

Main topics

1. Radiations; Law of attenuation of intensity of radiation
2. Geometrical optics; Fermat principle; Applications of geometrical optics
3. Wave optics; Applications of wave optics; Photon concept
4. Structure of matter; atom, electron
5. Atomic and molecular interactions; Applications
6. Many atom systems; Boltzmann distribution; Gases; Solids
7. Liquid crystals; biological and artificial membranes
8. Structural organization of living systems: water, nucleic acids, proteins
9. Light emission, scattering, absorption; Thermal radiation
10. Luminescence; Light sources; Lasers
11. X-radiation and its interaction with matter
12. Radioactive isotopes and radiation
13. Bases of radioisotope diagnostic methods
14. Basic electronic units and circuits
15. Signal processing, Detectors, Displays, Sound, ultrasound
16. Transport phenomena, flow of fluids and gases
17. Diffusion, osmosis
18. Thermodynamic aspects of transport processes
19. Sedimentation and electrophoretic methods
20. Membrane potential, Action potential
21. Sensory phenomena, Laws of sensation
22. Mass spectroscopy methods
23. Optical spectroscopic techniques
24. Radio spectroscopy methods