



VLSI and Embedded Laboratory

B. Tech. (Electronics and Communication)
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VLSI and Embedded Laboratory

Objective of Laboratory:

To have hands on training on different VLSI and Embedded Circuit Design and Analysis.

Student learning outcomes / objectives:

To have practical exposure to the basic device and kits used to analyze VLSI Circuits and Embedded Systems.

Practical List:

Sr. No.	VLSI and Embedded Laboratory	Hours
1	Write and simulate the VHDL code for all the basic gates.	2
2	Write and simulate the VHDL code for half adder and full adder.	2
3	Write and simulate the VHDL code for 8*1 multiplexer and 3*8 Decoder.	4
4	Write and simulate the VHDL code for magnitude comparator.	2
5	Write and simulate the VHDL code for SR and D Flip flop.	2
6	Write and simulate the VHDL code for JK and T Flip flop.	2
7	Write and simulate the VHDL code for shift register.	2
8	Write and simulate the VHDL code for Up Down Counter.	2
9	Write and simulate the VHDL code for Arithmetic and logical unit.	2
10	Write and simulate the VHDL code for Four Bit Adder Using One bit adder Component.	2
11	Introduction: Microcontroller Vs Microprocessor, ARM7.	2
12	Write an ALP to perform following task: 1. Transfer data from one register to another. 2. Store two numbers in registers and perform addition, subtraction, multiplication, AND, OR, EX-OR operation. Use instruction of ARM7.	2
13	Write an ALP to perform following task: 1. Addition of data in a single array. 2. Addition of 5 (32 bit) data stored in two arrays and stores the result in third array.	2

	3. Compare the data from the given array and store the smallest number in the register.	
14	Write an ALP to perform following task: 1. Addition of data in a single array. 2. Addition of 5 (32 bit) data stored in two arrays and stores the result in third array. 3. Compare the data from the given array and store the smallest number in the register.	2
15	Write an ALP to arrange given numbers in Ascending and Descending order. Use instruction of ARM7.	2
16	Write an ALP to illustrate the use of IMPORT and EXPORT Subroutines.	2
17	Write an embedded 'C' program to blink 4 LED's connected on LPC2148 board on pin P1.16. to P1.19.	2
18	Write an embedded 'C' program to display 0 to 9 on 7-segment LED connected on LPC2148 board on pin P0.0 to P0.6 in common anode configuration.	2
19	Write an embedded 'C' program to rotate stepper motor connected on LPC2148 board at pin P0.0 to P0.3 in clockwise direction.	2
20	Write an embedded 'C' program to display "CGPIT" on LCD connected to ARM processor.	2

Laboratory Equipments



VLSI Trainer Kits

Laboratory Equipments



Embedded System Trainer Kits

Laboratory Equipments



Microprocessor Trainer Kits

Components Available in Laboratory

1	Power Supply
2	Function Generator
3	CRO
4	Digital Multimeter
5	Educational Practice Board for ARM 7, ARM 7 IDE, LCD Keyboard Interfacing Kit, General Purpose Interfacing Kit
6	TK Based VLSI Trainer Board, CPLD Daughter Board, FPGA Daughter Board, Real Time Validation Tool
7	8085 Microprocessor Kit with 16x2 LCD Display XPO-85 (Quantity :12)
8	8259 i.e. Periware
9	8255 i.e. Periware
10	8279 i.e. Periware
11	8251 i.e. Periware
12	8251 i.e. Periware
13	Traffic Light of Two Intersections
14	Stepper Motor and 12 V DC Motor Interface Card
15	Scanning Techniques illustrating 8x8 LED Matrix
16	Temperature Controller with 8 bit DAC
17	8-bit 8-channel ADC (0809) and DAC (0808)