

University of Mumbai			
Class: T.E.	Branch: Computer Engineering	Semester: V	
Subject: Microprocessor (Abbreviated as MP)			
Periods per Week (each 60 min)	Lecture	04	
	Practical	02	
	Tutorial	--	
		Hours	Marks
Evaluation System	Theory	03	100
	Practical and Oral	--	25
	Oral	---	--
	Term Work	---	25
	Total	03	150

Module	Contents	Hours
1	Introduction to Intel 8085 Microprocessor: Basic functions of the microprocessor, System bus, Architecture, Pin Configuration and Programmer's model of Intel 8085 Microprocessor. Overview of the instruction groups of 8085 and the addressing modes. (No programming based on 8085).	06
2	Intel 8086 Architecture: Major features of 8086 processor, 8086/88 CPU Architecture and the pipelined operation, Programmer's Model and Segmented Memory.	04
3	Instruction Set of 8086 and Programming: Instruction Set of 8086 microprocessor in details, Addressing modes of 8086/88, Programming the 8086 in assembly language, Mixed mode programming with C-language and assembly.	06
4	Designing the 8086 CPU module: 8086 pin description in details, Generating the 8086 System Clock and Reset Signals, 8086 Minimum and Maximum Mode CPU Modules, Minimum and Maximum Mode Timing Diagrams, Interrupt Structure, Interrupt Processing and the Predefined interrupts in 8086 Processor.	06
5	Peripheral Controllers for 8086 family and System Design: Functional Block Diagram and description, Control Word Formats, Operating Modes and Applications of the Peripheral Controller namely 8255-PPI, 8253-PIT, 8259-PIC and 8237-DMAC. Interfacing of the above Peripheral Controllers. Keyword and Display Interface using 8255. Memory Interfacing: SRAM, ROM and DRAM (using a typical DRAM Controller such as Intel 8203). System Design based on the Memory and Peripherals	14
6	Multiprocessor Systems: Study of Multiprocessor Configurations namely Tightly	06

	Coupled System (TCS) and Loosely Coupled System (LCS), TCS with the case study of the Coprocessor, Various System Bus Arbitration Schemes in LCS, and Role of the Bus Arbiter (Intel 8289) in the LCS.	
7	I/O Buses and Standards: The EIA RS-232C Serial Interface Standard and IEEE-488 GPIB Standard.	02

Term work:

Term work shall contain minimum 10 experiments (from the list given below) and 03 assignments and at least one term test on the above syllabus.

A mini-project based on the syllabus to be taken by group of students and is desirable but not mandatory.

(a) Term work and the journal:

- Assembly Language Programming based on TASM/MASM- 03 experiments.
- Assembly Language Programming using BIOS/DOS interrupts- 02 experiments.
- Mixed Language Programming- 02 experiments,
- Peripheral Interfacing and applications- 05 experiments.

The journal shall also contain at least 03 assignments on the syllabus/ beyond syllabus.

Maximum weightage for the certified journal = 10 Marks in the Term work. the Term work.

(b) Term test:

Test can be a mid-term test of 50 marks (preferably preliminary examination of 100 marks at the end of the semester).

Maximum weightage for the test = 10 Marks in the Term work.

(c) Attendance:

Minimum 75% attendance is mandatory for the student to maintain the term.

Maximum weightage for the attendance = 05 Marks in the Term work.

Practical examination:

Practical examination is based on the experiments carried out in the term work and may contain the other experiments based on the concepts. Necessary data sheets/control word formats will be available to the students at the time of the practical examination

Oral examination:

Oral examination is based on the entire syllabus and may not be restricted to the practical carried out in the practical examination.

List of reference books:

- 1) Microprocessor architecture and applications with 8085: By Ramesh Gaonkar (Penram International Publication).
- 2) 8086/8088 family: Design Programming and Interfacing: By John Uffenbeck (Pearson)

Education).

- 3) 8086 Microprocessor Programming and Interfacing the PC: By Kenneth Ayala
- 4) Microcomputer Systems: 8086/8088 family Architecture, Programming and Design: By Liu & Gibson (PHI Publication).
- 5) Microprocessor and Interfacing: By Douglas Hall (TMH Publication).