



# C.U.SHAH UNIVERSITY – WADHWAN CITY

**FACULTY OF:** -Technology and Engineering (Diploma Engineering)

**DEPARTMENT OF:** -Electrical Engineering

**SEMESTER:** - VI

**CODE:** -2TE06MPA1

**NAME** – Microprocessors and Applications (MPA)

## Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evolution Scheme								
		Th	Tu	Pr	Total		Theory				Practical (Marks)				Total Marks
							Sessional Exam		University Exam		Internal		University		
							Marks	Hours	Marks	Hours	Pr	TW	Pr	TW	
2TE06MPA1	Microprocessors and Applications	04	00	02	06	05	30	1.5	70	03	---	20	30`	---	150

## Objectives:-

- The Microprocessor is Challenging and Very Dynamic Field.
- This Course Explores Architecture of a Microprocessor and its Programming in Assembly Language.
- The Student will able to Apply Logics to Various Given Problems and Develop Programs Using Assembly Language that Would Help Them to Develop Real Time Microprocessor Based Application Programs.

## Prerequisites:-

- Satisfactory Completed Basic Digital Electronics Courses.
- Ability to Use a Computer to Prepare Written Reports and to Perform Basic Data Reduction, Graphing, and Engineering Data Presentation.

## Course Outlines:-

Sr. No.	Course Contents	No Of Hours
1	<b>Control Systems Components:-</b> Role of Control System in Instrumentation, Open and Close Loop Control System, Types and Block Diagram, Servomechanism and Regulators with Suitable Examples, Basic Control Actions - On-Off, Proportional, Derivative, Integral Control, Proportional Derivative (PD), Proportional Integral (PI), Proportional Integral And Derivative (PID) Control, Basic Control System Components –AC/ DC Servo Motor, AC/ DC Tacho Generator, Stepper Motor And Synchro.	11
2	<b>Introduction Of Microprocessor:-</b> Evolution of Microprocessor and it's Types, Microprocessor Bus Organization : Data Bus, Address Bus and Control Bus, Operations of Microprocessor: Internal Data Manipulation, Microprocessor Initiated and Peripheral or External Initiated, Pin Diagram and Block Diagram of 8085, Architecture of 8085, Internal Registers Organization of 8085, Limitations of 8085.	08
3	<b>Instruction Cycle And Timing Diagram:-</b> 8085 Machine Cycle and Bus Timings to Fetch, Decode and Execute Instruction from Memory, Memory Read and Write, Input/ Output Read and Write Cycle with Timing Diagram.	06

4	<b>8085 Instruction Set &amp; Programming Techniques :-</b> Machine Language Instruction Format : Single Byte, Two Byte, Three Byte Instructions, Various Addressing Modes , Data Transfer Operation and Instruction, Arithmetic Operation and Instruction, Logical Operation and Instruction, Branch Operation and Instruction, Stack Operation and Instruction, Input/ Output and Machine Control Operation and Instruction, Simple Programs With 8085 Instruction, Looping, Counting and Indexing, Counter and Timing Delays, Stack and Subroutine, Basic Concepts, Procedure and Macro.	10
5	<b>8085 Interrupts:-</b> Interrupts and its Necessity, Classification of Interrupts, 8085 Interrupts: Software, Hard Ware and Priorities of Interrupts, 8085 Vectored Interrupts: TRAP, INTR, RST 7.5, RST 6.5, RST 5.5.	07
6	<b>Microprocessor Application:-</b> Simple Applications of Microprocessor for Interfacing of Switches & LED, Temperature Control of Furnace, Traffic Light Control and SCR Firing Angle Control Using Micro Processor, Data Acquisition System, Interfacing a Matrix Keyboard.	10

#### **List of Experiments:-**

- To Study Pin Diagram of 8085.
- To Study Architecture of 8085.
- Demonstrate of Kit/Simulator of 8085.
- Develop Assembly Language Program for Arithmetic Addition of Two Numbers Using  $\mu$ p 8085 Kit.
- Develop Assembly Language Program for Arithmetic Subtraction of Two Numbers Using  $\mu$ p 8085 Kit.
- Develop Assembly Language Program for Arithmetic Multiplication of Two Numbers Using  $\mu$ p 8085 Kit.
- Control Angular Displacement Using Synchro.
- To Study Pin Diagram of 8086.
- To Study Architecture of 8086.
- To Develop Program Related to Data Transfer Operation.
- To Develop Program Related to Logical Operation.
- To Develop Program Related to Branch Operation.
- To Develop Program Related to Stack Operation.

#### **Learning Outcomes:-**

- Able to Know about Microprocessor.
- Able to Solve Basic Binary Math Operations Using the Microprocessor.
- Able to Demonstrate Programming Proficiency Using the Various Addressing Modes and Data Transfer Instructions of the Target Microprocessor.

#### **Books Recommended:-**

- 8085 Microprocessor And Its Application by **A\_Nagoor Kani** Mc Graw Hill 2013
- Microprocessor Architecture, Programming, And Application With The 8085 (5th Edition) by **Ramesh Gaonkar**, Penram Mumbai