

CCCS-1-01T: Data Communication and Networks

Total Marks: 100

External Marks: 70

Internal Marks: 30

Credits: 4

Pass Percentage: 40%

Objective

Objective of this paper is to explain the basic Data Communication and Computer Networks.

Section A

Unit I: Basic concepts: Components of data communication, modes of communication, standards and organizations, Network Classification, Network Topologies; Transmission media, network protocol; layered network architecture.

Unit II: 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.

Unit III: Data Link Layer: Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.

Unit IV: Network Layer: Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive)

Section B

Unit V: Transport Layer: Elements of transport protocols – Addressing, Connection establishment and release, Flow control and buffering, Transport services, Transport Layer protocol of TCP and UDP.

Unit VI: Session and Presentation Layer: Session Layer – Design issues, remote procedure call. Presentation Layer – Design issues, Data compression techniques, Cryptography.

Unit VII: Application Layer: Application layer protocols and services – Domain name system, HTTP, E-mail, WWW, telnet, FTP, SMTP.

Unit VIII: Network Security: Common Terms, Firewalls, Virtual Private Networks.

Suggestive Readings

1. B.A. Forouzan: Data Communication and Networking, 4th Edition, Tata McGraw Hill, 2017.
2. A. S. Tanenbaum, Computer Networks, 5th Edition, Pearson, 2011
3. D.E. Comer, Internetworking with TCP/IP, Vol. I, Prentice Hall of India, 2015
4. W. Stalling, Data & Computer Communication, 8th edition, Prentice Hall of India, 2013
5. D. Bertsekas, R. Gallager, Data Networks, 2nd edition, Prentice Hall of India. 1992