3/4 B.Tech. FIRST SEMESTER

IT5L2 MICROPROCESSOR AND INTERFACING LAB Credits: 2

Lecture: -- **Internal assessment: 25 marks**
Lab: 3 periods /week **Semester end examination: 50 marks**

Objectives:

- To help the student to understand various aspects of hardware design, such as addressing, bus structure of memory interfacing.
- To learn addressing bus structures of different I/O devices interfacing.
- To understand the interrupt mechanism.
- To provide experience to write software in machine or assembly language for embedded system applications.

Outcomes:

The Student Will able to :

- Describe the fundamental features and operation of contemporary microprocessors.
- Explain the pin configuration and memory organization of a typical 8086 microprocessor.
- Analyze the 8086 Instruction Set .
- Develop assembly language source code for applications that use I/O ports, timer and single/multiple interrupts.
- Produce interfacing examples using 8086 microprocessor.

Exercises:

I. MICROPROCESSOR 8086:

1. Introduction to MASM/TASM/Debugger.
2. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.
3. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
4. By using string operation and Instruction prefix Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.
5. DOS/BIOS programming Reading keyboard (Buffered with and without echo) – Display characters, Strings.

II. INTERFACING:

1.8255-PPI Write ALP to generate Square wave using PPI.
2. 8279 – Keyboard Display Write a small program to display a string of characters.
3. ADC/DAC Interface with 8086 µP.
4. 8251 – USART Write a program in ALP to establish Communication between two processors.

Equipment required for Laboratories:

1. 8086 µP Kits
2. Interfaces/peripheral subsystems
   I. 8279-KB/Display
   II. 8255 PPI
   III. 8251 USART
3. ADC Interface
4. DAC Interface

Reference Books:

1.Micro process Architecture Programming and Applications with 8085 by Ramesh N Goankar.
2. Micro processors and Interfacing Programming & Hardware by Dougals V Hall
3.Experiments in Micro processor and Digital Systems by Dougals V Hall And Marybelly B.R