

Electronics Analog meters : Electronics analog DC and AC voltmeter and ammeters, Electronic analog ohmmeter and multimeter. Digital Meters Analog to digital converter : Transfer characteristics, A/D Conversion techniques : Simple potentiometric and servo method, Successive approximation, Ramp type, Integrating and Dual-slope integrating method. D/A Converter : Transfer characteristics, D/A Conversion techniques, Digital mode of operation, Performance characteristics of D/A converters. Display devices : Decimal, BCD and straight binary number, Indicating system, Numeric and alphanumeric display using LCD and LED, Specification of digital meters : Display digit and Counts resolution, Sensitivity, Accuracy, Speed and Settling time etc. Oscilloscopes and RF Measurement Types of oscilloscopes, Controls, Measurements : Voltage, Frequency, Time and Phase. High frequency measurements - RF impedancy. Probes : Types of probes, Probe loading and Measurement effect, Probe specifications. Signal Generators and Analyzers Signal Generators : Sine-wave, Non-sinusoidal and Function generators, Frequency synthesis techniques and digital signal generators. Signal Analyzers : Distortion, Wave and Network spectrum analyzers.

This book focuses on recent technical advancements and state-of-the art technologies for analyzing characteristic features and probabilistic modelling of complex social networks and decentralized online network architectures. Such research results in applications related to surveillance and privacy, fraud analysis, cyber forensics, propaganda campaigns, as well as for online social networks such as Facebook. The text illustrates the benefits of using advanced social network analysis methods through application case studies based on practical test results from synthetic and real-world data. This book will appeal to researchers and students working in these areas.

Basic Concepts Practical sources, source transformation, network reduction using star-delta transformation. Loop and node analysis with linearly dependent and independent sources for DC and AC networks. Network Topology Graph of network, Concept of a tree and co-tree, incidence matrix, tieset and cut-set schedules, formulation of equilibrium equations in matrix form, solution of resistive networks, principles of duality. Network Theorems Superposition, Reciprocity, Thevenin's, Norton's, Maximum power transfer and Millman's theorems. Resonant Circuits Series and parallel resonance, frequency-response of series and parallel circuits, Q-factor, Bandwidth. Transient Behaviour and Initial Conditions Behaviour of circuit element under switching condition and their representation, evaluation of initial and final conditions in RL, RC and RLC circuits for AC and DC excitations. Laplace Transformation and Applications Solution of networks, step, ramp and impulse functions, waveform synthesis, initial and final values, convolution integral, Transformed networks and their solution. Two Port Network Parameters Short circuit admittance parameters, open circuit impedance parameters, transmission parameters, hybrid parameters, relationship between parameters sets.

The book covers all the aspects of theory, analysis, and design of Electronic Circuits for the undergraduate course. The

concepts of biasing of BJT, JFET, MOSFET, along with the analysis of BJT, FET, and MOSFET amplifiers, are explained comprehensively. The frequency response of amplifiers is explained in support. The detailed essential of rectifiers, filters, and power supplies are also incorporated in the book. The book covers biasing of BJT, JFET, and MOSFET and analysis of basic BJT, JFET, and MOSFET amplifiers with Hybrid π equivalent circuits. It also includes the Darlington amplifier discussion, amplifiers using Bootstrap technique, multistage amplifiers, differential amplifiers, and BiCMOS cascade amplifier. The in-depth analysis of the frequency response of various amplifiers is also included in the book. Finally, the book covers all the aspects of rectifiers, types of filters, linear regulators, power supplies, and switching regulators. The book uses straightforward and lucid language to explain each topic. The book provides the logical method of describing the various complicated issues and stepwise methods to make understanding easy. The variety of solved examples is the feature of this book. The book explains the subject's philosophy, which makes understanding the concepts evident and makes the subject more interesting.

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The importance of network analysis and synthesis is well known in the various engineering fields. The book provides comprehensive coverage of the signals and network analysis, network functions and two port networks, network synthesis and active filter design. The book is structured to cover the key aspects of the course Network Analysis & Synthesis. The book starts with explaining the various types of signals, basic concepts of network analysis and transient analysis using classical approach. The Laplace transform plays an important role in the network analysis. The chapter on Laplace transform includes properties of Laplace transform and its application in the network analysis. The book includes the discussion of network functions of one and two port networks. The book covers the various aspects of two port network parameters along with the conditions of symmetry and reciprocity. It also derives the interrelationships between the two port network parameters. The network synthesis starts with the realizability theory including Hurwitz polynomial, properties of positive real functions, Sturm's theorem and maximum modulus theorem. The book covers the various aspects of one port network synthesis explaining the network synthesis of LC, RC, RL and RLC networks using Foster and Caue forms. Then it explains the elements of transfer function synthesis. Finally, the book illustrates the active filter design. Each chapter provides the detailed explanation of the topic, practical examples and variety of solved problems. The explanations are given using very simple and lucid language. All the chapters are arranged in a specific sequence which helps to build the understanding of the subject in a logical fashion. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.

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This book presents a comprehensive and in-depth analysis of electrical circuit theory in biomedical engineering, ideally suited as textbook for a graduate course. It contains methods and theory, but the topical focus is placed on practical applications of circuit theory, including problems, solutions and case studies. The target audience comprises graduate students and researchers and experts in electrical engineering who intend to embark on biomedical applications.

??Holt,Rinchart and Winston 1983??????. -- ??: Modern digital and analog communication systems/B. P. Lathi

The book covers all the aspects of Network Analysis for undergraduate course. The book provides comprehensive coverage of network analysis and simplification techniques, network theorems, graph theory, transient analysis, filters, attenuators, Laplace transform, network functions and two port network parameters with the help of large number of solved problems. The book starts with explaining the various network simplification techniques including mesh analysis, node analysis and source shifting. The basics of a.c. fundamentals are also explained in support. The book covers the various network theorems. Then the book explains the graph theory, its application in network analysis along with the concept of duality. The transient analysis of various networks is also explained in the book. The book incorporates the detailed discussion of resonant circuits. The book also explains the theory of four terminal networks, filters and attenuators. The Laplace transform plays an important role in the network analysis. The chapter on Laplace transform includes properties of Laplace transform and its application in the network analysis. The book includes the discussion of network functions of one and two port networks. The book covers the various aspects of two port network parameters along with the conditions of symmetry and reciprocity. It also derives the interrelationships between the two port network parameters. The book uses plain and lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. The variety of solved examples is the feature of this book. The book explains the philosophy of the subject which makes the understanding of the subject very clear and makes the subject more interesting. The students have to omit nothing and possibly have to cover nothing more.

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Open loop and closed loop systems, Servomechanism, Basic structure of a feedback control system.Dynamic Models and ResponsesDynamic model of an RLC network, State variable model, Impulse response model, Transfer function model, Standard test/disturbance signals and their models, Transfer function model and dynamic response of a second

order electrical system. Control System Components Basic units of feedback control system, Reduction of system block diagrams, Signal flow graph, Mason's gain rule, Block diagram reduction using Mason's gain rule, Operational amplifier used as an error detector, Servo potentiometer, DC and AC servomotors, Tachogenerator, Stepper motor, Synchros, Block diagram model of a typical control system using simplified sub-system, Transfer function blocks. Feedback Control System Characteristics Stability, Sensitivity, Disturbance rejection, Steady state accuracy, Transient and steady state responses of a second order system, Effect of additional zeros and poles, Desired closed loop pole locations and dominant poles, Steady state error constants, System type numbers and error compensation. System Stability Analysis and Compensator Design System stability bounds, Routh stability criterion, Relative stability and range of stability, Root locus concept, System characteristic equation, Plotting root loci, Design of cascade lag-lead compensation, Minor loop (rate) feedback compensation. Nyquist Criterion and Stability Margins Nyquist stability criterions, Nyquist plot, Gain and phase margins, Bode plot of magnitude and phase and determination of stability margins. Feedback System Performance Performance specifications in frequency domain, Correlation between frequency domain and time domain specifications, Constant - M circles, Nichols chart, Stability margins from sensitivity function. Design of cascade lag-lead compensation using Bode plot. Minor loop (rate) feedback compensation.

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Simplification and Analysis Techniques (A.C. and D.C. Circuits) Sinusoidal steady state. Phasors & phasor diagram. Energy sources. Mesh and nodal analysis. Source transformation. Network theorems. 1) Superposition theorem. 2) Thevenin's theorem. 3) Norton's theorem. 4) Maximum power transfer theorem. Resonance and Applications Definition of figure of merit, Q. Series resonance: Current bandwidth, Impedance, & selectivity in series resonance. Parallel (anti) resonance: Application of resonance circuits including impedance transformation. Transient Response Initial conditions in elements. A procedure for evaluating initial conditions. Solution of RC, RL, RLC step response using classical method. Solution of RC, RL, RLC step response using Laplace transform. Four Terminal Networks Classification of four terminal networks (Symmetrical, asymmetrical, balanced & unbalanced) Characteristic impedance & propagation constant for symmetrical networks. Image & iterative impedance for symmetrical networks. Filter fundamentals: Constant K type low-

pass filter. Constant K type high pass filter. Constant K type band pass filter. Constant K type band stop filter. M-derived T and sections of low pass filter. Composite low pass filter. Attenuators : Introduction. Nepers & decibels. Symmetrical T & type attenuators. Network Functions Terminal pairs and ports. Network functions for one and two port networks. Poles & zeros of network function. Time domain behaviour from pole zero plot. Two Port Network Parameters Introduction. Open circuit impedance parameters. Short circuit admittance parameters. Hybrid parameters. Transmission parameters. Interrelation between different parameters. Interconnection of two port networks.

Circuit Elements & Kirchoff's Laws Lumped & Discrete Circuit Elements, Characterization of Resistors, Capacitors & Inductors in Terms of Their Livearity & Time Dependence Nature, Characteristics of Independent & Dependent Sources, KCL & KVL for Circuits with Dependent & Independent. Sources, Terminal Characteristics of Active Circuit Elements like Diodes, OPAMPS & transistors, Dot Convention for Coupled Inductor. Time Domain Analysis of Circuits Initial and Final Conditions on Network Elements, Differential Equations & integrodifferential Equations of First-and Second Order System, Step and Impulse response of First and Second-Order System, Zero-Input & Zero-State Response. Sinusoidal Steady-State Analysis Difference of Sinusoidal Steady[^] State, Difference between a Phasor and a Vector. Concept of Impedance and Admittance, Node & Mesh Analysis in the Sinusoidal Steady State, Network Theorems Like Superposition, Thevenin's & Superposition in the Sinusoidal Steady State, Present Circuits (both Series & Parallel) Coupling Elements and Coupled Circuits Coupled Inductors & Their Characterisation, Co-efficient of Coupling, Multiwin'ding Inductors & their I Inductance Matrix, Double Tuned Circuits. Transform Domain Analysis of Networks The philosophy of Transform Methods, The Laplace Transform, Use of Laplace Transform for the Solution of Integra. Differential Equations, Transforms of Wave Forms Synthesized with Step, Rampm Gate and Sinusoidal Fuctions, The transformed Network, Network Theorems (the Venin, Norton, Maximum power. Superposition & Reciprocity) in transform Domain. Network Functions The concept of complex frequency, Concept of Ports, Network Functions of one Port & Two ports, Calculation of Network Functions for General Networks, Pole & Zeros of Network Functions of Different Kinds, Time Domain Behaviour from Pole-Zero plots. Two Port Networks Relationship of Two-port Variables, Short Circuit Admittance & Parameters, Open Circuit Impedance, Transmission Parameters, Hybrid Parameters, Relationship between Parameters Sets, Interconnection between Two-ports, Terminated Two-ports. Fourier Series & Fourier Transforms Concept of Signal Spectra, Fourier Series Co-efficients of a periodic Wave-form, Waveform Symmetrics, Exponential Form of Fourier Series, Steady State Response to Periodic Signals, Fourier integral & transform. Properties of Fourier Transform, Applications in Network analysis. Network Synthesis of One-port Networks with Two Kind of Elements Concept of Positive real functions, Hurwitz polynomials, Properties of L-C, RL & RC immittance function, Synthesis of RC, RL & LC

immittance functions in cauer, Foster & mixed canonical form. Topological Analysis of electrical Networks Concept of Network Graphs, Incidence matrix. Cut-sets and loops. Fundamental cut-set and loop matrices, Dual graphs. Cut-set and loop Analysis.

The book is written for an undergraduate course on the Signals and Systems. It provides comprehensive explanation of continuous time signals and systems, analogous systems, Fourier transform, Laplace transform, state variable analysis and z-transform analysis of systems. The book starts with the various types of signals and operations on signals. It explains the classification of continuous time signals and systems. Then it includes the discussion of analogous systems. The book provides detailed discussion of Fourier transform representation, properties of Fourier transform and its applications to network analysis. The book also covers the Laplace transform, its properties and network analysis using Laplace transform with and without initial conditions. The book provides the detailed explanation of modern approach of system analysis called the state variable analysis. It includes various methods of state space representation of systems, finding the state transition matrix and solution of state equation. The discussion of network topology is also included in the book. The chapter on z-transform includes the properties of ROC, properties of z-transform, inverse z-transform, z-transform analysis of LTI systems and pulse transfer function. The state space representation of discrete systems is also incorporated in the book. The book uses plain, simple and lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. The variety of solved examples is the feature of this book. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.

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