Year & Semester   : II-I

Lab In charges

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ELECTRICAL TECHNOLOGY AND BASIC SIMULATION LABORATORY

Course Objectives:

1. To make the students to understand different Motors and Generators working.
2. To provide background and fundamentals of MATLAB tool for the analysis and processing of signals and to generate various continuous and discrete time signals.
3. To prepare the students for Generation of Various signals and Sequences.
4. To make the students in determine the Fourier transform of signals Sampling Theorem Verification

Course Outcomes:

1. The students are expertise in basics of MATLAB syntax, functions and programming.
2. The students are able analyze the generation various signals and sequences in MATLAB, including the operations on signals and sequences.
1. The students will be able to determine different transforms.

List of Experiments:

PART-A
1. Magnetization Characteristics of D.C. Shunt Generator. Determination of Critical Field Resistance.
2. Swinburne's Test on DC Shunt Machine (Predetermination of Efficiency of a Given DC Shunt Machine Working as Motor and Generator).
3. Brake Test on DC Shunt Motor. Determination of Performance Characteristics.
4. OC & SC Tests on Single-Phase Transformer (Predetermination of Efficiency and Regulation at Given Power Factors and Determination of Equivalent Circuit).
5. Load Test on Single Phase Transformer.

PART-B

1. Generation of Various signals and Sequences (Periodic and Aperiodic), Such as Unit Impulse, Unit Step, Square, Saw Tooth, Triangular, Sinusoidal, Ramp, Sinc.
2. Operations on Signals and Sequences such as Addition, Multiplication, Scaling, Shifting, Folding, Computation of Energy and Average Power.
3. Convolution between Signals and Sequences.
4. Autocorrelation and Cross correlation between Signals and Sequences.
5. Verification of Linearity and Time Invariance Properties of a Given Continuous / Discrete System.
6. Finding the Fourier Transform of a given Signal and plotting its Magnitude and Phase Spectrum.
7. Waveform Synthesis using Laplace Transform.
8. Generation of Gaussian Noise (Real and Complex), Computation of its Mean, M.S.Values and its Skew, Kurtosis, and PSD, Probability Distribution Function.
9. Sampling Theorem Verification.
10. Removal of Noise by Auto Correlation / Cross correlation in a given signal corrupted by noise.
11. Impulse response of a raised cosine filter.
12. Checking a Random Process for Stationary in Wide Sense.

Note: Any 8 of the Experiments from Part-B are to be Conducted

Part-A

1. D.C Shunt Generator coupled with D.C shunt motor
2. DC Shunt Motor
3. 1-Phase transformers
4. A.C &D.C voltmeters/ammeters
5. Wattmeter's

Part-B

MATLAB software.