CORE COURSE XIX: DATA COMMUNICATION & NETWORKS

SEMESTER	COURSE CODE	HOURS PER WEEK	CREDIT	EXAM HRS
VI	6B19BCA	3	3	3

COURSE OUTCOME

CO1: Understand the basics of datacommunication
CO2: Familiarize with OSI referencemodel
CO3: Familiarize students with layers of communicationmodel
CO4: Understand the concepts of networksecurity

Unit I

Introduction to data communication, important elements /components of data communication, Data transmission- Analog, Digital. Transmission media- Guided media, Unguided media. Synchronous / Asynchronous data transmission.Line configuration – Simplex, Half duplex, Duplex.Network topologies – star, Bus, ring, Mesh.Computer networks, Use, network hardware, network structure- point to point connection, multicast, broadcast, classification of networks-LAN, WAN, Man. Network software – protocol hierarchies. design issues for layers, interfaces and services- connection oriented, connection less.

(12Hrs)

Unit II:

Reference models, the OSI reference model, TCP / IP reference model. Comparison between OSI and TCP / IP models.Data Link Layer, Design issues, Services to network layer, Framing- character count, character stuffing, bit stuffing, physical layer coding violation. Error control, flow control, Elementary data link protocols- unrestricted simplexprotocol,simplexstopandwaitprotocol,simplexprotocolforanoisychannel.

(12Hrs)

Unit III:

Network layer, design issues, services to the transport layer, routing algorithms- adaptive, non-adaptive algorithms, optimality principle, dijkstras shortest path routing algorithm, flow based routing, hierarchical routing, congestion control algorithms – the leaky bucket algorithm, the token bucketalgorithm.

(10Hrs)

Unit IV

Transport layer, design issues, connection management-addressing, establishing and releasing connection, transport layer protocols- TCP,UDP

(10Hrs)

Unit V

Application layer, network security, traditional cryptography, substitution ciphers, transposition ciphers, fundamental principles, secret key algorithm, dataencryption standard, DES chaining, DES breaking.Public key algorithm, RSAalgorithm.

(10Hrs)

Books for Study:

1. Computer Networks, Andrew S. Tanenbaum& David J. Wetherall, Pearson.

Books for Reference:

1. Data Communication and Networking, Behrouz A. Forouzan, McGraw Hill Education.
2. Achyut S. Godbole and AtulKahate, Data communication and Networks, 2nd Ed, McGraw Hill
3. Computer Networking: A Top-Down Approach, Kurose James F. and Ross Keith W., Pearson.
4. R. S. Rajesh, K. S. EaswaraKumar and R. Balasubramanian, Computer Networks – Fundamentals and Applications, VikasPublishing House.

Marks including choice:

Unit	Marks
1	12
2	12
3	12
4	12
5	12