**Lesson Plan**

**Name of Faculty : KRISHAN KUMAR**

**Discipline : Electronics & Communication Engineering**

**Semester : 1st**

**Subject : F E E**

**Lesson Plan Duration : 16 weeks**

**Work load (Lecture /Practical) per week (in hours): Lectures-03, Practical-04**

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| **week****1st** | **Lecture Day** | **Topic (Including Assignment/ Test** | **Practical Day** | **Topic** |
| **1** | **UNIT1-ELECTRICAL FUNDAMENTAL**Nature of Electricity, Charge, Free Electrons, Electric current.  | **1st** | Familiarization of measuring instruments viz- voltmeter, ammeter, CRO, Wattmeter and multimeter |
| **2** | Electric potential and potential difference, Electrical Energy, Electrical power and their unit. |
| **3** | **RESISTANCE:-**Definition, Unit, Laws of resistance, conductivity and resistivity. |
| **2nd** | **4** | Effect of temperature on resistance, Temperature coefficient of resistance. | **2nd** | To measure (very low)resistance of an ammeter and (very high)resistance of a voltmeter. |
| **5** | Types of resistance & their applications |
| **6** | Color coding of resistance |
| **3rd** | **7** | Revision  | **3rd** | To verify Ohm’s law by drawing a graph between voltage and current. |
| **8** | **Inductors** and **Capacitors** with their wattage consideration. |
| **9** | Factors affecting capacitance of a capacitor.  |
| **4th** | **10** | Capacitors in series and parallel. | **4th** | To observe change in resistance of a bulb in a hot & cold condition using voltmeter & ammeter. |
| **11** | **UNIT2-DC CIRCUITS & THEOREMS**Ohm’s law and its verification.Kirchhoff ‘s current law and Kirchhoff ‘s voltage law  |
| **12** | Star-Delta conversion. |
| **5th** | **13** |  Voltage and current sources, symbol and graphical representation, characteristics of ideal and practical sources. | **5th** | To determine the value of resistance using color coding method.  |
| **14** | Mesh and Loop analysis. |
| **15** | Mesh and Loop analysis. |
| **6th** | **16** | Thevenin’s theorem. | **6th** | Verification of Kirchhoff‘s current and voltage laws in a DC circuit on bread board.  |
| **17** | Norton’s theorem. |
| **18** |  Superposition’s theorem |
| **7th** | **19** | Maximum Power Transfer theorem. | **7th** | Verification of Thevenin’s theorem. |
| **20** | Revision  |
| **21** | Expert Lecture/ Quiz |
| **8th** | **22** | **UNIT3-AC CIRCUITS**AC Fundamental: Cycle, frequency, time period, amplitude. | **8th** | Verification of Norton‘s theorem. |
| **23** | Difference in AC and DC. |
| **24** | Instantaneous value, average value, r.m.s. value, maximum value, form factor and peak factor. |
| **9th** | **25** | Concept of conductance, susceptance, admittance, impedance. | **9th** | Verification of Superposition theorem. |
| **26** |  Concept of inductive and capacitive resistance. |
| **27** | RL-RC Circuits |
| **10th** | **28** | Introduction to series and parallel resonance and its conditions. | **10th** | Verification of Maximum Power Transfer theorem. |
| **29** | Power in pure resistance, inductance and capacitance. |
| **30** | Power in combined RLC circuits. |
| **11th** | **31** | Power factor, active and reactive power: Definition and significance. | **11th** | AC applied to R & L and R & C in series. |
| **32** | **UNIT4-ELECTRO MAGNETIC CIRCUIT**Concept of electro-magnetic field produced by flow of electric current, magnetic circuit. |
| **33** |  Concept of magneto-motive force (MMF), Flux, reluctance, permeability. |
| **12th** | **34** | Analogy between electric and magnetic circuit.  | **12th** | To find the VI relationship in a single phase R-L series circuit and draw their impedance Δ’s. |
| **35** | Faraday’s laws of electro-magnetic induction. |
| **36** | Principle of self and mutual induction, self and mutually induced emf. |
| **13th** | **37** | Energy stored in an inductor, series and parallel combination of inductors. | **13th** | To find the VI relationship in a single phase R-C series circuit and draw their impedance Δ’s. |
| **38** | Revision  |
| **39** | Expert Lecture/ Quiz. |
| **14th** | **40** | **UNIT5-BATTERIES**Basic idea of primary and secondary cells | **14th** | Measurement of power and power factor in a single phase R,L,C circuit. |
| **41** | Construction, working principle and applications of Lead-Acid.  |
| **42** | Construction, working principle and applications of Nickel, Cadmium batteries.  |
| **15th** | **43** | Construction, working principle and applications of Lithium batteries. | **15th** | Calculation of active and reactive powers in the circuit. |
| **44** | Series and parallel connections of batteries. |
| **45** | Introduction to maintenance free batteries |
| **16th** | **46** | Disposal of batteries. | **16th** | To test a lead-acid battery and measure its specific gravity. |
| **47** | General idea of solar cells, solar panels and their applications. |
| **48** | Expert Lecture/ Quiz. |