

# **Maulana Abul Kalam Azad University of Technology, West Bengal**

(Formerly West Bengal University of Technology)

## **Syllabus for B. Tech in Electrical Engineering**

(Applicable from the academic session 2018-2019)

<b>Name of the course</b>	<b>ELECTRIC MACHINE-II LABORATORY</b>
<b>Course Code:</b> PC-EE 591	<b>Semester: 5<sup>th</sup></b>
<b>Duration:</b> 6 months	<b>Maximum marks:100</b>
<b>Teaching Scheme</b>	<b>Examination scheme:</b>
<b>Theory:</b> 0 hr/week	<b>Continuous Internal Assessment:40</b>
<b>Tutorial:</b> 0 hr/week	<b>External Assessment: 60</b>
<b>Practical:</b> 2 hrs/week	
<b>Credit Points:</b> 1	
	<b>Laboratory Experiments:</b>
1.	Different methods of starting of a 3 phase Cage Induction Motor & their comparison [DOL, Auto transformer &Star-Delta]
2.	Study of equivalent circuit of three phase Induction motor by no load and blocked rotor test.
3.	Study of performance of wound rotor Induction motor under load.
4.	Study of performance of three phase squirrel- cage Induction motor –determination of iron-loss, friction &windage loss.
5.	Speed control of 3 phase squirrel cage induction motor by different methods & their comparison [voltagecontrol & frequency control].
6.	Speed control of 3 phase slip ring Induction motor by rotor resistance control
7.	Determination of regulation of Synchronous machine by a. Potier reactance method. b. Synchronous Impedance method.
8.	Determination of equivalent circuit parameters of a single phase Induction motor.
9.	Load test on single phase Induction motor to obtain the performance characteristics.
10.	To determine the direct axis resistance [ $X_d$ ] & quadrature reactance [ $X_q$ ] of a 3 phase synchronous machine by slip test.
11.	Load test on wound rotor Induction motor to obtain the performance characteristics.
12.	To make connection diagram to full pitch & fractional slot winding of 18 slot squirrel cage Induction motor for 6 poles & 4 pole operation
13.	To study the performance of Induction generator
14.	Parallel operation of 3 phase Synchronous generators
15.	V-curve of Synchronous motor

**Institute may develop experiments based on the theory taught in addition to experiments mentioned.**

### **Reference book:**

1. Laboratory experiments on Electrical Machines, C.K. Chanda, A. Chakrabarti, Dhanpat Rai & Co.
2. Laboratory manual for Electrical Machines, D.P. Kothari, B.S.Umre, I K International Publishing House Pvt. Ltd.

**Course outcome:** After completion of this course, the learners will be able to

1. identify appropriate equipment and instruments for the experiment.
2. test the instrument for application to the experiment.
3. construct circuits with appropriate instruments and safety precautions.
4. validate different characteristics of single phase Induction motor, three phase Induction motor, Induction generator and synchronous motor , methods of speed control of Induction motors and parallel operation of the 3 phase Synchronous generator.
5. work effectively in a team

**Special Remarks:** The above-mentioned outcomes are not limited. Institute may redefine outcomes based their program educational objective.