3/4 B.Tech - FIFTH SEMESTER

EC5L2 **Digital IC Applications Lab** **Credits: 2**

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

Course Objectives:

- To simulate the functions of the following digital ICs using VHDL and verify their operation practically:

IC 74x74 (D-flipflop)	IC 74x85 (4 bit comparator)
IC 74x90 (Decade counter)	IC 74x151 (8 to 1 multiplexer)
IC 74x95 (Shift register)	IC 74x155 (2 to 4 demultiplexer)
IC 74x138 (3 to 8 decoder)	IC 74x189 (RAM)
IC 74x49 (BCD to 7-segment)	IC 74x181 (ALU Design)
IC 74x83 (4-Bit Binary Adder)	IC 74x194 (Universal shift registers)
IC 74x93 (4 Bit counter)	

Learning Outcomes:

- Students will be able to design by simulation & test the logic circuits for various applications using digital ICs like Flip-flops, counters, shift registers, decoders, comparators, multiplexers, de-multiplexers & memories.

NOTE: Minimum of 10 experiments has to be performed and recorded by the candidate to attain eligibility for External Practical Examination.

List of Experiments:

1. Realization of Logic Gates
2. 3 to 8 Decoder -74x138
3. 8 x 1 Multiplexer-74x151 and 2x 4 De-multiplexer-74x155
4. BCD to 7-segment Decoder 74x49
5. 4- Bit comparator-74x85
6. 4-Bit Binary Adder 74x83
7. D Flip-Flop-74x74
8. Decade counter -74x90
9. 4 Bit counter-74x93
10. Shift registers-74x95
11. Universal shift registers-74x194/ 195
12. RAM (16 x 4)-74x189 (Read and Write operations)
13. Stack implementation using RAM
14. Queue implementation using RAM
15. 4-Bit ALU Design – 74x181