



# GOVERNMENT POLYTECHNIC KORAPUT

## Pr2. CIRCUIT AND SIMULATION LAB

Name of the Course: Diploma in Electrical Engineering			
Faculty: Sandhya Kumari Randhi			
Course code:	PR2	Semester w e f 01/08/2023	3rd
Total Period:	90	Examination	3hrs
Theory periods:	6P/week	Sessional :	50
Maximum marks:	100	End Semester Examination:	50

### DEPARTMENT OF ELECTRICAL

#### Vision:-

To create competent and industry ready Electrical diploma engineers with professional and social values to meet future challenges.

#### Mission:-

- To prepare diploma holders through “qualitative competency based education system” to compete with national requirement along with core values
- To produce dynamic Electrical Engineers to serve the society and industry .
- To develop leadership qualities, communication skills, critical thinking and attitude for Lifelong learning.

#### Program educational objectives:-

PEO1:	Apply technical knowledge and skills learned in the field of Electrical Engineering to excel in professional and/or higher education.
PEO2:	to provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3:	To engage in lifelong learning, career enhancement to adopt emerging technologies

#### Course outcomes:-

Co1	Verify the theorems using different components.
Co2	Know the various types of filters.
Co3	Simulate different circuits using MATLAB software.
Co4	Analyze the charging and discharging of an R-C & R-L circuit.



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## LESSON PLAN

Week	Class Day (3 periods per day)	Practical Topics
1 <sup>st</sup>	1 <sup>st</sup>	1. Measurement of equivalent resistance in series and parallel circuit
	2 <sup>nd</sup>	1. Measurement of equivalent resistance in series and parallel circuit
2 <sup>nd</sup>	1 <sup>st</sup>	2. Measurement of power and power factor using series R-L-C Load.
	2 <sup>nd</sup>	2. Measurement of power and power factor using series R-L-C Load.
3 <sup>rd</sup>	1 <sup>st</sup>	3. Verification of KCL and KVL
	2 <sup>nd</sup>	3. Verification of KCL and KVL
4 <sup>th</sup>	1 <sup>st</sup>	4. Verification of Super position theorem
	2 <sup>nd</sup>	4. Verification of Super position theorem
5 <sup>th</sup>	1 <sup>st</sup>	5. Verification of Thevenin's Theorem
	2 <sup>nd</sup>	5. Verification of Thevenin's Theorem
6 <sup>th</sup>	1 <sup>st</sup>	6. Verification of Norton's Theorem
	2 <sup>nd</sup>	6. Verification of Norton's Theorem
7 <sup>th</sup>	1 <sup>st</sup>	7. Verification of Maximum power transfer Theorem
	2 <sup>nd</sup>	7. Verification of Maximum power transfer Theorem
8 <sup>th</sup>	1 <sup>st</sup>	8. Determine resonant frequency of series R-L-C circuit.
	2 <sup>nd</sup>	8. Determine resonant frequency of series R-L-C circuit.
9 <sup>th</sup>	1 <sup>st</sup>	9. Study of Low pass filter & determination of cut-off frequency
	2 <sup>nd</sup>	9. Study of Low pass filter & determination of cut-off frequency
10 <sup>th</sup>	1 <sup>st</sup>	10. Study of High pass filter & determination of cut-off frequency
	2 <sup>nd</sup>	10. Study of High pass filter & determination of cut-off frequency
11 <sup>th</sup>	1 <sup>st</sup>	11. Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically
	2 <sup>nd</sup>	11. Analyze the charging and discharging of an R-C & R-L circuit with oscilloscope and Compute the time constant from the tabulated data and determine the rise time graphically.
12 <sup>th</sup>	1 <sup>st</sup>	12. Introduction to P-Spice/MATLAB software.
	2 <sup>nd</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. i. Superposition theorem
13 <sup>th</sup>	1 <sup>st</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. ii. Series Resonant Circuit
	2 <sup>nd</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms. ii. Series Resonant Circuit
14 <sup>th</sup>	1 <sup>st</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit
	2 <sup>nd</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit
15 <sup>th</sup>	1 <sup>st</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit
	2 <sup>nd</sup>	12. Construct the following circuits using P-Spice/MATLAB software and compare the measurements and waveforms iii. Transient Response in R-L-C series circuit

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01/08/2022

Signature of HOD(electrical)

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01/08/2022

Signature of faculty