EE

Lesson plan

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| **Name of Faculty** | **Sh Arun Sandhu** |
| **Discipline** | **EE** |
| **Semester** | **First Sem (1st sem)** |
| **Subject** | **Principles Of Electrical Engineering** |
| **Lesson Plan Duration** | **From 4th August 2025** |
| **Work load [Theory + Practical] Per Week** | **[03+04]** |

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| **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,** | **2** | **Determine the value of resistance using colour** |
|  |  | **Variable capacitor, Factors affecting** |  | **coding method.** |
|  |  | **capacitance of a capacitor, Capacitance of** |  |  |
|  |  | **parallel plate capacitor** |  |  |
|  | **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** |  |  |

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| **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 intens**ity. | **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** |

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|  | **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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