

3/4 B.Tech - FIRST SEMESTER

IT5L2

MICROPROCESSORS AND MICROCONTROLLERS LAB

Credits:2

Internal assessment: 25 marks

Lab: 3 Periods/week

Semester end examination: 50 marks

Objectives:

- Familiarize the architecture of 8086 processor, assembling language programming and Interfacing with various modules.
- The student can also understand 8051 Microcontroller concepts, architecture, programming and application of Microcontrollers.

Outcomes:

Students will be able to

- Apply knowledge of the microprocessor's internal registers and operations by use of a PC based microprocessor simulator.
- Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.
- Develop assembly language programs and download the machine code that will provide solutions such as fluid level control, temperature control, and batch processes.

Prerequisites:

C Programming, Computer System Architecture.

Experiments:

1. Introduction to Debugger / XT86 / TASM: 8-bit Arithmetic Operations.
2. 16-bit Signed and unsigned Arithmetic operations, ASCII – arithmetic operations.
3. Arithmetic operations – Multi byte Addition and Subtraction, Sum of Squares, Sum of Cubes.
4. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
5. 8255 – PPI: Write ALP to generate sinusoidal wave using PPI.
6. Using string operation and Instruction prefix: Move Block, Reverse string, String comparison
7. Write ALP to find smallest, largest number, arrange numbers in Ascending order, Descending order in a given series.
8. Traffic Lights Interface.
9. Stepper Motor Interface
10. 8279 – Keyboard Display: Write a small program to display a string of characters.
11. ADC Interface / DAC Interface.
12. Arithmetic Operations using 8051.
13. Reading and Writing on a parallel port.
14. Timer in Different Modes
15. Serial Communication using 8051.