SEMESTER S3

ELECTRICAL TECHNOLOGY LAB

Course Code	PCMRL307	CIE Marks	50
Teaching Hours/Week (L: T:P: R)	0:0:2:0	ESE Marks	50
Credits	2	Exam Hours	2 Hrs. 30 Min.
Prerequisites (if any)	None	Course Type	Lab

Course Objectives:

1. This course aims the students to learn about the introduction, working and testing methods of main basics machines of electrical
2. To learn about the introduction of Power Electronics.

Expt. No.	Experiments
1	Brake test on DC series motor
2	Brake test on DC shunt motor.
3	Open circuit characteristics of dc shunt generator
4	Load test on dc shunt generator
5	Load test on single phase transformer
6	Three phase power measurement using two wattmeter method
7	Load test on three phase squirrel cage induction motor
8	OC and SC test on single phase transformer
9	Load test on three phase slip ring induction motor
10	Static characteristics of SCR.
11	Static characteristics of MOSFET.
12	Obtain output waveform of single phase bridge rectifier using SCR.

Minimum of 10 experiments from the above list are to be done.

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Course Assessment Method
(CIE: 50 marks, ESE: 50 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Preparation/Pre-Lab Work experiments, Viva and Timely completion of Lab Reports / Record (Continuous Assessment)	Internal Examination	Total
5	25	20	50

End Semester Examination Marks (ESE):

Procedure/ Preparatory work/Design/ Algorithm	Conduct of experiment/ Execution of work/ troubleshooting/ Programming	Result with valid inference/ Quality of Output	Viva voce	Record	Total
10	15	10	10	5	50

1. ***Submission of Record: Students shall be allowed for the end semester examination only upon submitting the duly certified record.***
2. ***Endorsement by External Examiner:*** *The external examiner shall endorse the record*

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Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Test and validate different types of dc motors.	K3
CO2	Test and validate different types of dc generators.	K3
CO3	Validate and to do different test in transformer.	K3
CO4	To measure power in a three phase system	K3
CO5	Test and validate different types of three phase induction motors	K3

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO- PO Mapping (Mapping of Course Outcomes with Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	-	1	2	2	3	2	1	3
CO2	3	2	1	-	-	1	2	2	3	2	1	3
CO3	3	2	1	-	-	1	2	2	3	2	1	3
CO4	3	2	1	-	-	1	2	2	3	2	1	3
CO5	3	2	1	-	-	1	2	2	3	2	1	3

1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), -: No Correlation

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Theory & performance of Electrical Machines	J B Gupta	S K Kataria & Sons	January 2013
2	Power Electronics	P S Bimbhra	Khanna	August 2018

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	V K Mehta & Rohit Mehta	Principles of Electrical Machines	S Chand	2006
2	M H Rashid	Power Electronics Circuits	Khanna	2018

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Video Links (NPTEL, SWAYAM…)	
Module No.	**Link ID**
1	https://nptel.ac.in/courses/108105017
2	https://archive.nptel.ac.in/courses/108/102/108102146/
3	https://www.youtube.com/watch?v=JPhCxbxPHbo
4	https://www.youtube.com/watch?v=4JsR4xflPa4

Continuous Assessment (25 Marks)

1. Preparation and Pre-Lab Work (7 Marks)

- Pre-Lab Assignments: Assessment of pre-lab assignments or quizzes that test understanding of the upcoming experiment.
- Understanding of Theory: Evaluation based on students' preparation and understanding of the theoretical background related to the experiments.

2. Conduct of Experiments (7 Marks)

- Procedure and Execution: Adherence to correct procedures, accurate execution of experiments, and following safety protocols.
- Skill Proficiency: Proficiency in handling equipment, accuracy in observations, and troubleshooting skills during the experiments.
- Teamwork: Collaboration and participation in group experiments.

3. Lab Reports and Record Keeping (6 Marks)

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- Quality of Reports: Clarity, completeness and accuracy of lab reports. Proper documentation of experiments, data analysis and conclusions.
- Timely Submission: Adhering to deadlines for submitting lab reports/rough record and maintaining a well-organized fair record.

4. Viva Voce (5 Marks)

- Oral Examination: Ability to explain the experiment, results and underlying principles during a viva voce session.

Final Marks Averaging: The final marks for preparation, conduct of experiments, viva, and record are the average of all the specified experiments in the syllabus.

Evaluation Pattern for End Semester Examination (50 Marks)

1. Procedure/Preliminary Work/Design/Algorithm (10 Marks)

- Procedure Understanding and Description: Clarity in explaining the procedure and understanding each step involved.

- Preliminary Work and Planning: Thoroughness in planning and organizing materials/equipment.
- Algorithm Development: Correctness and efficiency of the algorithm related to the experiment.
- Creativity and logic in algorithm or experimental design.

2. Conduct of Experiment/Execution of Work/Programming (15 Marks)

- Setup and Execution: Proper setup and accurate execution of the experiment or programming task.

3. Result with Valid Inference/Quality of Output (10 Marks)

- Accuracy of Results: Precision and correctness of the obtained results.
- Analysis and Interpretation: Validity of inferences drawn from the experiment or quality of program output.

4. Viva Voce (10 Marks)

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- Ability to explain the experiment, procedure results and answer related questions
- Proficiency in answering questions related to theoretical and practical aspects of the subject.

5. Record (5 Marks)

- Completeness, clarity, and accuracy of the lab record submitted