JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTRE	Jaipur Engineering College and Research Centre, Shri Ram kiNangal, via Sitapura RIICO Jaipur- 302 022.	**Academic year 2020-21**

Viva Voce

Year: B. Tech. I Year Semester-I & II

Subject& Code: Basic Electrical Engineering Lab (1FY3-26)

Lab Outcomes (LO)	
LO1	Understand the electrical and electronic components, measuring devices along with safety precautions required during their use.
LO2	Determine the current, voltage and power consumption in transformer, AC and DC rotating machines by connecting the machine with the power supply.
LO3	Understand the concepts of power converters along with hardware demonstration.

Experiment No.	**LO**	**Object of the Experiment**
1.	**LO1**	Basic safety precautions. Introduction and use of measuring instruments – Voltmeter, Ammeter, Multi-meter, oscilloscope. Real life resisters, capacitors and inductors.
		1. What are the basic safety precautions for BEE lab? 2. Name different measuring instruments used in BEE lab. 3. What is the function of attenuator in CRO? 4. What are the basic components of a CRO? 5. What is the function of electron –gun assembly used in CRT? 6. What is measurement? 7. Whether ammeter is connected with elements in series or in parallel? Also explain the reason? 8. What is multi- meter? Differentiate between analog and digital multi- meter. 9. Differentiate between linear and nonlinear resistance. 10. What is thermistor?
2.	**LO2**	Transformers: Observation of the no-load current waveform on an oscilloscope. Loading of a transformer: measurement of primary and secondary voltages and currents, and power.
		1. What is single phase transformer? 2. State Faraday's law of electromagnetic induction. 3. Draw the phasor diagram of single phase transformer at no load. 4. Write the EMF equation for a single phase transformer. 5. Draw the phasor diagram of a single phase transformer on load. 6. Define efficiency and regulation of a single phase transformer. 7. What is the transformation ratio of a single phase transformer?

		8. Why the transformer rated in KVA? 9. Differentiate ideal & practical transformer. 10. What are the two types of power losses occurs in single phase transformer.
3.	**LO2**	Three-phase transformers: Star and Delta connections. Voltage and Current relationships (line-line voltage, phase-to-neutral voltage, line and phase currents).Phase-shifts between the primary and secondary side.
		1. What is three phase transformer? 2. Which material is used for the core of a transformer and why? 3. Define phase voltage, line voltage, phase current and line current. 4. What is the relation between phase voltage and line voltage in balanced star connected system? 5. What are the advantages of three phase system over single phase system? 6. How the windings of a three phase transformer are connected? 7. Define balanced and unbalanced load. 8. Draw the connection diagram of transformer winding for star-star and delta-delta. 9. Draw the phasor diagram for delta connected system. 10. What is the phase difference in each phase of a balanced three phase system?
4.	**LO2**	Demonstration of cut-out sections of machines: dc machine (commutator brush arrangement), induction machine (squirrel cage rotor), synchronous machine (field winging - slip ring arrangement) and single-phase induction machine.
		1. Classify different types of electrical machine. 2. What is the working principle of DC motor? 3. Define field winding and armature winding? 4. What is the function of commutator in DC machine? 5. What is the working principle of induction motor? 6. What is the function of brushes in DC machine? Name the material by which they are made up of? 7. What is slip? 8. Why single phase induction motor is not self-starting? 9. Write the formula for synchronous speed. 10. What is the working principle of synchronous motor?
5	**LO2**	Torque Speed Characteristic of separately excited dc motor.
		1. Define back EMF in DC motor. 2. What is separately excited DC motor? 3. Write the EMF equation of DC motor. 4. Write the formula for torque of a DC motor. 5. Write the formula for speed of DC motor 6. Draw the torque speed characteristics of separately excited dc motor.

		7. What are the methods of speed control of DC motor? 8. What are the types of DC motor? 9. What are the applications of DC series motor? 10. What are the applications of DC shunt motor?
6.	**LO3**	Demonstration of (a) dc-dc converters (b) dc-ac converters – PWM waveform (c) the use of dc-ac converter for speed control of an induction motor and (d) Components of LT switchgear.
		1. What is the function of DC-DC converter? 2. Name the different devices used in chopper. 3. Define duty cycle. 4. What is the function of Buck converter? 5. Draw the output voltage and current waveform for Buck converter. 6. What is the function of inverter? 7. What is the function of Boost converter? 8. Give the classification of switchgear. 9. What is circuit breaker? 10. Define MCB and MCCB.

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