

## Physics

- 1) Architectural Acoustics  
Classification of Sound : Loudness – Weber – Fechner law Decibel – Absorption Coefficient – Reverberation – Sabine's formula – Factors affecting acoustics of buildings and their remedies.
- 2) Ultrasonic  
Introduction, production, properties and detection of ultrasonics. Determination of velocity and application of ultrasonic in Engineering.
- 3) Crystal Physics  
Introduction and classification of solids-crystal structure – The crystal systems and Bravais Lattice – Space Lattices of cubic systems – Miller Indices – Relation between Interplanar Distance and cubic Edge and Laws Formula.
- 4) Band theory of Solids  
Band theory of Solids – Classification of solids – Energy band structure of conductors, insulator and semi conductors types of diodes (simple diode, Zener diode, varactor diode, LED Solar cells, photovoltaic cell, Photo Conductivity, Hall effects.
- 5) LASERS :  
Introduction and properties of Lasers, Stimulated and spontaneous emission – Relation between Einstein's 'A' and 'B' Coefficients-Population Inversion – Optical – Pumping – Nd-Yag Laser and CO<sub>2</sub> Laser – Application of Laser in Material Processing – Holography – Application of Lasers
- 6) Optical – Fibre Communication Introduction – Fibre – Optic System – advantages of Fibre optics – Basic principle – Acceptance angle and Numerical Aperture – Types of optics preparation through optical fibre
- 7) Conducting Materials :  
Introduction – conduction in Metals, Electron theory Q.M. treatment – Free electron theory of metals – Electrical Conductivity – Thermal Conductivity – Wiedemann – Franz law – Drawbacks of classical free electron theory
- 8) Super Conducting Materials  
Introduction to super conductor – properties of super conductor Type I and Type II super conductor – Comparison between I and II – High T conductors – Application
- 9) New Engineering Materials  
Introduction – Metallic glasses, types, properties, preparation and its application – Introduction to nano technology – method of producing, properties and its application – shape memory alloys – types – shape Memory effect – Pseudo

elasticity – properties – application – Bio-materials – General information – Biomedical compatibility of Ti-Al-Nb alloys for implant application.

10) Non-Destructive Testing

Introduction – The objective of NDT – Types of Defects – Methods of NDT (Liquid Penetrate – Dye Penetrate Radiographic) x X-ray Radiography – X-ray Fluoroscopy – Ultrasonic Inspection method – Pulse Echo System – Visual Display units.

**Reference Books :**

- 1) Engineering Physics                      K. Rajagopal Prentice-Hall of India Pvt. Ltd.,  
New Delhi
- 2) Engg. Physics                              G. Vijayakumari                              Vikas Publishing House Pvt.  
Ltd.
- 3) A Text book of Engg. Physics      M.N. Aavadhulala                              S. Chand  
P .G. Kshirsagar
- 4) Engg. Physics                              Abhijit Nayak S.K. Kataria & Sons.,  
Delhi.