Subject Code	Paper Name	L T P C
TPH 101/201	Engineering Physics	3 0 1 3

UNIT 1. INTEREFERENCE- Condition of interference, Spatial and temporal coherence, Bi-prism experiment, Interference in a wedge-shaped film, Newton's Rings. **(9)**

DIFFRACTION Fraunhofer diffraction in single slit and N-slit (Diffraction grating). Rayleigh criterion of resolution, Resolving power grating.

UNIT 2. POLARISATION Theory of double refraction, law of Malus, Ordinary and Extra ordinary ray, Production and analysis of plane, circularly and elliptically Polarised light, Optical activity, Specific rotation and Polarimeter **(9)**

LASER- Spontaneous and stimulated emission of radiation, Einstein's A & B Coefficient, Population inversion, Principle of laser action, construction and working of Ruby and He-Ne laser. Photovoltaic effect

FIBRE OPTICS- Introduction to Fibre optics, types of fibre, acceptance angle and cone, Numerical aperture,

UNIT 3. SPECIAL THEORY OF RELATIVITY: Inertial and non-inertial frames, Galliean transformation, Michelson Morley Experiment, Einstien's postulates of relativity, Lorentz transformation, Length contraction, Time dilation, variation of mass with velocity, mass energy relation **(8)**

UNIT 4. SUPERCONDUCTIVITY: Essential properties of superconductors, Zero resistivity, Type I, Type II superconductors and their properties

ELECTROMAGNETISM: Displacement current, Three electric vectors (E, P, D), Maxwell equations in integral and differential forms, Electromagnetic wave propagation in free space **(8)**

UNIT 5. QUANTUM MECHANICS- Quantum concept and radiation, Wave particle duality, Heisenberg uncertainty principle, Schrodinger wave equation in one dimensional under a conservative force field, Wave function and its significance, Eigen values and eigen function for particle confined in one dimensional infinite potential well (Rigid box). **(8)**

Text Books

Ajoy Ghatak, "Optics", 4 Edition, Tata Mcgraw Hill, 2009

N. Subrahmanyam Brijlal & M. N. Avadhamil. "Optics: 24" Edition, S. Chand. 2010

A. Beiser, "Concepts of Modern Physics", Tata Mcgraw Hill

Introduction to Solid State Physics, Charles Kittel, Wiley

Introduction to Electricity and Magnetism by Sadiku Resnick, Krane, Halliday, "Physics (vol I&II)", 5" Edition, Wiley, 2007

B. B. Laud, "Laser & Non liner Optics" 3" Edition, New Age International Publisher • Robert Resnick, "Introduction to Special Relativity", Wiley Publishers, 2007

Reference Books:

John R. Taylar, Chris D. Zafiratos, Michael A. Gibson, "Modern Physics", 1"Edotion, Pearson Education, 2007 M. Pedrotti, "Introduction to Optics",

Frank. Pedrotti, S. J., Leno S. Pedrotti, Leno M. Pedrotti “Introduction to optics” 3rd Edition Pearson Education,

Gerd Kelet"Optical Fiber Communications Edition, Tata Mc Graw Hill 2017 Alastair M Rae, lim Napolitano, "Quantum Mechanics” 6 Edition Wiley 2015