

ANNEXURE-1

MCA 1.1 FUNDAMENTALS OF COMPUTERS

Unit – I

Computer Graphics: Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem Solving Using Computers.

Data Representation: Representation of Characters in Computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error Detecting Codes.

Input / Output Units: Description of Computer Input Units, Other Input Methods, Computer Output Units.

Computer Memory: Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to Construct memories, Magnetic Hard Disk, Floppy Disk Drives, Compact Disk Read Only Memory (CDROM), Magnetic Tape Drive.

Unit – II

Processor: Structure of Instructions, Description of a Processor, A Machine Language Program, An Algorithm to Simulate the Hypothetical Computer.

Computer Architecture: Interconnection of Units, Processor to Memory Communication, I/O to Processor Communication, Interrupt Structures, Bus Architecture of Personal Computers, Multiprogramming, Processor Features, Reduced Instruction Set Computers (RISC), Virtual Memory.

Programming Languages: Why Programming Language?, Assembly Language, High Level Programming Languages, Compiling High Level Language Program, Some High Level Languages.

Operating System: Why Do We Need an Operating System?, Batch Operating System, Multiprogramming Operating System, Time Sharing Operating System, Other Facilities Provided by Operating Systems, Personal Computer Operating System, The UNIX Operating System, Microkernel based Operating System, On – line and Real – time Systems.

Unit – III:

Microcomputers: An Ideal Microcomputer, An Actual Microcomputer, Memory Systems for Microcomputers, A Minimum Microcomputer Configuration, Evolution of Microcomputers, Special Purpose Microprocessors, Special Purpose

Microcomputer Software, Special Purpose Applications of Microcomputers, Smart Cards and RFID.

Computer Generations and Classifications: First Generation of Computers, The Second Generation, The Third Generation, The Fourth Generation, The Fifth Generation, Moore's Law, Classification of Computers, Distributed Computer System, Parallel Computers.

Voice and Data Communications: Types of Communications with and Among Computers, Characteristics of Communication Channels, Allocation of Channel, Physical Communication Media, Public Switched Telephone Networks, Multiplexing Techniques in Wireless Communication, Cellular Communication System, Establishing Communication Paths, ATM Networks.

Computer Networks: Need for Computer Communication Networks, Internet and the World Wide Web, Communication Protocols, Local Area Networks, Token Ring Local Area Network, Interconnecting Networks, The Future of Internet Technology.

Unit – IV

Computer Graphics: Computer Graphics Applications, Display Devices, Overview of Display Method, Raster Scan Display Processing Unit, Input Devices for Interactive Graphics, Programmers' Model of Interactive Graphics Systems, Image Acquisition and Storage, Storage Formats for Pictures, Image Acquisition with a Digital Camera.

Multimedia Data Acquisition and Processing: Capturing a Moving Image with a Video Camera, Compression of Video Data, MPEG Compression Standard, Acquiring and Storing Audio Signals, Audio Signal Processing, Speech Processing.

Emerging Computing Environments: Current Computing Scenario, Peer to Peer Computing, Grid Computing, Cloud computing, Utility Computing.

Prescribed Book:

Fundamentals of Computers, by V.Rajaraman, PHI, Fifth Edition, April 2010.

Reference Book:

Fundamentals of computers , E.Balagurusamy, TMH, second reprint 2010.

Chapters: 1, 2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17.