COMPUTER ORGANIZATION
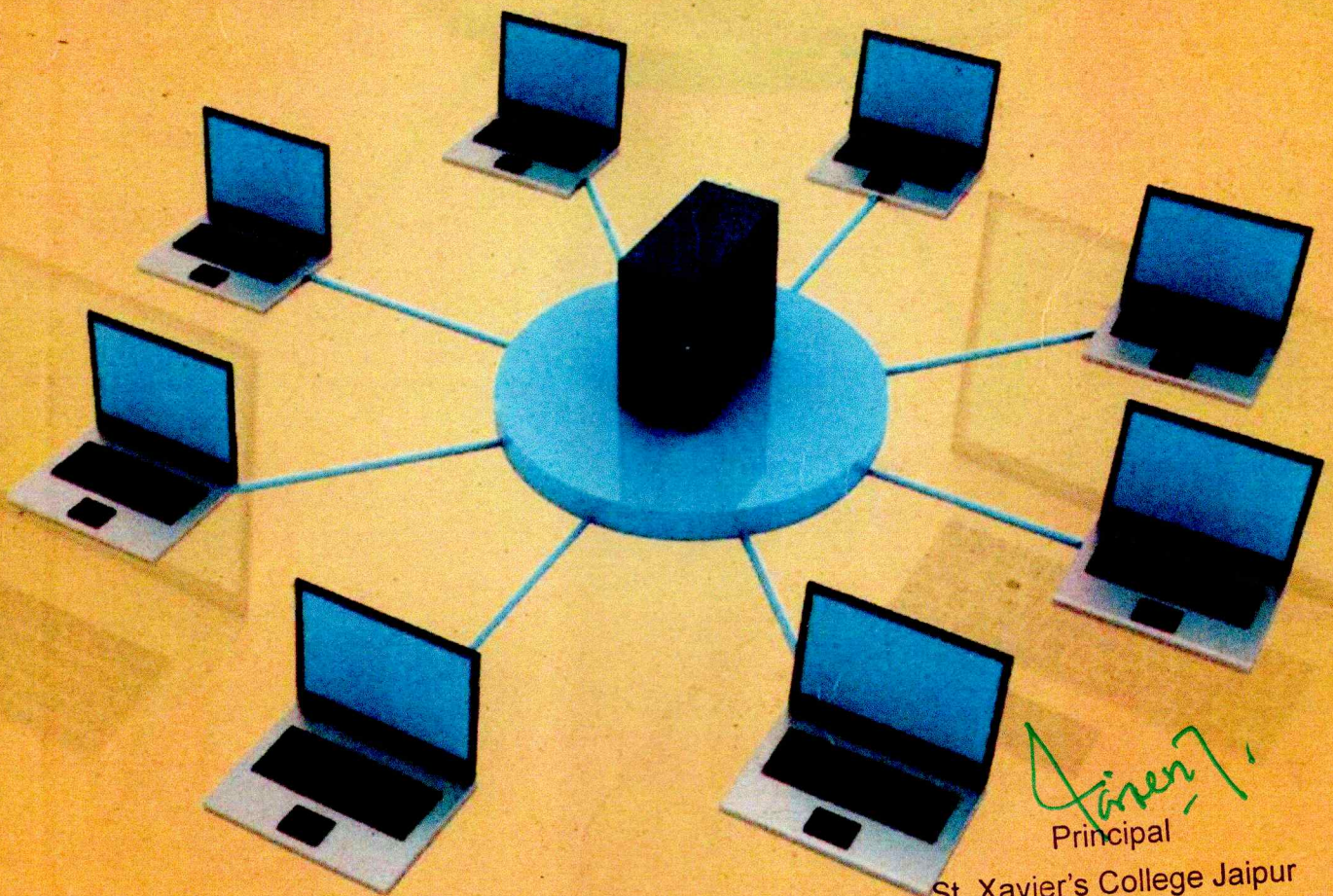

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COMPUTER ORGANIZATION

BCA-105

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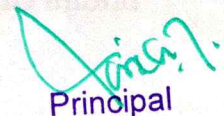Assistant Professor
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PREFACE

We are highly glad in bringing out the first edition of the book covering the topics of Computer Organization.

The objective of this need based book is to explain the system of Computer Organization (CO), in an easy to understand language to the students of University of Rajasthan for BCA Part I and the other related courses of UG and PG level of other universities also.

The text, Written in this book is extensively designed for various universities students. Most of the text in this book is based on the lecture notes, which the authors have been using for many years in class room teaching work. We have tried to give more and more examples and figures so that students can easily understand the basic concepts. All suggestions for the improvement of the book shall be thankfully acknowledged.

We are grateful to **Dr. R.N. Jat (Convenor, Computer Deptt., University of Rajasthan)** for his motivation and support.

The publisher **M/s. Jaipur Publishing house (JPH)** deserves special thanks for their painstaking efforts in bringing out this book in such an excellent manner.

We are also thankful to our family members, friends and well-wishers who given their valuable support and suggestions in writing this book.

—**Authors**

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Syllabus
UNIVERSITY OF RAJASTHAN
BCA105: COMPUTER ORGANIZATION

Max Marks: 100

UNIT- I

Computer System History and Architecture development von Neumann machine, Mother Board, System clock, Bus (Data, Address Control), Bus architecture (ISA, MCA, EISA, PCI, AGP), Expansion slots and cards (Network adapter cards, SCSI card, Sound card, TV tuner card, PC card), Ports (Serial Parallel, AGP, USB Fire Wire), cables (RS 232, BIN), Input devices Output devices , Storage devices, random versus sequential access, formatting, tracks and sectors, speed, storage capacity, Floppy Disk, Hard Disk tracks, cylinders, sectors; Hard Drive Interfaces Optical Disks , Magnetic tape, Modern (Fax/Data/Voice).

UNIT-II

Basic building blocks – I/O, Memory, ALU and its components, Control Unit and its functions, Instruction –word, Instruction and Execution cycle, branch, skip, jump and shift instruction, Operation of control registers; Controlling of arithmetic operations, Classification of Computers (Workstation, Mainframe, Super Computer, Client Server Computer, Notebook, Tablet, PalmTop Computer)

UNIT-III

Basics of Computer organization; system buses and instructions cycles, memory subsystem organization; system buses and instruction cycles, memory subsystem organization and interfacing, I/O subsystem organizations and interfacing, Register transfer languages.

CPU design : specifying a CPU, design and implementation of a simple CPU (fetching instructions from memory, decoding and executing instructions, establishing required data paths, design of ALU, design of the control unit and design verification), design and implementation of a simple micro sequencer, Features of Pentium microprocessors.

UNIT-IV

Addressing techniques and registers:

Addressing techniques – Direct, Indirect, Immediate, Relative, Indexed addressing and paging. Registers – Indexed, General purpose, Special purpose, overflow, carry, shift, scratch, Memory Buffer register; accumulators; stack pointers; floating point; status information and buffer registers. Memory: Main memory, RAM, static and dynamic, ROM, EPROM, EEPROM, EAROM, Cache and Virtual memory.

UNIT- V

Interconnecting System components:

Buses, Interfacing buses, Bus formats – address, data and control, Interfacing keyboard, display, auxiliary storage devices and printers. I/O cards in personal computers.

Introduction to Microprocessors and Microcontrollers: introduction to 8085 micropocesor, examples of few instructions to understand addressing techniques. Difference between microprocessor and microcontrollers, RISC v/s CISC.

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