

Syllabus for M. Tech in Nano Science & Technology (NST) Entrance Examination for Sponsored and part-time category

Materials science:

- Crystal structure
- Specific heat of solids
- Semiconductor
- Superconductivity
- Materials synthesis

Mathematical methods:

- Special functions and their properties
- Fourier transform
- Laplace transform Calculus
- Vector algebra and vector calculus.
- Complex analysis
- Tensor

Quantum Mechanics:

- Wave-particle duality
- Heisenberg's uncertainty principle
- Particle in box, harmonic oscillator, tunneling through a barrier
- Orbital angular momentum
- Time independent perturbation theory
- Born approximation

Electromagnetism:

- Maxwell's equations
- Electromagnetic waves
- Poynting vector
- Propagation of EM wave through different media

Electronics:

- Operational amplifier and its applications
- Digital integrated circuits
- Field effect transistor
- CMOS process technology

Communications:

- Analog communication
- Digital and data communication:

Computer Architecture:

- Basics of computer architecture
- Computer instruction set
- Fundamentals of parallel processing
- Multiprocessor