6. C and Data Structures: A Snap Shot oriented Treatise with Live examples from Science and Engineering, NB Venkateswarlu & EV Prasad, S Chand, 2010.

II Year – II SEMESTER

T	P	C
3+1	0	3

COMPUTER ORGANIZATION

Objectives: Comprehensive knowledge of computer system including the analysis and design of components of the system

UNIT I :
Objectives: Gives a view of computer system from user's perspective, representation of data
BASIC STRUCTURE OF COMPUTERS : Computer Types, Functional unit, Basic Operational concepts, Bus structures,
Data Representation: Data types, Complements, Fixed Point Representation. Floating – Point Representation. Other Binary Codes, Error Detection codes.

UNIT II :
Objectives: Understanding RTL, Micro operations, ALU, Organization of stored program computer, types of instructions and design of basic components of the system
REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS: Register Transfer language. Register Transfer Bus and memory transfers, Arithmetic Micro operations, logic micro operations, shift micro operations, Arithmetic logic shift unit.
BASIC COMPUTER ORGANIZATION AND DESIGN : Instruction codes, Computer Register Computer instructions, Timing and control, Instruction cycle, Memory – Reference Instructions. Input – Output and Interrupt, Design of basic computer, Design of Accumulator Logic.

UNIT III :
Objectives: Illustration of data paths and control flow for sequencing in CPUs, Microprogramming of control unit of CPU
CENTRAL PROCESSING UNIT : General Register Organization, STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.
MICRO PROGRAMMED CONTROL : Control memory, Address sequencing, micro program example, design of control unit

UNIT IV :
Objectives: Illustration of algorithms for basic arithmetic operations using binary and decimal representation
COMPUTER ARITHMETIC : Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – point Arithmetic operations. Decimal Arithmetic unit, Decimal Arithmetic operations.

UNIT V :
Objectives: Description of different parameters of a memory system, organization and mapping of various types of memories
THE MEMORY SYSTEM : Memory Hierarchy, Main memory, Auxiliary memory, Associative Memory, Cache Memory, Virtual Memory.

UNIT-VI
Objectives: Describes the means of interaction devices with CPU, their characteristics, modes and introduction multiprocessors.
INPUT-OUTPUT ORGANIZATION : Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupts, Direct memory Access.
MULTI PROCESSORS : Introduction, Characteristics or Multiprocessors, Interconnection Structures, Inter processor Arbitration.

TEXT BOOKS :
1. Computer System Architecture, M.Moris Mano, 3rd Edition, Pearson/PHI
2. Computer Organization , Carl Hamacher, Zvonks Vranesic, SafeaZaky, 5th Edition, McGraw Hill.
3. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition Elsevier

REFERENCES :
1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI