
**NH – 67, Karur – Trichy Highways, Puliyur C.F, 639 114 Karur District**

# M.C.A. (MASTER OF COMPUTER APPLICATIONS)

## SEMESTER III

## MC9232 - MICROPROCESSORS AND ITS APPLICATIONS

## COURSE MATERIAL

## ANNA UNIVERSITY CHENNAI SYALLABUS

## M.C.A - MASTER OF COMPURTER APPLICATIONS

## SEMESTER III

## MC9232 MICROPROCESSORS AND ITS APPLICATIONS

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### UNIT I THE 8086 PROCESSOR - SOFTWARE ASPECTS 11

Evolution of Microprocessors - 8086 architecture – Addressing modes- Instruction set and assembler directives – Assembly language programming – Interrupts and interrupt service routines.

### UNIT II 8086 SYSTEM DESIGN 10

8086 signals description – Basic configurations - System bus timing –System design using 8086 – Minimum mode /Maximum modes 8086 system and timings.

### UNIT III INTERFACING CONCEPTS 10

Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications.

### UNIT IV ADVANCED PROCESSORS 7

Intel 80286 – Internal Architectural – Register Organization – Internal Block Diagram – Modes of operation – Real Address Mode – Protected Virtual Address mode – Privilege – Protection - Architectural features and Register Organization of i386, i486 and Pentium processors.

### UNIT V BUILDING SYSTEMS 7

Bus Concepts – Bus Standards –The Peripheral Component Interconnect (PCI) Bus – Universal Serial Bus (USB) – Platform Architectures.

Total=45

**REFERENCES:**

1. A. K. Ray & K. M. Bhurchandi, "Advanced Microprocessors and peripherals- Architectures, Programming and Interfacing", TMH, 2002 reprint.

2. Barry B. Brey, "The Intel Microprocessors, 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, PentiumPro Processor, PentiumII, PentiumIII, PentiumIV, Architecture, Programming & Interfacing", 6th Edition, Pearson Education/PHI, 2002.

3. Yu-cheng Liu, Glenn A. Gibson, "Microcomputer systems: The 8086/8088 Family architecture, Programming and Design", PHI 2003.

4. Peter Abel, "IBM PC Assembly language and programming", Prentice Hall of India Pvt. Ltd.

5. Websites of latest processors.

## BASICS OF MICROPROCESSORS

**Microprocessor:**

The Central Processing Unit (CPU) of a microcomputer. CPU on a single chip.

**Microprocessor Development System:**

A tool for designing and debugging both hardware and software for microcomputer-based system.

**Microprocessor-Halt DMA:** Data transfer is performed between the microcomputer's memory and a peripheral device either by completely stopping the microprocessor or by a technique called cycle stealing.

**Microprogramming:** The microprocessor can use microprogramming to design the instruction set. Each instruction in the Instruction register initiates execution of a micro program stored typically in ROM inside the control unit to perform the required operation.

**Monitor:** Consists of a number of subroutines grouped together to provide "intelligence" to a microcomputer system. This intelligence gives the microcomputer system the capabilities for debugging a user program, system design, and displays.

**Multiplexer:**

A hardware device which selects one of n input lines and produces it on the output.

**Multiprocessing:** The process of executing two or more programs in parallel, handled by multiple processors all under common control. Typically each processor will be assigned specific processing tasks.

**Multitasking:** Operating system software that permits more than one program to run on a single microprocessor. Even though each program is given a small time slice in which to execute, the user has the impression that all tasks (different programs) are executing at the same time.

**Multiuser:** Describes a computer operating system that permits a number of users to access the system on a time-sharing basis