

4TH SEMESTER

BCS-203

COMPUTER ORGANIZATION –1 (3-1-0) Cr.-4

Module-I

Introduction: (05 Period)

Basic Organization of Computers, Classification Micro, Mini, Mainframe and Super Computer. System Bus and Interconnection, PCI, Computer Function, I-Cycle, Interrupt and Class of Interrupts, Von-Neumann M/c: Structure of IAS.

Computer Arithmetic: (05 Period)

Data Representation: Fixed Point Representation, Floating Point Representation. Addition and Subtraction, Multiplication Algorithm, Division Algorithm, Floating Point Arithmetic Operation, Decimal Arithmetic Operation,

CPU Organization: (05 Period)

Fundamental Concepts: Fetching and storing a word in Memory, Register Transfer, Performing an Arithmetic & Logic Operation, Execution of a Completes, Branching.

Module-II

General Register Organization: (13 Period)

Control word, Examples of Microsoft, Stack Organisation, Register Stack, Memory Stack, RPN, Evaluation of Arithmetic Expression using RPN, Instruction Format: Three Address, Two Address, One Address and Zero Address Instruction, Addressing Modes: Types of Addressing modes, Numerical Examples, Program Relocation, Compaction, Data Transfer & Manipulation: Data transfer, Data Manipulation, Arithmetic, Logical & Bit Manipulation Instruction, Program Control: Conditional Branch Instruction, Subroutine, Program Interrupt, Types of Interrupt, RISC & CISC Characteristic. Control Unit Operation: Hardware Control & Micro Programmed Control, Introduction to Pipelining.

Module-III

Input/Output Organization: (9 Period)

Peripheral Devices, Input – output Interface, I/O Bus, Interface Module, Asynchronous Data Transfer, Strobe Control, Handshaking, Asynchronous Serial Transfer, Asynchronous Communication Interface, Modes of Transfer: Programmed I/O, Interrupt Driven I/O, Direct Memory Access (DMA), DMA Controller, I/O Channel & Processor.

Priority Interrupt: Daisy Chaining Priority, Parallel Priority Interrupt.

Module-IV

Memory Organization:

(13 Period)

Computers Memory System Overview, Characteristics of Memory System, The Memory Hierarchy, Semi Conductor Main Memory types, Organisation, Memory cell Operation. Cache Memory: Cache Principles, Elements of Cache Design, Cache Size, Mapping function, Replacement Algorithm, LRU, FIFO, LFU, Write policy. Number of Caches: Single versus two level caches, Pentium Cache Organisation. Associative Memory: Hardware Organisation, Match Logic. Read Operation, Write Operation, Auxiliary Memory: Magnetic Disks, Magnetic Tape. Virtual Memory: Paging, Paging h/w, Address Mapping using pages, Segmentation h/w, Demand Paging, Memory Management h/w.

Text Books:

1. Computer Organization & Architecture – William Stallings, 7th Edition, PHI
2. Computer System Architecture : Morris Mano, 3rd Edition, PHI

Reference Books:

1. Computer Organization – by V.Carl Hamacher, Z.G.Vranesic, and S.G.Zaky, 5th Edition. McGraw Hill,
1. Computer Architecture and Organization, by - John P. Hayes, 3rd Edition, Mc Graw Hill International Editions.
2. Computer Organization & Design, (3rd Edition) by – D.A.Patterson & J.L.Hennessy – Morgan Kaufmann Publishers (Elseviers)
4. Computer Architecture and Parallel Processing – Hwang And Briggs_Mcgraw Hill 1985.

BCS-204

DATABASE ENGINEERING (3-1-0)

Cr.-04

Module – I

(10 Lectures)

Database System Architecture – Data Abstraction, Data Independence, Data Definitions and Data Manipulation Languages.

Data models- Entity Relationship (ER), Mapping ER Model to Relational Model, Network, Relational and Object Oriented Data models, Integrity Constraints and Data Manipulation Operations.

Module – II

(08 Lectures)

Relation Query Language, Relational Algebra, Tuple and Domain Relational Calculus, SQL and QBE.