

SYLLABUS

PHYSICS (042) (THEORY) CLASS XII (2021-22)

Time : 2 Hours

Max. Marks : 35

TERM II			
		No. of Periods	Marks
Unit V	Electromagnetic Waves		
	Chapter 8 : Electromagnetic Waves	2	
Unit VI	Optics		17
	Chapter 9 : Ray Optics and Optical Instruments	18	
	Chapter 10 : Wave Optics		
Unit VII	Dual Nature of Radiation and Matter		
	Chapter 11 : Dual Nature of Radiation and Matter	7	
Unit VIII	Atoms and Nuclei		11
	Chapter 12 : Atoms	11	
	Chapter 13 : Nuclei		
Unit IX	Electronic Devices		
	Chapter 14 : Semiconductor – Electronics : Materials, Devices and Simple Circuits	7	7
	Total	45	35

UNIT V : ELECTROMAGNETIC WAVES

(2 PERIODS)

Chapter 8 : Electromagnetic Waves

Electromagnetic waves, their characteristics, their Transverse nature (qualitative ideas only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

UNIT VI : OPTICS

(18 PERIODS)

Chapter 9 : Ray Optics and Optical Instruments

Ray Optics : Refraction of light, total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism.

Optical Instruments : Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying Powers.

Chapter 10 : Wave Optics

Wave Optics : Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double-slit experiment and expression for fringe width, coherent sources and sustained interference of light, diffraction due to a single-slit, width of central maximum.

UNIT VII : DUAL NATURE OF RADIATION AND MATTER

(7 PERIODS)

Chapter 11 : Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation – particle nature of light.

Experimental study of photoelectric effect.

Matter waves – wave nature of particles, de-Broglie relation.

UNIT VIII : ATOMS AND NUCLEI

(11 PERIODS)

Chapter 12 : Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.

Chapter 13 : Nuclei

Composition and size of nucleus, Nuclear force, Mass-energy relation, mass defect, nuclear fission, nuclear fusion.

UNIT IX : ELECTRONIC DEVICES

(7 PERIODS)

Chapter 14 : Semiconductor Electronics : Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only). Semiconductor diode – I-V characteristics in forward and reverse bias, diode as a rectifier; Special purpose p-n junction diodes : LED, photodiode, solar cell.