											<del></del>	<del></del>
Paper code: ARA 318P									L	Р	Credits	
Paper Title: ELECTRICAL MACHINES AND DRIVES LAB									0	2	1	
Marking Internal I End-Terr	<b>g Scheme:</b> Evaluation n Practica	n: As per l Examir	universi ation: A	ty examin s per univ	nation no versity e	orms fro xaminat	m time ion nor	to time. ms from	n time to t	time.		
Course C	Jutcomes [	Bloom's	Knowled	ge Level (	KI )]•							
[CO1] [k	K1, K2, K3	3, K4]: A	bility to	understar	nd the E	lectrical	machir	nes, driv	e compoi	ients and	l various ty	pes of
[CO2] [K1, K2, K3, K4]: Ability to learn and apply induction motor parameters, characteristics and various												
tests.												
[CO3] [K1, K2, K3, K4]: Ability to understand the use of DC Motor, its components, load tests and												
characteristics in different applications.												
[CO4] [K1, K2, K3, K4]: Ability to understand the concepts of DC generator and synchronous motor.												
CO/PO	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO1	2	1	1	1	2	2	1	1	1	2	-	-
CO2	2	1	1	1	2	2	1	1	1	2	-	-
CO3	2	1	1	1	2	2	1	1	1	2	-	-
CO4	2	1	1	1	2	2	1	1	1	2	-	-
Average	2	1	1	1	2	2	1	1	1	2	-	-
Course	Content											
1. Familiarization of the electrical machine laboratory apparatus												
<u>(</u> ]	(https://ems-iitr.vlabs.ac.in/exp/lab-equipment-familiarization/)											
2. S	2. Speed control of slip ring Induction Motor											
(https://ems-iitr.vlabs.ac.in/exp/speed-control-slip-ring/)												
3. N	lo Load Te	est on Th	ree-Phas	se Inductio	on Moto	)r		N				
	(https://em-coep.vlabs.ac.in/exp/no-load-test-induction-motor/)											
4. D	olocked KC	coop vla	bs ac in/	e Phase In	auction	r test in	duction	motor				
5 I	( <u>Inttps://em-coep.vlabs.ac.in/exp/blocked-rotor-test-induction-motor/</u> ) 5 Load Test On Separately Excited DC Motor											
	5. Load Test OII Separately Excited DC Motor (https://em-coep.ylabs.ac.in/eyp/load-test-dc-motor/)											
6. Š	6. Speed Control of Separately Excited DC Motor											
(1	(https://em-coep.vlabs.ac.in/exp/speed-control-dc-motor/)											
7. Š	7. Speed Control of DC motor by field resistance control											
(1	(https://ems-iitr.vlabs.ac.in/exp/dcmotor-field-resistance-control/)											
8. T	o study the	e Load C	Character	istics of I	OC shun	t genera	tor					
<u>(</u> ]	(https://ems-iitr.vlabs.ac.in/exp/load-characteristics-dc-shunt/)											
9. V	. V and Inverted V curves of Synchronous Motor											
	(https://em-coep.vlabs.ac.in/exp/synchronous-motor/)											
10. 10 study the Magnetisation Characteristics of DC shunt generator												
<u> </u>	mps://ems	s-mr.viat	<u>18.ac.In/6</u>	<u>xp/magne</u>	<u>suzation</u>	<u>-charact</u>	CHSUCS	-acsnun	<u>u j</u>			

## **Text Books:**

- 1. Nagrath I. J. Kothari D. P. (2011'). Electric machines. McGraw-Hill Education. 3rd edition
- 2. Ashfaq Hussain, Electric Machines 2nd edition, Dhanpat Rai and Co. (Pvt) Ltd.
- 3. Power Semiconductor and Drives, Gopal K. Dubey

## **Reference Books:**

- 1. Mohan N. (2012). Electric machines and drives, Wiley India publication
- 2. Sen P. C'. (2002). Principle of Electric Machines and Power Electronics, Wiley publications.

Paper code : ARA 352									L	Р	Credits	
Paper Title : Automotive Technology & Green Vehicles Lab									0	2	1	
Marking S	Scheme:										·	•
Internal Evaluation: As per university examination norms from time to time.												
End Term Practical Examination: As per university examination norms from time to time.												
Course Outcomes [Bloom's Knowledge Level (KL)]: [CO1] [K1, K2, K3, K4] [CO2] [K1, K2, K3, K4] [CO3] [K1, K2, K3, K4] [CO4] [K1, K2, K3, K4]												
CO/PO	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO1												
CO2												
CO3												
CO4												
Average												
Course Content:												