

# AKTU : B.Tech First Year

## BAS101 / BAS201 ENGINEERING PHYSICS

**By Ms. Anjali Sharma**  
BSc. from Delhi Univ.  
MSc. From GBU  
Schooling from K.V.  
3 + Years Teaching  
Experience

As per New  
Syllabus  
2022-23



- ✓ Inadequacy of classical mechanics
- ✓ Planck's theory of black body radiation(qualitative)
- ✓ Compton effect, de-Broglie concept of matter waves
- ✓ Davisson and Germer Experiment
- ✓ Phase velocity and group velocity
- ✓ Time-dependent and time-independent Schrodinger wave equations
- ✓ Physical interpretation of wave function, Particle in a one-Dimensional box.

- ✓ **Basic concept of Stoke's theorem and Divergence theorem**
- ✓ **Basic laws of electricity and magnetism**
- ✓ **Continuity equation for current density**
- ✓ **Displacement current**
- ✓ **Maxwell equations in integral and differential form**
- ✓ **Maxwell equations in vacuum and in conducting medium**
- ✓ **Poynting vector and Poynting theorem**
- ✓ **Plane electromagnetic waves in vacuum and their transverse nature.**
- ✓ **Relation between electric and magnetic fields of an electromagnetic wave**
- ✓ **Plane electromagnetic waves in conducting medium, Skin depth.**

- ✓ Coherent sources, Interference in uniform and wedge shaped thin films
- ✓ Necessity of extended sources
- ✓ Newton's Rings and its applications
- ✓ Introduction to diffraction
- ✓ Fraunhofer diffraction at single slit and double slit
- ✓ Absent spectra
- ✓ Diffraction grating
- ✓ Spectra with grating
- ✓ Dispersive power
- ✓ Resolving power
- ✓ Rayleigh's criterion of resolution
- ✓ Resolving power of grating.

**Fibre Optics:** Principle and construction of optical fiber, Acceptance angle, Numerical aperture, Acceptance cone, Step index and graded index fibers, Fiber optic communication principle, Attenuation, Dispersion,, Application of fiber.

**Laser:** Absorption of radiation, Spontaneous and stimulated emission of radiation, Population inversion, Einstein's Coefficients, Principles of laser action, Solid state Laser (Ruby laser) and Gas Laser (He-Ne laser), Laser applications.

## Syllabus

# Unit-5: Superconductors and Nano-Materials

**Superconductors:** Temperature dependence of resistivity in superconducting materials, Meissner effect, Temperature dependence of critical field, Persistent current, Type I and Type II superconductors, High temperature superconductors, Properties and Applications of Super-conductors.

**Nano-Materials:** Introduction and properties of nano materials, Basics concept of Quantum Dots, Quantum wires and Quantum well, Fabrication of nano materials Top- Down approach (CVD) and Bottom-Up approach (Sol Gel), Properties and Application of nano materials.



**Thank You**

Download  
Gateway  
Classes  
Application  
From Google  
Play store

Link in  
Description