EE

Lesson plan

Name of Faculty	**RAHUL NEHRA**
Discipline	**EE**
Semester	**First Sem (1st sem)**
Subject	**Principles Of Electrical Engineering**
Lesson Plan Duration	**From Aug 2025**
Work load [Theory + Practical] Per Week	**[03+08]**

Week	Day	Theory Topic/ Assignment/ Test	No.	Practical
1st	1	Unit1: Electrical Fundamentals- Nature of Electricity, Charge, free electrons, Electric potential and potential	1	Familiarization of basic components/equipment like ammeter, voltmeter, watt meter, resistance, capacitor, inductor, energy meter, power factor meter, CRO, multi-meter etc. and their operation, uses.
	2	Resistance: Definition, Unit, Laws of resistance, conductivity and resistivity, Effect of temperature on resistance, Temperature coefficient of resistance, Types of resistance & their applications, Color coding of resistance.		
	3	Rating and wattages of Electrical appliances, heating effect of Electrical current.		
2nd	1	Introduction to Capacitors, capacitance, Variable capacitor, Factors affecting capacitance of a capacitor, Capacitance of parallel plate capacitor	2	Determine the value of resistance using colour coding method.
	2	Grouping of capacitors: capacitors in series, parallel, series-parallel. Energy stored in capacitor, Charging and discharging of a capacitor.		
	3	Test/ Assignment		
3rd	1	Unit 2: Ohm's law, Definition of DC circuit, types of DC circuits: series circuit, parallel circuit, series-parallel circuit.	3	Observation of change in resistance of a bulb in hot and cold conditions, using voltmeter and ammeter.
	2	Concept of voltage source & current source, connections and their conversions, Wheatstone Bridge.		
	3	Kirchhoff's Laws -KVL and KCL.		
4th	1	Star – Delta connections and their conversion	4	To charge and discharge a capacitor and to show the graph on C.R.O.
	2	Test		
	3	Revision		

5th	1	Unit 3: Electrostatics & Magnetostatics: Concepts of Electrostatics, Coulomb's law.	5	Verification of laws of capacitors in series and parallel.
	2	Concept of magnetism, Magnetic field, Magnetic lines of force.		
	3	Definition of Electromagnetism, magnetic effect of electric current, direction of magnetic field and current: right hand rule, right hand cork screw rule.		
6th	1	Magnetic field due to circular coil, solenoid.	6	To verify ohm's law by drawing a graph between voltage and current.
	2	Current carrying conductors in a magnetic field and methods to find its direction, applications.		
	3	Force between two parallel current carrying conductors. Analogy between electric and magnetic circuit.		
7th	1	Definition of Magnetic circuit, terms related to magnetic circuits: magneto-motive force (MMF), flux, magnetic flux density, reluctance, permeability, field intensity, relation between magnetic flux density, permeability, field intensity.	7	Verification of Kirchhoff's Current Law in a dc circuit.
	2	Revision		
	3	Class Test/ Assignment		
8th	1	Unit 4: Electro-Magnetic Induction: Determination of Ampere Turns, Series & parallel magnetic circuits, Concept of magnetic leakage, useful flux & Air Gap.	8	Verification of Kirchhoff's Voltage Laws in a dc circuit.
	2	Magnetic curve (B-H curve) - cause of Hysteresis, Hysteresis loss, significance of Hysteresis loss, magnetic hysteresis loop for hard and soft magnetic materials.		
	3	Faraday's laws of electro-magnetic induction.		
9th	1	Direction of Induced emf and current: Lenz's law, Fleming's right Hand rule	9	Measurement of current and voltage in series resistive circuit.
	2	E.M.F induced in a conductor: Dynamically induced emf, Statically induced emf: Self- induced emf and Mutual induced emf,		
	3	Expression for self-inductance, mutual inductance.		
10th	1	Revision	10	Measurement of current and voltage in parallel resistive circuit.
	2	Class Test/ Assignment		

	3	**Unit 5: Batteries: Electrolysis, Faradays law of electrolysis, important terms related to electrolysis, electroplating.**		
11th	1	**Concept of Cell: definition, emf of cell, internal resistance of cell terminal potential of cell**	**11**	**To find the ratio of inductance of a coil having air-core and iron-core respectively and to observe the effect of introduction of a magnetic core on coil inductance.**
	2	**Types of cells (primary and secondary cell), grouping of cells (series grouping, parallel grouping, series-parallel grouping).**		
	3	**Concept of Battery: Definition, types of battery like Lead-Acid, Nickel-Cadmium, Lithium-ion batteries with their Construction, working principle and applications.**		
12th	1	**Charging methods of storage battery and charging indications.**	**12**	**Verification of Faraday's law of electromagnetic induction. To obtain BH curve of a magnetic material.**
	2	**Characteristics of battery: voltage, capacity, efficiency**		
	3	**Care and maintenance of battery**		
13th	1	**Introduction to maintenance free batteries.**	**13**	**Demonstration of parts of a battery and find the specific gravity of battery.**
	2	**Disposal of batteries**		
	3	**Revision**		
14th	1	**Class Test/ Assignment**	**14**	**Demonstration of charging and discharging of Battery and measure the terminal voltage during charging and discharging condition.**
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