

**SHREE SATHYAM COLLEGE OF ENGINEERING AND
TECHNOLOGY**

DEPARTMENT OF EEE

SUBJECT CODE: EE 6502

SUBJECT NAME: Microprocessor and Microcontroller

Regulation: 2013

Year and Semester: V

MICROPROCESSORS AND MICROCONTROLLERS L T P C30 03

OBJECTIVES:

To study the Architecture of uP8085 & uC 8051

To study the addressing modes & instruction set of 8085 & 8051. To introduce the need & use of Interrupt structure 8085 & 8051.

To develop skill in simple applications development with programming 8085 & 8051

To introduce commonly used peripheral / interfacing

UNIT I 8085 PROCESSOR 9

Hardware Architecture, pinouts – Functional Building Blocks of Processor – Memory organization – I/O ports and data transfer concepts – Timing Diagram – Interrupts.

UNIT II PROGRAMMING OF 8085 PROCESSOR 9

Instruction -format and addressing modes – Assembly language format – Data transfer, data manipulation & control instructions – Programming: Loop structure with counting & Indexing – Look up table - Subroutine instructions - stack.

UNIT III 8051 MICRO CONTROLLER 9

Hardware Architecture, pinouts – Functional Building Blocks of Processor – Memory organization – I/O ports and data transfer concepts – Timing Diagram – Interrupts- Comparison to Programming concepts with 8085.

UNIT IV PERIPHERAL INTERFACING 9

Study on need, Architecture, configuration and interfacing, with ICs: 8255 , 8259 , 8254, 8237, 8251, 8279 , - A/D and D/A converters & Interfacing with 8085 & 8051.

UNIT V MICROCONTROLLER PROGRAMMING & APPLICATIONS 9

Data Transfer, Manipulation, Control Algorithms & I/O instructions – Simple programming exercises key board and display interface – Closed loop control of servo motor- stepper motor control – Washing Machine Control.

TOTAL : 45 PERIODS

OUTCOMES:

Ability to understand and analyse, linear and digital electronic circuits.

To understand and apply computing platform and software for engineering problems.

TEXT BOOKS:

1. Krishna Kant, “Microprocessor and Microcontrollers”, Eastern Company Edition, Prentice Hall of India, New Delhi , 2007.
2. R.S. Gaonkar, „Microprocessor Architecture Programming and Application“, with 8085, Wiley Eastern Ltd., New Delhi, 2013.
3. Soumitra Kumar Mandal, Microprocessor & Microcontroller Architecture, Programming & Interfacing using 8085,8086,8051,McGraw Hill Edu,2013.

REFERENCES:

1. Muhammad Ali Mazidi& Janice GilliMazidi, R.D.Kinely „The 8051 Micro Controller and Embedded Systems“, PHI Pearson Education, 5th Indian reprint, 2003. 2.N.Senthil Kumar, M.Saravanan, S.Jeevananthan, „Microprocessors and Microcontrollers“,Oxford,2013.
3. Valder – Perez, “Microcontroller – Fundamentals and Applications with Pic,” Yeesdee Publishers, Tayler & Francis, 2013.

1. Aim and Objective of the Subject

Aim:

To discuss about the architecture and instruction sets of 8085 and 8051 how to write a program using 8085 and 8051.

Objectives:

- To study the Architecture of uP8085 &uC 8051
- To study the addressing modes & instruction set of 8085 & 8051.
- To introduce the need & use of Interrupt structure 8085 & 8051.
- To develop skill in simple applications development with programming 8085 & 8051
- To introduce commonly used peripheral / interfacing

2. Need and Importance for Study of the Subject

Need for Study of the Subject:

To know about the architecture of 8085 and 8051

To know about programming using 8051 and other supporting IC's

Importance for Study of the Subject:

At the end of the course, the student should be able to:

Students will be able to make a microcontroller 8051 based project. Students will be able to understand working and programming of 8051.

3. Industry Connectivity and Latest Developments

Industry Connectivity:

The following companies (Industries) are connectivity to Embedded based companies and All electronic product manufacturers

Latest Developments:

Advance RISC Processors

Low power and high speed controllers

4. Industrial Visit (Planned if

any) Date:

Industry: Texas Instrument Pvt Ltd,Bangalore

UNIT-I 8085 MICROPROCESSOR
PART - A

1. What is stack and what is the use of stack pointer? (Dec-2015)

The stack is a reserved area of the memory in the RAM where temporary information may be stored. A 16-bit stack pointer is used to hold the address of the most recent stack entry.

2. Mention the use of ALE. (Dec-2015, Dec-2013, May-2010)

The ALE signal is used to demultiplex (separate) AD₀ – AD₇ lines to A₀ – A₇ (address lines) and D₀ – D₇ (data lines). The separation of address lines and data lines is achieved by connecting an external latch to AD₀ – AD₇ lines and enabling the latch when signal is active.

3. State the functions of keyboard interrupts. (Dec-2014)

Keyboard interrupt is special case of signal usually generated by the keyboard in the text user interface. This signal is used to generate a hardware interrupt when a key is pressed or released.

4. List the 8085 flags. (Dec-2014, Dec-2013)

Various flags are :

S (Sign flag), Z (Zero flag), AC (Auxiliary carry flag), P (Parity flag), CY (Carry flag).

5. What is meant by level-triggered interrupt? Which of the interrupts in 8085 are level triggered? (May-2014)

A level triggered interrupt is an interrupt signaled by maintaining the interrupt line at a high or low level. A device wishing to signal a level triggered interrupt drives the interrupt request line to its active level (high or low), and then holds it at that level until it is recognized by microprocessor. In 8085 microprocessor, RST 5.5, RST 6.5, INTR, TRAP are level triggered interrupts. TRAP is both level as well as edge triggered interrupt.

