



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
ELL45	Electrical Machines Lab	--	--	2	--	--	1	1
		Examination Scheme						
		ISE			ESE		Total	
		40			--		20	60

Pre-requisite Course Codes		EL45 (Electrical Machines)
After successful completion of the course, student will be able to		
Course Outcomes	CO1	Validate speed torque characteristics of ac motor and dc motor using simulation software and available machines in the laboratory.
	CO2	Design a driver circuit for a given stepper motor and DC motor.
	CO3	Compare three phase squirrel cage induction motor, three phase wound rotor induction motor and single phase induction motor and do the connection to control their speed.
	CO4	Identify different parts of the given starters and do the connections of the starters for the respective motors.
	CO5	Discuss and design the experiment to find the efficiency of motor on given motor-generator set.
	CO6	Use Expeyes hardware and python programming to observe the output current waveform and its FFT response.

Exp. No.	Experiment Details	Ref.	Marks
1	To construct the voltage waveforms for corresponding input current of three phase squirrel cage induction motor using current sensor and EXPEYES for different values of input voltage.	4	5
2	To validate the characteristics of speed control using Armature Voltage Control and Flux Control method for a given DC motor.	1,2	5
3	To validate the characteristics of armature and field winding of a given DC machines	2	5
4	To plot three phase sinusoidal signal using MATLAB and observe the the phase PWM signal. Implement the same using Python programming	2	5
5	To validate the Torque vs speed characteristics of a given DC motor.	2	5



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India
(Autonomous Institute Affiliated to University of Mumbai)

6	A. Discuss and implement a circuit to find the efficiency of a given DC motor and DC generator set. Observe the current waveforms using Expeyes hardware and Python programming. B. Discuss and implement a circuit to perform the load test on three phase induction motor using given Motor-Generator set. Observe the current waveforms and its FFT using Expeyes hardware and Python programming.	1,4	5
7	Identify the fault in the given driver circuit to control the speed of the DC motor also state the steps followed.	1,3	5
8	Demonstrate the given starters and do the connections with the respective motors. Explain the need of starters.	1	5
Total Marks			40

References:

- [1] D. P. Kothari and I J Nagarath, "Electrical Machines", McGrawHill publications, Fourth edition
- [2] Sailendra Nath Bhadra, "Electric Machinery Experiment laboratory practices and simulation study", Narosa
- [3] Gopal K. Dubey, "Fundamental of Electrical Drives", Narosa, second edition.
- [4] Mueller John Paul, "Beginning programming with Python for Dummies, Wiley publication.