ECE279:BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LABORATORY

L:0 T:0 P:2 Credits:1

Course Outcomes: Through this course students should be able to

CO1 :: Understand the fundamental behaviour and notations of DC and AC circuits.

CO2 :: Discuss the working principles and applications of transformer.

CO3 :: Illustrate functionality of the digital trainer kit to verify basic logic truth table.

CO4 :: Explore the performance of combinational circuits on digital trainer kit.

CO5 :: Evaluate the application of sequential circuit on digital trainer kit.

CO6 :: Analyze the digital circuits and compare its theoretical and actual performance.

List of Practicals / Experiments:

Kirchhoff voltage law and Kirchhoff current law

- Verification of Kirchhoff voltage law and Kirchhoff current law using hardware.

Turn ratio of a transformer

- To understand the principle of turn ratio of a transformer using hardware.

Distribution Board

- To learn the use of kit-kat fuse, MCB, energy meter, house wiring, and connections of switches.

Comparison of different lighting sources

- To compare the efficiency of incandescent lamps, fluorescent lamps, CFL, and LED-based light sources.
- Switching control of a single lamp by using 2-way switches.

Thevenin's and Norton's theorems

- Verification of Thevenin's and Norton's theorems in DC circuits using hardware.

Analysis and Synthesis of Boolean Expressions using Basic Logic Gates

- Understanding the combinational logic by implementing the boolean function using basic logic gates

Analysis and Synthesis of Arithmetic Expressions using Adders/Subtractors

- To design and analyze the circuit for Full adder and Full subtractor using Logic Gates.

Analysis and Synthesis of Logic Functions using Multiplexer.

- Understanding the combinational logic by implementing the boolean function using multiplexer

Analysis and Synthesis of Sequential Circuits using Flip-Flops

- Understanding the sequential logic by implementing the flip flop with the help of logic gates

Analysis of Functions of BCD-TO-7-segment Decoder / Driver and Operation of 7-segment LED Display

- To visualize the output of decade counter on seven segment display

Text Books:

1. FUNDAMENTALS OF ELECTRICAL ENGINEERING AND ELECTRONICS by B.L.THERAJA, S Chand Publishing

References:

1. DIGITAL DESIGN PRINCIPLES AND PRACTICES PEARSON by JOHN F. WAKERLY, PEARSON

2. DIGITAL INTEGRATED ELECTRONICS by H. TAUB AND D. SCHILLING, MC GRAW HILL