

# AMCS-22 PC ORGANIZATION

## UNIT-1 BASIC STRUCTURE OF COMPUTERS

- 1.1 Computer Types, Functional unit, Basic OPERATIONAL concepts,
- 1.2 Bus structures, Software, Performance, multiprocessors and multi computers.
- 1.3 Data Representation. Fixed Point Representation. Floating
- 1.4 Point Representation. Error Detection codes.

## UNIT-2 REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS

- 2.1 Register Transfer language. Register Transfer Bus and memory transfers,
- 2.2 Arithmetic Micro operations, logic micro operations, shift micro operations,
- 2.3 Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions- Instruction cycle.
- 2.4 Memory- Reference Instructions. Input- Output and Interrupt.
- 2.5 STACK organization. Instruction formats. Addressing modes.
- 2.6 DATA Transfer and manipulation.
- 2.7 Program control. Reduced Instruction set computer.

## UNIT-3 MICRO PROGRAMMED CONTROL

- 3.1 Control memory, Address sequencing, microprogram example,
- 3.2 Design of control unit Hard wired control.
- 3.3 Microprogrammed control

## UNIT-4 COMPUTER ARITHMETIC

- 4.1 Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating
- 4.2 Point Arithmetic operations.
- 4.3 Decimal Arithmetic unit Decimal Arithmetic operations.

## UNIT-5 THE MEMORY SYSTEM

- 5.1 Basic concepts semiconductor RAM memories.
- 5.2 Read-only memories Cache memories performance considerations,
- 5.3 Virtual memories secondary storage.
- 5.4 Introduction to RAID.

## UNIT-6 INPUT-OUTPUT ORGANIZATION

- 6.1 Peripheral Devices, Input-Output Interface,
- 6.2 Asynchronous data transfer Modes of Transfer,
- 6.3 Priority Interrupt Direct memory Access,
- 6.4 Input- Output Processor (IOP) Serial communication;
- 6.5 Introduction to peripheral component, Interconnect (PCI) bus.
- 6.6 Introduction to standard serial communication protocols like RS232, USB, IEEE1394.

## UNIT-7 PIPELINE AND VECTOR PROCESSING

- 7.1 Parallel Processing, Pipelining, Arithmetic Pipeline,  
7.2 Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

### **UNIT-8 MULTI PROCESSORS**

- 8.1 Characteristics of Multiprocessors,  
8.2 Interconnection Structures,  
8.3 Interprocessor Arbitration.  
8.4 InterProcessor Communication and Synchronization Cache Coherence.  
8.5 Shared Memory Multiprocessors.

#### **References Books:**

1. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
3. Fundamentals of Computer Organization and Design, – Sivarama Dandamudi Springer Int. Edition.
4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, Fourth Edition Elsevier

