**23EE21P2- DC MACHINES & TRANSFORMERS LAB**

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| **Course Category:** | Professional core | **Credits:** | 1.5 |
| **Course Type:** | Laboratory | **Lecture-Tutorial-Practical:** | 0-0-3 |
| **Pre-requisite:** | Basic concepts of Electro Magnetics, Knowledge of DC machines. | **Sessional Evaluation: External Exam Evaluation:**  **Total Marks:** | 30  70  100 |

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| **Course Objectives:** | Students undergoing this course are expected to learn : | | |
| 1. To demonstrate starting and speed control methods of DC Machines. 2. To apply theoretical concepts to determine the performance characteristics of DC Machines & speed control methods of DC motors 3. To analyze the parallel operation of single phase transformers 4. To determine the performance parameters of single-phase transformer. 5. To analyze the performance analysis of transformers using various tests. | | |
| **Course Outcomes:** | After completing the course the student will be able to | | **Blooms**  **level** |
| CO1 | Demonstrate starting and speed control methods of DC  Machines. | **L2** |
| CO2 | Apply theoretical concepts to determine the performance  characteristics of DC Machines. | **L3** |
| CO3 | Analyze the parallel operation of single phase transformers | **L4** |
| CO4 | Determine the performance parameters of single-phase  transformer. | **L3** |
| CO5 | Analyze the performance analysis of transformers using various tests | **L4** |
| **Course Content:** | Minimum of 10 experiments to be conducted out of the following:  **List of Experiments**   1. Speed control of DC shunt motor by Field Current and Armature Voltage Control. 2. Brake test on DC shunt motor- Determination of performance curves. 3. Swinburne’s test - Predetermination of efficiencies as DC Generator and Motor. 4. Hopkinson’s test on DC shunt Machines. 5. Load test on DC compound generator-Determination of characteristics. 6. Load test on DC shunt generator-Determination of characteristics. 7. Fields test on DC series machines-Determination of efficiency. 8. Brake test on DC compound motor-Determination of performance curves. 9. OC & SC tests on single phase transformer. 10. Sumpner’s test on single phase transformer. 11. Scott connection of transformers. 12. Parallel operation of Single-phase Transformers. | | |

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|  | 13. Separation of core losses of a single-phase transformer. |
| **e-**  **Reference:** | <https://ems-iitr.vlabs.ac.in/List%20of%20experiments.html> |