GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY

ANALOG AND DIGITAL ELECTRONICS LAB

Course Code: GR15A2046   L:0 T:0 P:2 C:2
II Year II Semester

Course Objectives: At the end of the course the student is expected
- • To design various applications of Operational Amplifier
- • To design the wave form generators
- • To analyze the oscillators circuits and their working operations
- • To implement the ZCD and DC voltage regulator
- • To implement the verilog code in the Xilinx Software

Course Outcomes
- • Ability to design and conduct simulations and experiments.
- • Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
- • Ability to identify, formulate and solve engineering problems with simulation.
- • Ability to use Operational Amplifier as Multiplexer, Subractor and divider
- • Able to use Operational Amplifier to generate sine waveform, Square wave form, Triangular wave forms.
- • Able to use Operational Amplifier to as analog to digital and digital to analog converter.
- • Ability to use Verilog programs to implement Digital Electronics.

Contents
1. Design of Operational Amplifier as proportional Amplifier
2. Design of Operational Amplifier as integrator
3. Design of Operational Amplifier as differential amplifier
4. Design of Operational Amplifier as summation amplifier
5. Design of Operational Amplifier for multiplying two time varying signals
6. Design of Operational Amplifier for generation of triangle wave
7. Design of Operational Amplifier for generation of Square
8. Design of Operational Amplifier for generation of sin wave
9. 555 timer as basic application of generating train of pulses
10. 555 timer as speed sensor / frequency to Voltage Converter
11. Design of Operational Amplifier as D/A converter
12. Design of Operational Amplifier as V/f to F/v converter
13. All gates using Xilinx software with Verilog code
14. 7800 series & I C's and their applications
15. Combination circuits
16. Multiplexer and De multiplexer
17. Flip Flops implementation using Xilinx Software
18. Introduction to logic gates using Xilinx in Cool runner CPLD board