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Defects in Crystals: Classification of defects, Point Defects: Vacancies, Substitution, Interstitial, Concentration of Vacancies, Frenkel and Schottky Defects, Edge and Screw Dislocations (Qualitative treatment), Burger's Vector. 3. Principles of Quantum Mechanics: Waves and Particles, de Broglie Hypothesis, Matter Waves, Davisson and Germer's Experiment, Heisenberg's Uncertainty Principle, Schrodinger's Time Independent Wave Equation-Physical Significance of the wave Function-Particle in One Dimensional Potential Box. UNIT –II 1. Electron Theory of Metals: Classical free electron theory, Derivation of Ohm's law, Mean free path, Relaxation time and Drift velocity, Failures of Classical free electron theory, Quantum free electron theory, Fermi-Dirac distribution, Fermi energy, Failures of Quantum free electron theory. 2. Band Theory of Solids: Electron in a periodic potential, Bloch Theorem, Kronig-Penny Model(Qualitative Treatment), origin of Energy Band Formation in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators, Effective mass of an Electron. 3. Semiconductor Physics: Intrinsic Semiconductors and Carrier Concentration, Extrinsic Semiconductors and Carrier Concentration, Fermi Level in Intrinsic and Extrinsic Semiconductors, Hall Effect and Applications. UNIT – III 1. Dielectric Properties: Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector, Types of polarization: Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities (Electronic & Ionic) -Internal Fields in Solids, Clausius -Mossotti Equation, Piezo-electricity and Ferro- electricity. 2. Magnetic Properties: Magnetic Permeability, Magnetic Field Intensity, Magnetic Field Induction, Intensity of Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magnetron, Classification of Dia, Para and Ferro Magnetic Materials on the basis of Magnetic Moment, Hysteresis Curve on the basis of Domain Theory of Ferro Magnetism, Soft and Hard Magnetic Materials, Ferrites and their Applications. UNIT – IV 1. Lasers: Characteristics of Lasers, Spontaneous and Stimulated Emission of Radiation, Meta-stable State, Population Inversion, Einstein's Coefficients and Relation between them, Ruby Laser, Helium-Neon Laser, Semiconductor Diode Laser, Applications of Lasers. 2. Fiber Optics: Structure and Principle of Optical Fiber, Acceptance Angle, Numerical Aperture, Types of Optical Fibers (SMSI, MMSI, MMGI), Attenuation in Optical Fibers, Application of Optical Fibers, Optical fiber Communication Link with block diagram. UNIT –V 1. Nanotechnology: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Bottom-up Fabrication: Sol-gel Process; Top-down Fabrication: Chemical Vapor Deposition, Physical, Chemical and Optical properties of Nano materials, Characterization (SEM, EDAX), Applications. 1st sem b.tech b.tech 1st year engg physics book pdf download engineering physics book pdf physics rtu utd Academia.edu uses cookies to personalize content, tailor ads and improve the user experience. By using our site, you agree to our collection of information through the use of cookies. To learn more, view our Privacy Policy. Sorry, but the page you were trying to view does not exist. Check Out Engineering Physics 1st Year Notes Free Download – Books & Notes, Lecture Notes, Study Materials Pdf. We have provided Physics 1st Year Study Materials and Lecture Notes for CSE, ECE, EEE, IT, Mech, Civil, ANE, AE, PCE, and all other branches. 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Walker, John Wiley, and Sons, New York (2001). Introduction to solid-state physics,7th Edn, Charls Kittel, Wiley, Delhi (2007) Practical Physics, R.K. Shukla, Anchal Srivastava, New age international (2011)B.Sc. Practical Physics, C.L Arora, S. Chand &Co. (2012)Resnick, Walker and Halliday, Fundamentals of Physics, John Willey and Sons. Inc, 6th Edition, 2005. Streetman B. G., Solid State Electronics, Prentice Hall India (2nd Edition) 1986.Avadhanulu M. N. and P.G. Kshirsagar, A text Book of Engineering Physics, (7th Edition) 2004.Dekkar A.J.; Electrical Engineering Materials; Prentice Hallog India Publication, 1992.Kenneth Krane; Modern Physics; (2 nd Edition); John Wiley Eastern, 1998.Pillai S. O., Solid State Physics, New Age International Publishers, 3 rd edition, 1999.B.tech First-Year Syllabus PhysicsUnit I: Electrostatics- 8Boundary conditions and Boundary value problems in electrostatics, The Uniqueness theorem, Laplace and Poisson's equations in electrostatics and their applications, method of electrical images and their simple applications, energy stored in the discrete and continuous system of charges.Unit II: Wave Optics- 8Methods of formation of coherent sources, Theory of Interference, Fresnel's Biprism, Displacement of Fringes, thin-film interference, Newton's ring. Fraunhofer diffraction at single slit and grating, Rayleigh's criterion of the resolution, resolving power of grating.Unit III: Optical activity and Modern Optics- 8Production of plane-polarized light by reflection and Double refraction, Nicol prism. Optical activity, Fresnel's theory, polarimeter (Laurentz and Biquartz). Principle of fiber optics, numerical aperture, attenuation, dispersion in optical fibers, material dispersion, waveguide dispersion, intermodal and intramodal dispersion, Pulse dispersion in step-index fiber, Main components of laser, Einstein's coefficients, He-Ne laser, Nd-YAG laser, and their applications.Unit IV: Properties of Matter and Relativistic MechanicsViscosity, Poiseulli's equation, Frame of reference, Michelson-Morley experiment and its implications, Galilean transformation equations, Einstein's postulates, Lorentz transformation equations, and their consequences, energy mass relation, relativistic kinetic energy.Unit V: Quantum PhysicsCompton effect, Basic postulates of quantum mechanics, Wave function and its physical admissibility, orthogonality and normalization of wave functions, Heisenberg's uncertainty principle(no derivation) and its applications to (non-existence of electron in nucleus, Bohr's radius), Schrodinger's equation and its application to particle in 1-D box and finite well.B. Tech 1st year Engineering Physics Important Questions Show that FCC Crystals are closely packed than BCC and SC crystals by working out the packing factors. Derive an expression for the concentration of Vacancies at any given temperature.What are the factors affecting Architectural Acoustics and explain the remedies?Discuss different types of Ultrasonic Production Systems. Derive an expression for Internal Fields in Solids. Explain the Hysteresis curve on the basis of Domain theory of Ferromagnetism.Derive the relation between Einstein's Coefficients.explain Optical Fiber Communication Link with a block diagram. Describe any three processes by which Nano materials are fabricated. Explain the Scanning Electron Microscopy. Write a note on Edge and Screw dislocations and explain the significance of Burger's Vector.Explain the principle of Optical Fibre Communication and write a note on Attenuation.Discuss different types of Polarizations in Dielectrics.Derive an expression for Acceptance Angle and Numerical Aperture of an Optical Fiber. Define Electronic Polarization and obtain the relevant mathematical expressions for Electronic Polarization in terms of the radius of the atoms.A paramagnetic material has a magnetic field intensity of 104 A/m. If the Susceptibility of the material at room temperature is 3.7×10-3 calculate the magnetization and flux density of the material.Illustrate on the construction and working principle of a He-Ne Laser giving its energy level diagram.Write down any four applications of Lasers.Derive an expression for acceptance angle for an optical fiber? How it is related to the numerical aperture.What are the properties of Nano Materials?How the Nano Materials are fabricated using bottom-up, top-down and chemical vapor deposition methods.Briefly, explain about Edge and Screw Dislocations.Explain the band theory of solids qualitatively and use it for classification of the Materials.Mobilities of electrons and holes in a sample of intrinsic germanium at room temperature are 4600 cm2 /volt-second and 2700 cm2 /volt-second respectively.If the electron and hole densities are each equal to 3 x 1013 per cm2, calculate the conductivity.Give an account of domain structure and how the hysteresis curve is explained on the basis of Domain theory of ferromagnetism.Explain the following i) Single-mode optical fiber ii) Multimode optical fiber iii) Step-index optical fiber iv) Graded index optical fiberBuy Engineering Physics Books for 1st year Online at Amazon.inWe have Provided the Engineering physics 1st Year Notes Free Download – Books & Notes, Lecture Notes, Study Materials Pdf. 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