BHAGWAN MAHAVIR UNIVERSITY

Effective From (2022-2023)

MASTER OF COMPUTER APPLICATION (MCA)

Semester: I

Subject Code	Subject Title	Teaching Scheme					
		(Hours/Week)		Credits	Examination Marks		Total Marks
		Theory	Tutorial		Internal	External	
2050302103	Computer Networks	3	0	3	40	60	100

Duration of Exam: 2:30 Hours

Objective of the course:

- To equip the students with basics concept of Computer Networks.
- To familiarize the students with the standard models for the layered approach OSI and TCP/IP to communication between machines in a network and the protocols of the various layers.
- To gain basic insight of programming for network solutions.

Course Outcomes:

Upon completion of the course, the student shall be able:

Sr. No.	CO statement	Marks % weightage
CO-1	Understand concepts of networking and gain the knowledge of the functions of each layer in the OSI and TCP/IP reference model.	20
CO-2	Identify the components required to build different types of networks	25
CO-3	Obtain the skills of subnetting and routing mechanisms.	25
CO-4	Have a working knowledge of datagram	20
CO-5	Trace the flow of information from one node to another node in the network	10

Detail Content:

Sr. No.	Topic	Total Hrs.
1	**Introduction to Computer Networks** Computer Network Applications, Personal Area Network, Local Area Networks, Metropolitan Area Networks, Wide Area Networks, Internetworks, Network software, protocol hierarchies, Design issues for the layers, Reference Models , Open System Interconnection (OSI), TCP/IP Reference models	9
2	**Physical Layer and Data Link Layer** Maximum Data Rate of a Channel, Guided Transmission Media, Magnetic Media, Twisted Pairs, Coaxial Cable, Fiber Optics, Wireless Transmission, Electromagnetic Spectrum, Radio Transmission, Microwave Transmission. **Data Link Layer** Duties of Data Link Layer, Error Detection and Correction Techniques	10
3	**The Network Layer** Introduction, Duties of Network Layer, Design issues, Routing algorithms: Optimality principle, shortest path routing, Flooding, distance vector routing, The Network layer in the Internet (Ipv4 Protocol, Addresses, Ipv6, Internet Control Protocols.	11
4	**The Transport Layer** Introduction, Duties of Transport Layer, Congestion Control, Error control, flow control Comparison with Data Link Layer, Connection Management at Transport Layer	9
5	**The Application Layer** Introduction, Domain Name System: Name Space, Registration Process, Name Servers, Dynamic DNS, WWW and HTTP, Bluetooth	7

Reference Books:

1. Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, Fourth Edition
2. Kurose and Ross, Computer Networking- A Top-Down approach, Pearson, 5th edition
3. Larry L. Peterson, Bruce S. Davie, “Computer Networks: A Systems Approach”, Morgan Kaufmann Publishers, Fifth Edition, 2011.
4. Fred Halsall, Computer Networking and the Internet, Addison Wesley, (5th edition)

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