Lesson Plan

Name of faculty : Ruby Sathiala

Discipline : Electrical Engineering

Semester : 3rd

Subject : Electrical circuits and networks

Lesson plan duration : 15 weeks

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| **Week** | **Lecture** | **Topic (Including Assignment / Test) : Planned** | **Actually covered on**  **(date)** | **Teacher’s**  **Sign** | **HOD’s Sign** | **DP’s**  **Sign** |
| 1st | 1 | Network topology and theorems: Classification of circuits |  |  |  |  |
| 2 | sources and signals |  |  |  |  |
| 3 | source transformations |  |  |  |  |
| 2nd | 4 | Network topology, graph matrices |  |  |  |  |
| 5 | formulation and solution of circuit equations based on graph theory using different analysis techniques- circuit |  |  |  |  |
| 6 | cut set and mixed |  |  |  |  |
| 3rd | 7 | Concept of duality |  |  |  |  |
| 8 | Network theorems and their applications- Superposition |  |  |  |  |
| 9 | reciprocity, Thevenin |  |  |  |  |
| 4th | 10 | Norton, Maximum power transfer |  |  |  |  |
| 11 | Millman, Substitution |  |  |  |  |
| 12 | Compensation and Tellegan’s theorem. |  |  |  |  |
| 5th | 13 | Transient response: Introduction to non-linear circuits and their analysis |  |  |  |  |
| 14 | Analysis of circuits with dependent sources |  |  |  |  |
| 15 | Transient response under d.c. and a.c. excitation |  |  |  |  |
| 6th | 16 | Analysis of magnetically coupled circuits |  |  |  |  |
| 17 | Series and parallel resonance circuits |  |  |  |  |
| 18 | bandwidth and Q-factor |  |  |  |  |
| **7th** |  | **1stSessionals** |  |  |  |  |
| 8th | 19 | response with variation in parameters and frequency |  |  |  |  |
| 20 | Two-port networks and Parameters: Concept of one port, two-port networks |  |  |  |  |
| 21 | characteristics and parameters(impedance parameters, admittance parameters, transmission parameters and hybrid parameters) |  |  |  |  |
| 9th | 22 | interrelationships of parameters |  |  |  |  |
| 23 | image & iterative impedance |  |  |  |  |
| 24 | concept of characteristic impedance |  |  |  |  |
| 10th | 25 | scattering parameters, insertion loss |  |  |  |  |
| 26 | interconnection of two-port networks |  |  |  |  |
| 27 | analysis of terminated two-port networks |  |  |  |  |
| 11th | 28 | extensions to multiport networks.  Network functions and Synthesis: Generalized network functions (Driving point and Transfer) |  |  |  |  |
| 29 | concepts of poles and zeros |  |  |  |  |
| 30 | determination of free and forced response from poles and zeros |  |  |  |  |
| 12th | 31 | concept of minimum phase networks |  |  |  |  |
| 32 | analysis of ladder, lattice |  |  |  |  |
| 33 | T and bridged-T networks |  |  |  |  |
| 13th | 34 | Network synthesis |  |  |  |  |
| 35 | Network synthesis- Synthesis problem formulation |  |  |  |  |
| 36 | properties of positive real functions |  |  |  |  |
| **14th** |  | **2ndSessionals** |  |  |  |  |
| 15th | 37 | Hurwitz polynomials |  |  |  |  |
| 38 | properties of RC, LC and RL driving point functions |  |  |  |  |
| 39 | Foster and Cauer synthesis of LC and RC circuits. |  |  |  |  |