

II Year II Semester

Code: 20ME4752

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NANO ENGINEERING

UNIT-I

General Introduction: Basics of Quantum Mechanics, Harmonic oscillator, magnetic Phenomena, band structure in solids, Mossbauer and Spectroscopy, optical phenomena bonding in solids, Anisotropy.

UNIT-II

Silicon Carbide: Application of Silicon carbide, nano materials preparation, Sintering of SiC, X-ray Diffraction data, electron microscopy sintering of nano particles,

Nano particles of Alumina and Zirconia: Nano materials preparation, Characterization, Wear materials and nano composites,

UNIT-III

Mechanical properties: Strength of nano crystalline SiC, Preparation for strength measurements, Mechanical properties, Magnetic properties,

UNIT -IV

Electrical properties: Switching glasses with nano particles, Electronic conduction with nano particles.

Optical properties: Optical properties, special properties and the coloured glasses

UNIT-V

Process of synthesis of nano powders, Electro deposition, Important nano materials.

Investigating and manipulating materials in the nanoscale: Electron microscopies, scanning probe microscopies, optical microscopies for nano science and technology, X-ray diffraction.

TEXT BOOKS

1. Nano Materials- A.K.Bandyopadhyay/ New Age Publishers.
2. Nano Essentials- T.Pradeep/TMH