**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:** | 3070100 |

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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.
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| **Course Outcomes:** | After completing the course the student will be able to | **Blooms****level** |
| CO1 | Demonstrate starting and speed control methods of DCMachines. | **L2** |
| CO2 | Apply theoretical concepts to determine the performancecharacteristics of DC Machines. | **L3** |
| CO3 | Analyze the parallel operation of single phase transformers | **L4** |
| CO4 | Determine the performance parameters of single-phasetransformer. | **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> |