KIIT, Deemed to be University

School of Electronics Engineering

Digital System Design Laboratory [EC 29005]

Experiment List

Sl. No.	List of Experiments	Course Outcome
0.	Introduction to lab equipment and Vivado software.	
1.	Design and Simulation of boolean functions using Verilog HDL. Hardware implementation of a Boolean function in sum of products and product of sums expressions using universal gates.	CO1
2.	Design and Simulation of Full Adder circuit using Verilog HDL. Hardware implementation of Full Adder circuit using logic gates.	CO2
3.	Design and Simulation of 3 line to 8 line active high decoder using Verilog HDL. Realization of 3 variable Boolean function using active low decoder.	CO2
4.	Design and Simulation of 8-to-1-line Multiplexer using Verilog HDL. Generation of 4 variable logic function using 8-to-1-line Multiplexer.	CO2
5.	Design and simulation of JK flip-flop and D flip-flop using Verilog behavioral modeling. Designing of JK flip-flop using D flip-flop and 2X1 Multiplexer.	CO3
6.	Design and simulation of modulo counter using Verilog behavioral modeling. Design modulo counter using JK flip-flops	CO4
7.	Design and simulation of a pseudo random sequence generator in Verilog. Implementation of pseudo random sequence generator using shift register.	CO4
8.	Design and simulation of a finite state machine in Verilog to detect a given sequence of bits.	CO5
9.	Open ended experiment I	CO6
10.	Open ended experiment II	CO6

Course Outcomes

After successful completion of Digital System Design Laboratory course, the students will be able to:	
CO 1:	Explain the operation of fundamental logic gates and simulate various boolean functions using Verilog HDL.
CO 2:	Design and analyze the operation of standard combinational circuits such as adder, decoder, multiplexer which are fundamental building blocks of digital circuits.
CO 3:	Analyze the operation of various flip-flops and understand the concepts of timing analysis and synchronization in digital systems.
CO 4:	Design and analyze the operation of various sequential building blocks such as counters and shift registers.
CO 5:	Design synchronous sequential circuit using concept of finite state machine.
CO 6:	Work effectively in team to design practical digital logic circuits.