

2EC05: DIGITAL SYSTEM DESIGN LABORATORY
CREDITS - 1 (LTP: 0,0,1)

Course Objective:

To provide practical knowledge about Digital electronics for designing various Combinational and sequential circuits.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per week)			Credits	Teaching Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE	CE	ESE	CE	100	
0	0	2	1	00	00	40		60

List of Experiment	
1.	Verify the truth-table of various logic gates with different logic families and compare the parameters.
2.	To design and set up the 4-bit binary parallel adder and 4-bit binary parallel subtractor circuit using IC 7483.
3.	Design a Binary to Gray code converter, BCD to XS-3 code converter and realize it using various logic gates.
4.	Design a 2 bit magnitude comparator using logic gates.
5.	Realize 8:1 multiplexer using two 4:1 multiplexer.
6.	Realize a given logic function using 4:1 Multiplexer and logic gates. [for example, $F(A,B,C,D) = \sum_m(0,2,3,6,9,10,14,15)$]
7.	Study binary to decimal encoder and Implement a Full Adder circuit using 3:8 decoders.
8.	Verify the Truth Table of SR, JK, D & T type Flip-flop.
9.	Design modulo-10 up-down counter.
10.	Design 4-bit Ripple up counter and 4-bit synchronous counter.
11.	To study bi-directional shift resistor with two modes (SISO,PIPO)
12.	To study about ADC and DAC.
13.	Implement the Boolean function using PLA, PAL and PROM.

List of References:

- David J. Comer, 1995, 3rd edition, “*Digital Logic and State Machine Design*”, oxford university press.
- M. Morris Mano, Michael D. Ciletti, 2009, 4th edition, “*Digital Design*”, Pearson.
- R.P. Jain, 2007, 3rd edition “*Modern digital electronics*”, TMH.
- A. Anand Kumar, 4th edition, 2016, “*Fundamentals of digital circuits*”, PHI.
- B. Somanathan Nair, 2006, 6th edition, *Digital Electronics and Logic Design*, PHI.

Course Outcomes (COs):

By learning this course students will be able to ...

- To understand various logic families and selection of logic families as per the application.
- Detailed understanding of the fundamental concepts to design digital system.
- The ability to understand, analyze and design various combinational circuits.
- The ability to understand, analyze and design various sequential circuits.
- To understand role of memory in computer system.
- Understand the architectures of various data converters.