networks and trouble shooting

Section A

Module	Module Name	Module Content
Module I	Basic concepts	Basic Concepts: Components of data communication, modes of communication, standards and organizations, Network Classification, Network Topologies; Transmission media, network protocol; layered network architecture.
Module II	Models	Models: Overview of OSI reference model; TCP/IP protocol suite. Physical Layer: Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway; Transmission impairments.
Module III	Data Link Layer, Network Layer and Transport Layer	Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA. Virtual Circuits and Datagram approach, IP addressing methods – Sub netting; Routing Algorithms (adaptive and non-adaptive) Elements of transport protocols - Addressing, Connection establishment and release, Flow control and buffering, Transport services, Transport Layer protocol of TCP and UDP.

Module VI	Session Layer, Presentation Layer, Application Layer and Network Security	Session Layer: Design issues, remote procedure call. Presentation Layer: Design issues, Data compression techniques, Cryptography Common Terms, Firewalls, Virtual Private Networks
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Books

<ol style="list-style-type: none"> 1. B.A. Forouzan, “Data Communication and Networking”, 4th Ed., Tata McGraw Hill, 2017. 2. A. S. Tanenbaum, “Computer Networks”, 5th Ed., Pearson, 2011 3. D.E. Comer, “Internetworking with TCP/IP”, vol. I, PHI, 2015 4. W. Stalling, “Data & Computer Communication”, 8th Ed., PHI, 2013 5. D. Bertsekas, R. Gallager, “Data Networks”, 2nd Ed., PHI, 1992
