

PH2161 ENGINEERING PHYSICS IMPORTANT 2 MARKS AND 16 MARKS

I UNIT-CONDUCTING MATERIALS

Part – A

Define mobility give its unit.

Define Drift velocity.

What are the drawbacks of classical free electron theory.

Define Mean free path.

Define Collision Time.

Define Electrical Conductivity.

Define Thermal Conductivity.

State Wiedemann-Franz law.

Define Lorentz number.

Define relaxation time of an electron.

What is Planck's Hypothesis?

State Planck's radiation – law.

Define Compton-effect.

Write Planck's radiation formula.

Write down Schrodinger time independent and time dependent wave equation with symbol.

Give the physical significance of wave function.

What are the eigen value and eigen function?

Write Fermi-Dirac distribution formula.

Define Fermi level and Fermi Energy with its importance.

How does Fermi function vary with temperature

what is work function.

What are bound and free electrons?

For Copper the relaxation time is 10^{-14} seconds. The free electron density is

$2 \times 10^{28}/\text{m}^3$. Calculate its electrical conductivity.

What is the probability of an electron being thermally promoted to the Conduction band in

silicon ($E_g = 1.07 \text{ eV}$) at 25°C ?

Give the expression for change in wavelength of a scattered X-ray Photon.

Part-B

Derive the electrical conductivity of a metal based on classical free electron theory.

Derive the thermal conductivity of a metal based on classical free electron theory.

State and Prove Wiedemann-Franz law.

What is Compton Effect? Give the theory of Compton Effect and Show that the Compton shift

$$\Delta\lambda = \frac{h}{m_0c} (1 - \cos\theta)$$

Explain the application of Schrodinger wave equation to a one Dimensional Potential well.

Derive Time independent Schrodinger wave equation and hence deduce the time dependent

Schrodinger equation.

Describe the energy band theory of solids with the help of neat band diagram. Distinguish

between metals insulator and semiconductor on the basis of band theory.

Derive the expression for Planck's theory of Black body radiation.

Unit- II SEMI CONDUCTORS MATERIALS

Part – A

Ph2161 Engineering Physics

M Lipman



Ph2161 Engineering Physics:

Engineering Physics Purnima Khare, Abhaba Swarup, 2010 This text reference provides students practicing engineers and scientists with the fundamental physical laws and modern applications used in industry Unlike many of its competitors modern physics theory e g quantum physics and its applications are discussed in detail including laser techniques and fiber optics nuclear fusion digital electronics wave optics and more An extensive review of Boolean algebra and logic gates is also included Because of its in text examples with solutions and self study exercise sets the book can be used as a refresher for engineering licensing exams or as a full year course It emphasizes only the level of mathematics needed to master concepts used in industry *Engineering Physics*, 2010 *Engineering Physics* Uma Mukherji, 2001 **Textbook Of Engineering Physics** Jain, Jain Mahesh C., 2009-01-01 **Engineering Physics** S. Mani Naidu, 2009 Written in a lucid style this book assimilates the best practices of conceptual pedagogy dealing at length with various topics such as crystallography principles of quantum mechanics free electron theory of metals dielectric and magnetic properties semiconductors superconductivity lasers holography nanotechnology and optics *A Textbook of Engineering Physics* R. V. Subba Rao, 2012 *Engineering Physics II* P. K. Palanisamy, 2009 **Engineering Physics Vol II** R. K. Shukla, 2014 *Engineering Physics II* is strictly developed as per the revised syllabus of B Tech IInd semester Uttar Pradesh Technical University which is effected from the current academic session i e 2013 14 This book is designed to provide students of engineering with the preliminary conceptual knowledge about engineering physics This book consists of seven chapters which covers all the four units of the prescribed syllabus of the university *Textbook Of Engineering Physics (Part Ii)* Rajagopal, 2009 **Engineering Physics** R. K. Kar, 2009 In this book a large number of problem have been solved to give the students an easier understanding of the subject **Engineering Physics** DATTU R. JOSHI, 2010 **Engineering Physics, 2e** S. L. Kakani, 2008-02-01 **Basic Engineering Physics (M.P.)** M N Avadhanulu, 2004 Quantum Physics Charged Particle Ballistics Electron Optics Lenses And Eye Pieces Interference Diffraction And Polarization Nuclear Physics Digital Electronics Dielectrics Lasers Fibre Optics *Principle of Engineering Physics II Sem A* S Vasudeva, The book is present form is due to the outcome of excellent received for the Author s Book *Modern Engineering Physics* which is prescribed in M D University Rohtak and Kurushetra university and other universities of Haryana In order to make the book more useful and strictly as per the syllabi of Haryana Universities most of the topics have been revised **Modern Physics for Engineers** Jasprit Singh, 1999-03-12 Reminding us that modern inventions new materials information technologies medical technological breakthroughs are based on well established fundamental principles of physics Jasprit Singh integrates important topics from quantum mechanics statistical thermodynamics and materials science as well as the special theory of relativity He then goes a step farther and applies these fundamentals to the workings of electronic devices an essential leap for anyone interested in developing new technologies *Modern Physics for Engineers* provides engineering and physics students with an accessible unified introduction

to the complex world underlying today's design oriented curriculums It is also an extremely useful resource for engineers and applied scientists wishing to take advantage of research opportunities in diverse fields **ENGINEERING PHYSICS.**

A. MARIKANI,2024 **Modern Engineering Physics** A S Vasudeva,2010-12 The book in its present form is due to my interaction with the students for quite a long time It had been my long cherished desire to write a book covering most of the topics that form the syllabii of the Engineering and Science students at the degree level Many students although able to understand the various topics of the books may not be able to put their knowledge to use For this purpose a number of questions and problems are given at the end of each chapter **Engineering Physics** Rao,Wiley,1982-07-01 Rao

Engineering *physics* Revised Edition .V .N. Rao,1982-05 **A Textbook of Engineering Physics (Orissa)** A S Vasudeva,2008 Volume I Simple Harmonic Motion Wave Motion Interference Diffraction Polarization Scalar And Vector Fields Electromagnetism Maxwell S Equation Spectroscopy Matter Waves And Uncertainty Principle Particle Properties Of Radiation Quantum Mechanics Volume Ii Particle Accelerators Radioactivity Crystal Structure Band Theory Of Solids Metals Insulators And Semiconductors Super Conductivity Lasers Fibre Optics

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