**17EC41P4 – MICROPROCESSOR & INTERFACING LAB**

**(ECE)**

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| **Course Category:** | Professional Core | **Credits:** | 2 |
| **Course Type:** | Laboratory | **Lecture-Tutorial- Practice:** | 0 - 0 - 3 |
| **Pre-requisite:** | Basic knowledge in programming C, Microprocessors and programming | **Sessional Evaluation:**  **External Evaluation :**  **Total Marks:** | 40  60  100 |

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| **Course**  **Objectives:** | Students undergoing this course are expected to learn: | |
| 1. The features of the software tool – T.A.S.A.M. simulator.  2. The arithmetic and data transfer instructions of 8086.  3. To design the high speed communication circuits using serial bus connection  4. To write the assembly language programs for counters and code conversions.  5. Interfacing knowledge with microprocessor kit  6. To develop the ALP for simple logical and arithmetic operations. | |
| **Course Outcomes:** | Upon successful completion of the course , the students will be able to: | |
| **CO1** | Design the home appliances and toys using microcontroller chips. |
| **CO2** | Design computers like desktops and laptops using various processors |
| **CO3** | Design the high speed communication circuits using serial bus connection |
| **CO4** | Use a commercial C.P.U.(s) as realistic vehicles to demonstrate these concepts by introducing students to C.P.U. instructions and internal register structures |
| **CO5** | Understand the full internal workings of a typical simple C.P.U. including the utilization of the various hardware resources during the execution of instructions. |
| **CO6** | Write the assembly language programs for counters and code converters. |
| **Course**  **Content:** | **List of experiments**   1. Summation & block Transfer of Data   a) Write and execute 8086 to add the given series of B.C.D. numbers and show the result.  b) Write and execute 8086 A.L.P. to transfer a Block of data from one memory area to another memory area.   1. Multiplication & Division    1. Write and execute 8086 A.L.P. to perform the following multiplications.       1. Repeated addition       2. Using SHIFT and ADD instruction    2. Write and execute 8086 A.L.P. to perform the following.       1. Binary division       2. B.C.D. division 2. Searching & sorting data    1. Write and execute 8086 A.L.P. to find the minimum and maximum number from a given data array    2. Write and execute 8086 A.L.P. to arrange the given data array in ascending order and descending order 3. Evaluation of Mathematical Expression   Mathematical expressions   1. a\*b- c/d + e   n   1. ∑ xi yi   i=1   1. Code conversion    1. Write and execute 8086 A.L.P. to convert H.E.X. to B.C.D. number    2. Write and execute 8086 A.L.P. to convert B.C.D. to H.E.X. number    3. Write and execute 8086 A.L.P. to convert H.E.X. to A.S.C.I.I. number    4. Write and execute 8086 A.L.P. to convert A.S.C.I.I. to H.E.X. number 2. Logic controller module   Write and execute 8086 A.L.P. to design the logical expression using logic controller interface module   1. Stepper motor module   Write and execute 8086 A.L.P. to rotate a stepper motor either in clockwise direction or in anticlockwise direction and to control the speed of rotation   1. Serial input display unit module(S.I.D.U.)   Write and execute 8086 A.L.P. to display the desired word in a display of serial input display unit interface module   1. Parallel input display unit module (P.I.D.U.)   Write and execute 8086 A.L.P. to design an up and down counter using P.I.D.U. Interface module   1. Digital to Analog Converter Interface Module   Write and execute 8086 A.L.P. to generate given waveform through  C.R.O. using D.A.C. | |