RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

New Scheme Based On AICTE Flexible Curricula

Electronics & Communication Engineering III-Semester

EC305 Network Analysis

Unit-1 Introduction to circuit theory: basic circuit element R,L,C and their characteristics in terms of linearity & time dependant nature, voltage & current sources, controlled & uncontrolled sources KCL and KVL analysis, Steady state sinusoidal analysis using phasors; Concept of phasor & vector, impedance & admittance, Nodal & mesh analysis, analysis of magnetically coupled circuits. Dot convention, coupling coefficient, tuned circuits, Series & parallel resonance

Unit-2 Network Graph theory: Concept of Network graph, Tree, Tree branch & link, Incidence matrix, cut set and tie set matrices, dual networks

Unit-3 Network Theorems: Thevenins & Norton's, Super positions, Reciprocity, Compensation, Substitution, Maximum power transfer, and Millman's theorem, Tellegen's theorem, problems with dependent & independent sources.

Unit-4 Transient analysis: Transients in RL, RC&RLC Circuits, initial& final conditions, time constants. Steady state analysis

Laplace transform: solution of Integro-differential equations, transform of waveform synthesized with step ramp, Gate and sinusoidal functions, Initial & final value theorem, Network Theorems in transform domain.

Unit-5 Two port parameters: Z, Y, ABCD, Hybrid parameters, their inverse & image parameters, relationship between parameters, Interconnection of two ports networks, Reciprocity and Symmetry in all parameter.

Text/Reference Books: 1. M.E. Van Valkenburg, Network Analysis, (Pearson)
2. S P Ghosh A K Chakraborty Network Analysis & Synth. (MGH).
3. http://www.nptelvideos.in/2012/11/networks-and-systems.html

REFERENCE:- 1. Sudhakar-Circuit Network Analysis & Synth(TMH).
2. J. David Irwin Engineering Circuit analysis tenth edition, Wiley india.
3. Kuo- Network Analysis & Synthesis, Wiley India.
4. Robert L Boylestad introductory Circuit analysis, Pearson
5. Smarajit Ghosh, NETWORK THEORY: ANALYSIS AND SYNTHESIS (PHI).

6. Roy Choudhary D; Network and systems; New Age Pub.
7. Bhattacharya and Singh- Network Analysis & Synth (Pearson)

EXPERIMENTS LIST:-

1. To Verify Thevenin Theorem and Superposition Theorem.

2. To Verify Reciprocity Theorem and Millman's Theorem.

3. To Verify Maximum Power Transfer Theorem.

4. To Determine Open Circuit and Short Circuit parameters of a Two Port Network.

5. To Determine A,B, C, D parameters of a Two Port Network.

6. To determine h parameters of a Two Port Network.

7. To Find Frequency Response of RLC Series Circuit RLC parallel Circuit and determine resonance and 3dB frequencies.

8. To determine charging and discharging times of Capacitors.