U A Bakshi A P Godse Filetype

Elements Of Electronics Engineering
This book addresses 5G network capacity requirements with a new architecture for 5G Optical Backhaul Network. The author first describes the challenges for 5G backhaul network requirements and then the details of an Optical Backhaul Network for 5G. The author describes an architecture, in which small cells deploy as a cluster (i.e., 3-5 small cells in one cluster), where one small cell works as an aggregation point using an optical transceiver to backhaul the aggregated traffic to the nearest optical network unit, before it then goes to the core network. This book also illustrates the optical link budget analysis that can be used to determine the availability and the performances of the optical backhaul link in different deployment scenarios and different weather conditions. Provides a single-source reference to the basics of free space laser communication with ambient light compensation; Offers timely information, blending theory and practice; Written to be accessible to readers with varying backgrounds, including numerous illustrations; Provides hands-on experience through practical examples, which can be put to work to deploy and optimize cellular networks. Communication / Pulse Modulation Block schematic of Communication System, Base Band Signals and their bandwidth requirements, RF Bands, Types and Communication Channels (Transmission Lines, Parallel Wires, Co-axial Cables, Waveguides and Optical Fiber). Necessity of Modulation, Types of Modulation : AM, FM, PM and Pulse Modulation.Block schematic of PAM, PWM, PPM. Multiplexing : TDM, FDM.Amplitude Modulation Mathematical treatment and expression for AM, Frequency Spectrum, Modulation Index, Power Relation as applied to Sinusoidal Signals, Representation of AM wave, Mathematical treatment as applied to general signals in Communication, Generation of AM using non-linear property.Types of AM TransmittersDSB-FC, DSB-SC, SSB, ISB & VSB, their generation methods and Comparison in terms of Bandwidth and Transmission Power requirements & Complexity (Block diagram treatment only)Angle ModulationMathematical analysis of FM and PM using Sinusoidal Signals, Frequency spectrum, Mathematical treatment as applied to general non-sinusoidal Signals, Modulation index, Bandwidth requirements (all three relations). Narrowband and Wideband FM, Comparison of FM and PM, Direct and Indirect methods of FM generation, Need for Pre-emphasis, Comparison of AM and FM.AM & FM Receivers Block diagram of AM and FM receivers, Superheterodyne Receiver, Performance characteristics : Sensitivity, Selectivity, Fidelity, Image Frequency Rejection, IFRR, Tracking, De-emphasis, Mixers.AM DetectionEnvelope detection, Synchronous detection, Practical diode detection, AGC. SSB and DSB detection methods.FM DetectionPhase discriminatior and Ratio Detector, Mathematical analysis of FM Detection.Noise Sources of Noise, Types of Noise, White Noise, SNR, Noise Figure, Noise Temperature, Friis formula for Noise Figure, Noise Bandwidth, Performance of AM (DSB, SSB & VSB) and FM in presence of Noise : Mathematical treatmentRadiation and Propagation Concept of Radiation, Basic Antenna System (Dipole), Antenna parameters, Yagi Antenna. Mechanism of Propagation : Ground Wave, Sky Wave, Space Wave, Duct, Tropospheric Scatter and Extraterrestrial Propagation. Concept of Fading and diversity reception.
Amplitude Modulation Introduction. Amplitude Modulation : Time-domain description, Frequency-domain description, Generation of AM wave : Square law modulator, Switching modulator. Detection of AM waves : Square law detector, Envelope detector. Double sideband suppressed carrier modulation (DSBSC) : Time-domain description. Frequency-domain representation. Generation of DSBSC waves : Balanced modulator, Ring modulator. Coherent detection of DSBSC modulated waves. Costas loop. Quadrature carrier multiplexing. Hilbert transform, Properties of Hilbert transform, Pre-envelope, Canonical representation of bandpass signals, Single sideband modulation, Frequency-domain description of SSB modulated signals, Frequency discrimination method for generating an SSB modulated wave, Time-domain description, Phase discrimination method for generating an SSB modulated wave, Demodulation of SSB wave. Vestigial sideband modulation, Frequency-domain description, Generation of VSB modulated wave, Time-domain description, Envelop detection of VSB wave plus carrier, Comparison of amplitude modulation techniques, Frequency translation, Frequency division multiplexing, Application : Radio broadcasting, AM radio, Television, Color television, High definition television.Angle Modulation Basic definitions, Frequency modulation, Narrow band frequency modulation, Wide band frequency modulation, Transmission bandwidth of FM waves, Generation of FM waves : Indirect FM and direct FM, Demodulation of FM waves, FM stereo multiplexing, Phase-locked loop, Nonlinear model the phase-locked loop. Linear model of phase-locked loop. Nonlinear effects in FM systems.Random Processes Introduction, Probability theory : Relative-frequency approach, Axioms of probability, Conditional probability, Random variables : Several random variables. Statistical averages :Function of random variables, moments. Random process stationarity. Mean, Correlation and Covariance functions : Properties of the autocorrelation function, Cross-correlation functions, Power spectral density : Properties of the spectral density, Gaussian process :Central limit theorem, Properties of Gaussian process. Noise Introduction, Short noise, Thermal noise, White noise, Noise equivalent bandwidth, Narrowband noise, Noise figure, Equivalent noise temperature, Cascade connection of two-port networks.Noise in Continuous Wave Modulation Systems Introduction, Receiver model, Noise in DSB-SC receivers, Noise in SSB receivers, Noise in AM receivers, Threshold effect, Noise in FM receivers, FM threshold effect, Pre-emphasis and De-emphasis in FM, Summary and discussion.
This book covers diverse aspects of advanced computer and communication engineering, focusing specifically on industrial and manufacturing theory and applications of electronics, communications, computing and information technology. Experts in research, industry, and academia present the latest developments in technology, describe applications involving cutting-edge communication and computer systems and explore likely future directions. In addition, access is offered to numerous new algorithms that assist in solving computer and communication engineering problems. The book is based on presentations delivered at ICOCOE 2014, the 1st International Conference on Communication and Computer Engineering. It will appeal to a wide range of professionals in the field, including telecommunication engineers,

computer engineers and scientists, researchers, academics and students.

Graduate Aptitude Test in Engineering (GATE) is one of the recognized national level examinations that demands focussed study along with forethought, systematic planning and exactitude. Postgraduate Engineering Common Entrance Test (PGECET) is also one of those examinations, a student has to face to get admission in various postgraduate programs. So, in order to become up to snuff for this eligibility clause (qualifying GATE/PGECET), a student facing a very high competition should excel his/her standards to success by way of preparing from the standard books. This book guides students via simple, elegant and explicit presentation that blends theory logically and rigorously with the practical aspects bearing on computer science and information technology. The book not only keeps abreast of all the chapterwise information generally asked in the examinations but also proffers felicitous tips in the furtherance of problem-solving technique. HIGHLIGHTS OF THE BOOK • Systematic discussion of concepts endowed with ample illustrations • Notes are incorporated at several places giving additional information on the key concepts • Inclusion of solved practice exercises for verbal and numerical aptitude to guide students from practice and examination point of view • Prodigious objective-type questions based on the past years' GATE examination questions with answer keys and in-depth explanation are available at https://www.phindia.com/GATE_AND_PGECET • Every solution lasts with a reference, thus providing a scope for further study The book, which will prove to be an epitome of learning the concepts of CS and IT for GATE/PGECET examination, is purely intended for the aspirants of GATE and PGECET examinations. It should also be of considerable utility and worth to the aspirants of UGC-NET as well as to those who wish to pursue career in public sector units like ONGC, NTPC, ISRO, BHEL, BARC, DRDO, DVC, Power-grid, IOCL and many more. In addition, the book is also of immense use for the placement coordinators of GATE/PGECET. TARGET AUDIENCE • GATE/PGECET Examination • UGC-NET Examination • Examinations conducted by PSUs like ONGC, NTPC, ISRO, BHEL, BARC, DRDO, DVC, Power-grid, IOCL and many more

Visual information is one of the richest and most bandwidth-consuming modes of communication. To meet the requirements of emerging applications, powerful data compression and transmission techniques are required to achieve highly efficient communication, even in the presence of growing communication channels that offer increased bandwidth. Presenting the results of the author's years of research on visual data compression and transmission, Advances in Visual Data Compression and Communication: Meeting the Requirements of New Applications provides a theoretical and technical basis for advanced research on visual data compression and communication. The book studies the drifting problem in scalable video coding, analyzes the reasons causing the problem, and proposes various solutions to the problem. It explores the author's Barbell-based lifting coding scheme that has been adopted as common software by MPEG. It also proposes a unified framework for deriving a directional transform from the nondirectional counterpart. The structure of the framework and the statistic distribution of coefficients are similar to those of the nondirectional transforms, which facilitates subsequent entropy coding. Exploring the visual correlation that exists in media, the text extends the current coding framework from different aspects, including advanced image synthesis—from description and reconstruction to organizing correlated images as a pseudo sequence. It explains how to apply compressive sensing to solve the data compression problem during transmission and covers novel research on compressive sensor data gathering, random projection codes, and compressive modulation. For analog and digital transmission technologies, the book develops the pseudo-analog transmission for media and explores cutting-edge research on distributed pseudo-analog transmission, denoising in pseudo-analog transmission, and supporting MIMO. It concludes by considering emerging developments of information theory for future applications.

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The tragic disappearance of the Malaysia Airlines Flight MH370 has created a need for research in the areas of aircraft transportation, and specifically flight debris tracking. As researchers and scientists continue to search for novel technologies that will assist with aeronautical detection, two modes have emerged as possible solutions. The use of remote sensing technology and genetic algorithms are techniques that scientists are beginning to use to improve aircraft trajectory models and to locate downed aircraft. Genetic Algorithms and Remote Sensing Technology for Tracking Flight Debris is an essential reference source that discusses developing tracking methods using advanced algorithms as well as satellite technologies. Featuring research on topics such as wave pattern modeling, microwave satellite data, and trajectory movement, this book is ideally designed for practitioners, researchers, oceanographers, aerospace engineers, scientists, educators, developers, analysts, and students seeking coverage on advancements in sensor and tracking technology in regard to flight dynamics.

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Original research on SHM sensors, quantification strategies, system integration and control for a wide range of engineered materials New applications in robotics, machinery, as well as military aircraft, railroads, highways, bridges, pipelines, stadiums, tunnels, space exploration and energy production Continuing a critical book series on structural health monitoring (SHM), this two-volume set (with full-text searchable CD-ROM) offers, as its subtitle implies, a guide to greater integration and control of SHM systems. Specifically, the volumes contain new research that will enable readers to more efficiently link sensor detection, diagnostics/quantification, overall system functionality, and automated, e.g., robotic, control, thus further closing the loop from inherent signal-based damage detection to responsive real-time maintenance and repair. SHM performance is demonstrated in monitoring the behavior of composites, metals, concrete, polymers and selected nanomaterials in a wide array of surroundings, including harsh environments, under extreme (e.g., seismic) loading and in space. New information on smart sensors and network optimization is enhanced by novel statistical and model-based methods for signal processing and data quantification. A special feature of the book is its

explanation of emerging control technologies. Research in these volumes was initially presented in September 2013 at the 9th International Workshop on Structural Health Monitoring (IWSHM), held at Stanford University and sponsored by the Air Force Office of Scientific Research, the Army Research Laboratory, and the Office of Naval Research. ????????????????????????,?????18?????1947?????,?????????????? ?????CMOS?????????????,????CMOS??????????,?????????????????,?MOSFET??????????,????CMOS??????,????? ,????,??,?????????,?????,?????????,??????,?????????????,?????????????????????.?????????????????,??????????? . ??

Conduction in SemiconductorsElectrons and holes in an intrinsic semiconductor, conductivity of a semiconductor, carrier concentrations in an intrinsic semiconductor, donor and acceptor impurities, charge densities in a semiconductor. Fermi level in a semiconductor having impurities, diffusion, carrier life time, Hall effect.Semiconductor-Diode CharacteristicsQualitative theory of a PN junction, PN junction as a diode, volt-ampere characteristics, temperature dependence of PN characteristics, half wave and full wave rectifiers, other full wave circuits, ripple factor, capacitor filter; Zener diode-characterisitcs, zener and avalanche breakdown, zener regulated power supply.Transistor CharacteristicsJunction transistor, transistor current components, transistor as an amplifier, common-base configuration, common-emitter configuration, CE cut-off region, CE saturation region, large-signal, DC and small-signal CE values of current gain, operating point, bias stabilization, cascading transistor amplifiers, decibel; classification of amplifiers, distortion in amplifiers, frequency response of an amplifier, RC coupled amplifier.Theory of Sinusoidal OscillatorsConcept of feedback, sinusoidal oscillators, working of RC phase shift, Colpitt's and Hartely's oscillator using BJT expressions for frequency of oscillation (no derivation), crystal oscillator.Operational Amplifiers (Op-Amp)Ideal Op-Amp, inverting and non-inverting Op-Amp, need for Op-Amp, Op-Amp characteristics, Op-Amp applications, voltage follower, addition and subtraction using Op-Amp circuits. Op-Amp integrating and differentiating circuits.Communication SystemsBasic block diagram of communication systems modulation, Amplitude Modulation, frequency spectrum, power relations, Phase and Frequency Modulation, frequency spectrum, comparison of AM and FM, radio telegraphy, radio telephony, super heterodyne receivers.Digital ElectronicsDigital logic-Binary numbers, number base conversion, Octal and hexadecimal numbers, complements, Binary addition and subtraction using One's and Two's complements, addition and subtraction in other number system, fractional numbers and BCD numbers. Binary logic, symbols, basic theorems and properties of Boolean Algebra, De-Morgan's theorem, AND, OR logic gate realisation using diodes, NOT gate using transistor, Diode Transistor Logic (DTL) Resistance Transistor Logic (RTL), Direct Coupled Transistor Logic (DCTL), Current Mode Logic (CML), and Transistor-Transistor Logic (TTL), symbols used for NOT, OR, AND, NAND, XOR gates and their truth tables, Boolean functions, half adder, full adder and parallel binary adder, introduction to sequential logic circuits, working of an R-S flip-flop (transistor version, NAND/NOR version)Cathode Ray Oscilloscope (CRO)Basic block diagram, use of CRO for measurement of amplitude, frequency and phase.

???Prentice Hall???????? ???????????????????????:??,?????????????????,?????????????? Integrated CircuitsClassification, chip size and circuit complexity, basic information of Op-amp, ideal and practical Op-amp, internal circuits, Op-amp characteristics DC and AC characteristics, 741 Op-amp and its features.Op-amp ApplicationsBasic application of Op-amp, instrumentation amplifier, ac amplifier, V to I and I to V converters, Op-amp circuits using diodes, sample & hold circuits, log & antilog amplifiers, multipliers and dividers, differentiators and integrators, comparators, Schmitt trigger, multivibrators, introduction to voltage regulators, festures of 723.Active Filters & Oscillators and Waveform GeneratorsButterworth filters-1st order, 2nd order LPF, HPF filters, band pass, band reject and all pass filters. Oscillator types and principle of operation-RC, Wien and quadrature type, waveform generators-triangular, swatooth, square wave and VCO.Timers & Phase Locked Loops555 timer, functional diagram, monostable and astable operations and applications, Schmitt trigger. PLL-introduction, block schematic, principles and description of individual blocks, 565 PLL, Applications of PLL-frequency multiplication, frequency translation, AM, FM & FSK demodulators.D to A & A to D ConvertersBasic DAC techniques, weighted resistor DAC, R-2R ladder DAC, inverted R-2R DAC, and IC 1408 DAC, different types of ADCs-parallel comparator type ADC, counter type ADC, successive approximation ADC and dual slope ADC. DAC and ADC specifications.

21??????????????? Study of Electronic Materials and ComponentsClassification of materials based on bandgaps; Types of resistors-fixed, variable and precision etc. like carbon film, metal film, wire wound, cermets, Their standard values specifications and applications, Classification of capacitors based on dielectrics, Standard values, Specifications and applications of capacitors, Types of capacitors-electrolytic, ceramic, paper, mica, tantalum, plastic film etc. Study of different core materials depending on rage of frequencies for inductors and transformers; semiconductor materials, Si, Ge, AIII - BV compounds their properties.Semiconductor PhysicsElectrical properties of Ge and Si materials like intrinsic concentration, mobility, conductivity, energy gap, etc. Law of mass action, Generation and recombination of free charges (Holes/electrons). Diffusion phenomenon, Concentration gradient, Einstein relationship, Volt equivalent of temperature, Total current (drift and diffusion) potential variation within continuous and step graded semiconductor, i.e. p-n junction.Semiconductor Diode CharacteristicsCurrent components in forward biased / reverse biased p-n junction diode; cut-in voltage, Reverse saturation current, Derivation of V/I characteristics (logarithmic) equation of diode, Temperature dependence of diode characteristics, Concepts and significance of expressions of transition and diffusion capacitance, Junction diode switching times.Semiconductor Diode as Circuit Elementp-n junction as rectifier, Half-wave, Full-wave and bridge rectifier with and without capacitor filter, Other types of filters-choke input and L section filters, Parameters like

ripple factor, Efficiency, TUF, PIV, IFmax, Isurage, etc. Derivations of ripple factor for L, C and L section filter, Bleeder resistor, Calculations for bridge rectifier with C filter for specified load voltage / current and ripple. Diode as a waveshaping element in clipping and clamping circuits, Voltage multipliers.BJT-Characteristics, Biasing Circuits and Bias StabilityBJT as a two-port device, Configurations of BJT (CE/CB/CC), Input-output and transfer characteristics in all three configurations with relevant V-I expressions and definitions of d.c. current gains, Concept of load line and Q point with active, Cut-off and saturation regions of operations of BJT. Early effect, Punch through effect, Fixed collector feedback and self bias circuits for CE transistor, Definitions of stability factors for CE transistor and their derivations for above circuits; bias stabilization and compensation techniques, Condition to avoid thermal runaway. Absolute maximum rating of BJT as referred to datasheets.BJT as Small Signal LF AmplifierSmall signal LF-h parameter model in CE/CB/CC configuration; concept of A.C. equivalent circuit of single stage amplifier need of coupling and bypass capacitors; analysis CE/CB/CC amplifier for Ai, Av, Ri and Ro in terms of h-parameters; simplified h-parameter model; effect of biasing and source resistance on performance on single stage amplifier, Concept of frequency response.Field Effect TransistorConstruction of p-channel and n-channel JFET/D-MOSFET/E-MOSFET; output and transfer characteristics of each with definitions of parameters like gm, rd and m ; biasing techniques for all types, Small signal LF model of FET; analysis of CS/CD/CG amplifier for voltage gain and input-output impedance; comparison of BJT/JFET and MOSFET frequency response for FET amplifier. Absolute maximum rating/specification of FET as referred to datasheet.Special Semiconductor DevicesConstruction, Principle of operation; functional description with characteristics of each of the following devices; LED, Photo-diode, Photo-transistor, Photo-conductive cell, Photo-voltaic cell, Opto-isolator/coupler, LCD; applications of each.

Semiconductor Diodes Classification of materials as insulator, Conductors and semiconductors, Types of semiconductors-intrinsic and extrinsic semiconductors, P-type and N-type, Majority and minority charge carriers, Drift current. The PN junction, Formation of depletion layer, Junction voltage, Effect of temperature on junction voltage, Forward and reverse biased PN junction. Reverse saturation current, V-I characteristics. Junction breakdown, Zener and avalanche breakdown, Junction capacitance and equivalent circuit. PN junction diode, V-I characteristics, Diode parameters, Applications, Diode ratings or specifications, Ideal diode and real diode, Introduction to zener diode.Bipolar Junction Transistor Introduction, Emitter, Base and collector of transistor, Transistor construction and biasing. Transistor circuit configurations, Common base, Common emitter, Common collector, Leakage current and thermal runaway.Field Effect Transistor Introduction, Symbol, Classification of FET, Basic construction of JFET, Opens operation and characteristics, MOSFET, Depletion and enhancement type MOSFET, Construction, Working. FET applications.Opto and Power Devices Introduction, Wavelength and frequency, Spectral response of human eye, LED, Photo emissive devices, Photo diode.UJT, SCR, TRIAC, DIAC, SCSConstruction, Parameters, Characteristics, Operation and applications.Operational Amplifiers and Power Supplies Ideal operational amplifier. Inverting and non-inverting amplifier, Difference amplifier. Ground concept, Summing amplifier, Voltage follower.DC Power Supplies Introduction, Unregulated and regulated power supply, Rectifiers, Regulation, Zener diode shunt regulator, Transistor series voltage regulator. Voltage multipliers, Complete power supply.Cathode Ray OscilloscopeIntroduction, Cathode ray tube, Theory and construction, Applications.Electronic InstrumentsElectronic voltmeters, Differential amplifiers, DC voltmeters, Electronic multimeters.Logic Circuits Binary numbers, Conversion of decimal numbers to binary numbers. HEX and OCTAL numbers, Conversion to binary form, AND, OR, NOR, NAND and all logic gates, Symbols and truth table each case.

This book introduces Radio Frequency Modulation to a broad audience. The author blends theory and practice to bring readers up-to-date in key concepts, underlying principles and practical applications of wireless communications. The presentation is designed to be easily accessible, minimizing mathematics and maximizing visuals.

Mathematical methods and theories with interdisciplinary applications are presented in this book. The eighteen contributions presented in this Work have been written by eminent scientists; a few papers are based on talks which took place at the International Conference at the Hellenic Artillery School in May 2015. Each paper evaluates possible solutions to long-standing problems such as the solvability of the direct electromagnetic scattering problem, geometric approaches to cyber security, ellipsoid targeting with overlap, non-equilibrium solutions of dynamic networks, measuring ballistic dispersion, elliptic regularity theory for the numerical solution of variational problems, approximation theory for polynomials on the real line and the unit circle, complementarity and variational inequalities in electronics, new two-slope parameterized achievement scalarizing functions for nonlinear multiobjective optimization, and strong and weak convexity of closed sets in a Hilbert space. /divGraduate students, scientists, engineers and researchers in pure and applied mathematical sciences, operations research, engineering, and cyber security will find the interdisciplinary scientific perspectives useful to their overall understanding and further research.

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 ? 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 book covers all the aspects of theory, analysis, and design of Electronic Circuits for the undergraduate course. The concepts of feedback amplifiers and oscillators, tuned amplifiers, wave shaping and multivibrator circuits, power amplifiers, and DC converters are explained in a comprehensive manner. The former part of the book focuses on the fundamental concepts of feedback amplifiers and oscillators. It explains the analysis of series-shunt, series-series, shunt-shunt, and shunt-series feedback

amplifiers, stability and frequency compensation in feedback amplifiers. The concepts of the Barkhausen criterion for oscillations and the detailed analysis of various oscillator circuits including phase shift, Wien bridge, Hartley, Colpitt's, Clapp, ring, and crystal oscillators are included in the book. The oscillator amplitude stabilization is explained in support. Then the book focuses on the fundamental concept of tuned amplifiers. It explains topics such as coil losses, unloaded and loaded Q of tank circuits, analysis of single and double tuned amplifiers, the effect of cascading single tuned and double tuned amplifiers on bandwidth, stagger tuned amplifiers, stability of tuned amplifiers, and neutralization methods. The later part of the book incorporates the detailed analysis of various wave shaping circuits, including high pass and low pass RC and RL circuits, clipper and clamper circuits, bistable, monostable, and astable multivibrator circuits. The discussion of Schmitt trigger circuits and UJT is also included in the book. Finally, the book explains the class A, B, and C types of power amplifiers along with the discussion of the elimination of cross-over distortion. The book also covers the concepts of power amplifiers using power MOSFET and various types of d.c. to d.c. converters. The book uses plain and lucid language to explain each topic. 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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Passive Circuit Components and Electron BallisticsPassive circuit components : Resistors : Fixed and variable - Tolerance - Colour coding ; Capacitors : Fixed and variable - Dissipation factor - Characteristics and applications of various types of capacitors; Inductors : Fixed and variable - Energy stored in a magnetic field - Q factor - Mutual coupled coils.Electron ballistics : Charged particles - Force, Field intensity, potential and energy - Two dimensional motion of electron - Force in magnetic field - Motion in a magnetic field - Parallel and perpendicular electric and magnetic fields - Electrostatic deflection and Magnetic deflection in a Cathode Ray Tube - Principles and applications of CRO.Semiconductor Diodes and Special DiodesSemiconductor diodes : Classification of semiconductors - Conductivity of semiconductors - Carrier concentration in intrinsic semiconductor - Mass - Action law - Properties of intrinsic semiconductors - Variation in semiconductor parameters with temperature - Drift and diffusion currents - Carrier life time - Continuity equation - Theory of PN junction diode - Energy band structure of open circuited PN junction - Quantitative theory of PN diode currents - Diode current equation - Diode resistance - Transition or space charge capacitance - Diffusion capacitance - Effect of temperature of PN junction diodes - Junction diode switching characteristics - Breakdown in PN junction diodes - PN diode applications - Clipper - Clampers.Special diodes : Zener diode - Backward diode - Varactor diode - Step recovery diode - Point-contact diode - Tunnel diode - PIN diodes - Laser diode ; Photoconductive sensors - Photovoltaic sensors - Photoemissive sensors - Light emitters - Liquid Crystal Display (LCD) - Nixie tube - Alphanumeric displays - Optocoupler.Bipolar Junction Transistors and Field Effect TransistorsBipolar Junction Transistors : Construction - Transistor biasing - Operation of NPN transistor - Operation of PNP transistor - Types of configuration - Breakdown in transistors - Ebers-Moll model - Transistor switching times.Field Effect Transistors : Construction of N-channel JFET - Operation of N-channel JFET - Characteristic Parameters of the JFET - Expression for saturation drain current - Slope of the transfer characteristics at IDSS - Comparison of JFET and BJT - Applications of JFET - Metal oxide semiconductor field effect transistor (MOSFET) - Enhancement MOSFET - Depletion MOSFET - Comparison of MOSFET with JFET - Handling precautions for MOSFET - Comparison of N-with P-channel MOSFETs - Comparison of N-with P-Channel.Integrated Circuit FabricationIntroduction to mass technology - Manufacturing process - Construction of a bipolar transistor - Monolithic diodes - Integrated resistors - Monolithic capacitors - Inductors - Thin and thick film technology - Definition of LSI, MSI, VLSI circuits - VLSI Design rules and layout technique - Introduction to fast VLSI circuits.Metal Semiconductor Contacts and Power Control DevicesMetal semiconductor contacts : Energy band diagram of metal semiconductor junction - Schottky diode and ohmic contacts - GTO.Power control devices : PNPN diode (Shockley diode) - SCR - Thyristor ratings - LASCR (Light Activated SCR) - TRIAC - DIAC - Characteristics and equivalent circuit of UJT - Intrinsic stand-off ratio.

Test Prep for Analog Electronics—GATE, PSUS AND ES Examination

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

Electromagmetics for Engineering Students is a textbook in two parts, Part I and II, that cover all topics of electromagmetics needed for undergraduate students from vector analysis to antenna principles. In both parts of the book, the topics are presented in sufficient details such that the students will follow the analytical development easily. Each chapter is supported by many illustrative examples, solved problems, and the end of chapter problems to explain the principles of the topics and enhance the knowledge of the student. There are a total of 681 problems in the both parts of the book as follows: 162 illustrative examples, 88 solved problems, and 431 end of chapter problems. This part is a continuation of Part I and focuses on the application of Maxwell's equations and the concepts that are covered in Part I to analyze the characteristics of wave propagation in half-space and bounded media including metamaterials. Moreover, a chapter has been devoted to the topic of antennas to provide readers with the fundamental concepts related to antenna engineering. The key features of this part: • In addition to the coverage of classical topics in electromagnetic normally covered in the similar available texts, this part of the book adds some advanced concepts and topics such as: • Application of multi-pole expansion for vector potentials. • More detailed analysis on the topic of waveguides including circular waveguides. • Refraction through metamaterials and the concept of negative refractive index. • Detailed and easy-to follow presentation of mathematical analyses and problems. • An appendix of mathematical formulae and functions.

With the rise of global competitiveness among industries, it has become increasingly vital to develop novel strategies to assist in optimizing value-chain networks, thus helping to secure economic success. By employing engineer-to-order practices, many enterprises have improved their manufacturing processes. Supply Chain Strategies and the Engineer-to-Order Approach evaluates innovative processes and original operational models, frameworks, and architectures in the topic areas of industrial engineering and management science. Featuring optimized enterprise chain management strategies and emergent research within the field, this book is an essential reference source for professional, academics, and researchers specializing in enterprise operations and engineer-to-order procedures.

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The book covers all the aspects of theory, analysis, and design of Electron Devices and Circuits for the undergraduate course. The concepts of p-n junction devices, BJT, JFET, MOSFET, electronic devices including UJT, thyristors, IGBT, Amplifier circuits-BJT,

JFET and MOSFET amplifiers, multistage and differential amplifiers, feedback amplifiers, and oscillators are explained comprehensively. The book explains various p-n junction devices, including diode, LED, laser diode, Zener diode, and Zener diode regulator. The different types of rectifiers are explained in support. The book covers the construction, operation, and characteristics of BJT, JFET, MOSFET, UJT, Thyristors - SCR, Diac and Triac, and IGBT. It explains the biasing of BJT, JFET, and MOSFET amplifiers, basic BJT, JFET, and MOSFET amplifiers with h-parameters and r-parameters equivalent circuits, multistage amplifiers, differential amplifiers, BiCMOS amplifier, single tuned amplifiers, neutralization methods, power amplifiers, and frequency response. Finally, the book incorporates a detailed discussion of the analysis of the current series, voltage series, current shunt, and voltage shunt feedback amplifiers. The book also includes the discussion of the Barkhausen criterion for oscillations and the detailed analysis of various oscillator circuits, including RC phase shift, Wien bridge, Hartley, Colpitt's, Clapp, and crystal oscillators. 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.