

GUJARAT TECHNOLOGICAL UNIVERSITY

MASTER OF COMPUTER APPLICATION (COURSE CODE-6)

Year – II (Semester – IV) (W.E.F. 2013-14)

Subject: Fundamentals of Networking (FON)

Subject Code: 2640001

Learning Objectives:

- To introduce the basics of Computer Networks
- To understand the functionality of each layer of OSI and TCP/IP models and interactions between them
- To gain basic insight of programming for network solutions

Prerequisites:

C Programming, Basic Knowledge of Linux OS, Java Programming (Core Java)

Course Contents:

Unit No.	Title	Weightage
1	Introduction to Computer Networks Need to share resources, Concepts of Layering, Distributed System and Networks, Prerequisites, Definition, Categories and Components, Connections, Layers and Services, Applications of Computer Networks, Data Communication Fundamentals- Introduction, Frequency and Band, Analog and Digital Signals and Transmission, Coding Mechanism, Modulation, Multiplexing and De-multiplexing, TDM, FDM, Switching and Routing, Transmission and Errors	20
2	Physical Layer Introduction, Duties of Physical Layer, Infrared and Millimeter Waves, ISM Bands, Optical Lights and Free Space Optics, Wired Physical Layer, Wireless Physical Layer	20
3	The Data Link Layer Duties of Data Link Layer, The Error, The Protocols	10
4	The Medium Access Sub layer Introduction, Wired MAC Layer, The LLC Layer, Wireless MAC, The MAC Layer, The Generic Frame Structure, Connecting Device at Data Link Layer, Virtual LAN.	15
5	The Network Layer Introduction, Duties of Network Layer, Connection Oriented	15

	Forwarding using Virtual Circuits, Connection Less Forwarding using Datagram, Connection Oriented Vs Connectionless Forwarding, Forwarding Examples, Routing Algorithms, Congestion, Network Layer Switching	
6	The Transport Layer Introduction, Duties of Transport Layer Connection Management at Transport Layer, Congestion Control, Comparison with Data Link Layer	10
7	The Application Layer Introduction, Domain Name System: Name Space, Registration Process, Name Servers, Resource Records, Types of Resource Records, Dynamic DNS, WWW and HTTP, Bluetooth	10

Text Book (Theory):

1. Bhushan H Trivedi ,“Computer Networks”, Oxford University Press

Other Reference Book (Theory):

1. Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, Fourth Edition
2. Andrew S. Tanenbaum, "Computer Networking", Prentice Hall, Fourth Edition

Chapter Wise Coverage from Text Book:

Unit No.	Topics/Subtopics	No of Lectures
1	1.1,1.2.1,1.2.2,1.2.3,1.2.4,1.2.5,1.2.6,1.2.7,1.2.8.1.2.10,1.3 2.1 to 2.4 3.1, 3.2, 3.3,3.4, 3.5, 3.6, 3.8,3.9,3.10,3.11, 3.12	9
2	4.1 to 4.7.10	8
3	5.1.1 to 5.1.2, 5.2.1 to 5.2.11, 5.3.1 to 5.3.10	05
4	6.1 to 6.6, 6.8, 6.11	10
5	7.1 to 7.7,7.11, 7.12	07
6	8.1 to 8.5	05
7	9.1, 9.2.1 to 9.2.5, 9.3.1 to 9.3.9, 9.12.1 to 9.12.8	04
	Total Number of Lectures	48

Students are not required to reproduce the entire algorithms/protocol code in the theory exam for any protocols and routing algorithms. Concepts based on these algorithms/protocols should be asked in theory exam.