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Future Vision

By K B Hemanth Raj

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DATA COMMUNICATION (Effective from the academic year 2018 -2019) SEMESTER – IV			
Course Code	18CS46	CIE Marks	40
Number of Contact Hours/Week	3:0:0	SEE Marks	60
Total Number of Contact Hours	40	Exam Hours	03
CREDITS –3			
Course Learning Objectives: This course (18CS46) will enable students to:			
<ul style="list-style-type: none"> • Comprehend the transmission technique of digital data between two or more computers and a computer network that allows computers to exchange data. • Explain with the basics of data communication and various types of computer networks; • Demonstrate Medium Access Control protocols for reliable and noisy channels. • Expose wireless and wired LANs. 			
Module 1			Contact Hours
Introduction: Data Communications, Networks, Network Types, Internet History, Standards and Administration, Networks Models: Protocol Layering, TCP/IP Protocol suite, The OSI model, Introduction to Physical Layer-1: Data and Signals, Digital Signals, Transmission Impairment, Data Rate limits, Performance. Textbook1: Ch 1.1 to 1.5, 2.1 to 2.3, 3.1, 3.3 to 3.6 RBT: L1, L2			08
Module 2			
Digital Transmission: Digital to digital conversion (Only Line coding: Polar, Bipolar and Manchester coding). Physical Layer-2: Analog to digital conversion (only PCM), Transmission Modes, Analog Transmission: Digital to analog conversion. Textbook1: Ch 4.1 to 4.3, 5.1 RBT: L1, L2			08
Module 3			
Bandwidth Utilization: Multiplexing and Spread Spectrum, Switching: Introduction, Circuit Switched Networks and Packet switching. Error Detection and Correction: Introduction, Block coding, Cyclic codes, Checksum, Textbook1: Ch 6.1, 6.2, 8.1 to 8.3, 10.1 to 10.4 RBT: L1, L2			08
Module 4			
Data link control: DLC services, Data link layer protocols, Point to Point protocol (Framing, Transition phases only). Media Access control: Random Access, Controlled Access and Channelization, Introduction to Data-Link Layer: Introduction, Link-Layer Addressing, ARP IPv4 Addressing and subnetting: Classful and CIDR addressing, DHCP, NAT Textbook1: Ch 9.1, 9.2, 11.1, 11.2 11.4, 12.1 to 12.3, 18.4 RBT: L1, L2			08
Module 5			
Wired LANs Ethernet: Ethernet Protocol, Standard Ethernet, Fast Ethernet, Gigabit Ethernet and 10 Gigabit Ethernet, Wireless LANs: Introduction, IEEE 802.11 Project and Bluetooth. Other wireless Networks: Cellular Telephony			08

Textbook1: Ch 13.1 to 13.5, 15.1 to 15.3, 16.2	
RBT: L1, L2	
Course Outcomes: The student will be able to :	
<ul style="list-style-type: none"> • Explain the various components of data communication. • Explain the fundamentals of digital communication and switching. • Compare and contrast data link layer protocols. • Summarize IEEE 802.xx standards 	
Question Paper Pattern:	
<ul style="list-style-type: none"> • The question paper will have ten questions. • Each full Question consisting of 20 marks • There will be 2 full questions (with a maximum of four sub questions) from each module. • Each full question will have sub questions covering all the topics under a module. • The students will have to answer 5 full questions, selecting one full question from each module. 	
Textbooks:	
<ol style="list-style-type: none"> 1. Behrouz A. Forouzan, Data Communications and Networking 5E, 5th Edition, Tata McGraw-Hill, 2013. 	
Reference Books:	
<ol style="list-style-type: none"> 1. Alberto Leon-Garcia and Indra Widjaja: Communication Networks - Fundamental Concepts and Key architectures, 2nd Edition Tata McGraw-Hill, 2004. 2. William Stallings: Data and Computer Communication, 8th Edition, Pearson Education, 2007. 3. Larry L. Peterson and Bruce S. Davie: Computer Networks – A Systems Approach, 4th Edition, Elsevier, 2007. 4. Nader F. Mir: Computer and Communication Networks, Pearson Education, 2007. 	