G. NARAYANAMMA INSTITUTE OF TECHNOLOGY & SCIENCE

(For Women)

(AUTONOMOUS)
Shaikpet, HYDERABAD - 500 104

II Year B.Tech. EEE II-Semester

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ELECTRICAL SIMULATION LAB

Prerequisites: Basic Electrical Engineering and Circuits Theory

Objectives:
1. To develop the simulation skills.
2. To generate various signals and synthesis for the engineering systems.
3. To analyze harmonics in the systems.
4. To analyze electrical circuit in simulation environment.

The following experiments are required to be conducted compulsory experiments:

1. Basic Operations on Matrices.
2. Generation of various signals and sequences (Periodic and Aperiodic), such as unit Impulse, Step, Square, Saw tooth, Triangular, Sinusoidal, Ramp.
3. Operations on signals and sequences such as Addition, Multiplication, Scaling, Shifting, Folding, Computation of Energy, and Average Power
4. Verification of Network Theorems
   i) Superposition theorem.   ii) Thevenin's theorem.
5. Verification of maximum power transfer and reciprocity theorems.
6. Simulation of AC Circuits –Nodal and mesh analysis.
7. Locating the Zeros and Poles and Plotting the Pole-Zero maps in s - plane for the given transfer function.
8. Simulation of Transient response of RL,RC and RLC Circuits.
9. Solar Pv System

In addition to the above eight experiments, at least any two of the experiments from the following list are required to be conducted.

10. Waveform Synthesis using Laplace Transform
11. Harmonic analysis of non-sinusoidal waveforms.
12. Measurement of active Power of three phase circuit for balanced and unbalanced load.
13. Simulation of single phase diode bridge rectifiers with filter for R & RL load.

Course Outcomes:

After going through this lab the student will be able to
1. Apply different signals to different systems and observe the responses.
2. Analyze networks by various techniques or theorems.
3. Synthesize a given wave form using Laplace Transform.
4. Analyze bridge rectifiers.
5. Measure three phase power in a balanced or unbalanced three phase load.
6. Construct and analyze a solar PV system.Using appropriate SIMULATION packages.

1) N. Mallo badly   4) S.   9)   13) KReddy

2)   5)   6)   10)   14) RNy

3)   7)   11) Rola   15) NRoy

8)   12)   16) R. Balasubrama