Govt. Polytechnic, Loharu (Bhiwani) Electrical Engineering Department Lesson plan (for Even-semester as per revised curriculum and study scheme)

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| **Name ofFaculty** | | **Sh.Navneet** | | |
| **Discipline** | | **Electrical Engineering** | | |
| **Semester** | | **2nd(Even-semester)** | | |
| **Subject** | | **ELECTRICAL NETWORKS** | | |
| **LessonPlan** | | **From FEB 2024 to June 2024** | | |
| **Workload(Theory** | | **(03+04)** | | |
| **Week** | **Day** | **Topics** | **No.** | **Practical** |
| 1st | 1 | Meshanalysis | 1 | Use voltmeter, ammeter to determine current through the given branchofa electric network by applying mesh analysis. |
| 2 | Nodalanalysisusingvoltageandcurrent  sources |
| 3 | Superpositiontheorem |
| 2nd | 1 | Thevenintheorem | 2 | Use voltmeter, ammeter to determine current through the given branchofa electric network by applying node analysis. |
| 2 | Nortontheorem |
| 3 | Maximumpowertransfertheorem |
| 3rd | 1 | Activeandpassivenetwork,LinearandNon  Linearnetwork | 3 | VerificationofSuperpositionTheorem. |
| 2 | Problemsolutionbasedonabovetheorems |
| 3 | GenerationofalternatingVoltageandcurrent. |
| 4th | 1 | Differencebetweenacanddc,Equationof  alternatingquantity. | 4 | VerificationofThevenin’stheorem. |
| 2 | ACTerminology:waveform,cycle,frequency,  timeperiod,amplitude |
| 3 | Instantaneousvalue,alternation,and their important relations (time period and  frequency, |
| 5th | 1 | Angularvelocityandfrequencyetc.) | 5 | VerificationofNorton’sTheorems. |
| 2 | Values of alternating voltage and current: Instantaneousvalue,peakvalueaverage  value, |
| 3 | R.M.S.value,formfactorandpeakfactor |
| 6th | 1 | Vectorrepresentationofalternatingquantities | 6 | VerificationofMaximumPowertransferTheorem. |
| 2 | Conceptofphase,phasedifferenceand  phasors |
| 3 | Representationofelectricalquantitiesthrough  phasors |
| 7th | 1 | Additionoftwoalternatingquantities:  parallelogram method, | 7 | Observe the wave shape of an alternating supply on CRO and calculate average, RMS  value,frequencyandtimeperiod. |
| 2 | A.CcircuitcontainingpureResistance,  Inductance, Capacitance with the concept of Componentmethodpowerconsumed, |
| 3 | PhaseAngle,inductiveandcapacitive  reactanceetc. |
| 8th | 1 | ACseriescircuit:R-L,R-C,R-L-Calongwith  theconceptofphasordiagram, | 8 | Measure input current, power, power factor of R-L series circuit and draw the power  triangle. |
| 2 | Phaseangle,Impedance,impedance  triangle,power,powertriangleetc. |
| 3 | ConceptofTrue power,apparentpowerand  reactivepower, |
|  | 1 | Significance,disadvantagesoflowpower  factor,causeoflowpowerfactor, |  | Measureinputcurrent,power,powerfactorofR-C  seriescircuitanddrawthepower |

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| 9th | 2 | Power factor and its improvement of power factor. | 9 | triangle. |
| 3 | Activeandreactivecomponentsofcurrent |
| 10th | 1 | Resonance in RLC series circuit, Quality (Q) factor | 10 | Measureinputcurrent,power,powerfactorofR-L-  C series circuit and draw thepower triangle. |
| 2 | ConceptofACparallelcircuit |
| 3 | Methods of solving parallel AC circuit: vector method, |
| 11th | 1 | Admittancemethod,symbolicorJ-method | 11 | Use variable frequency supply to create resonance in given series R-L-C circuit or by  usingvariableinductororvariablecapacitor. |
| 2 | ParallelResonance,Q-factor |
| 3 | Comparisonofseriesandparallelresonance. |
| 12th | 1 | IntroductiontotransientandHarmonicsin  A.C.circuits | 12 | To determine current, p.f., active, reactive and apparent power in R-C parallel A.C.  circuit. |
| 2 | 5.1 Principle of generation of 3 –ø alternating emf. |
| 3 | Advantages of Polyphase circuit over single phase circuit, Phase Sequence. |
| 13th | 1 | Types of three phase connections-Star connection and delta connection. | 13 | To determine current, p.f., active, reactive and apparentpowerforgiven R-L-Cparallel circuit with series connection of resistor and inductor in parallel with capacitor. |
| 2 | Conceptofbalancedandunbalancedload. |
| 3 | Relation between phase and line quantities of star and delta connection. |
| 14th | 1 | Poly-Phase Systems ,Advantages of 3Ø over 1- Ø | 14 | Use variable frequency supply create resonance in given parallel R-L-C circuit or by  usingvariableinductororcapacitor. |
| 2 | System Star & delta connections with phase and line voltage and current relations. |
| 3 | 3-phasebalancedandunbalancedcircuits |
| 15th | 1 | Powerin3-phasecircuits |  |  |
| 2 | Revision/Review/TestofoldHSBTEPapers |
| 3 | Revision/Review/TestofoldHSBTEPapers |