Syllabus

PHYSICS

CLASS XII (Code No. 042)

(2021- 22)

Syllabus assigned for Term II

THEORY

Time: 2 Hours **Max Marks: 35**

		No. of Periods	Marks
Unit–V	**Electromagnetic Waves**	02	17
8.	Electromagnetic Waves		
Unit-VI	**Optics**	18	
9.	Ray Optics and Optical Instruments		
10.	Wave Optics		
Unit-VII	**Dual Nature of Radiation and Matter**	07	11
11.	Dual Nature of Radiation and Matter		
Unit-VIII	**Atoms and Nuclei**	11	
12.	Atoms		
13.	Nuclei		
Unit-IX	**Electronic Devices**	07	7
14.	Semiconductor -Electronics: Materials, Devices and Simple Circuits		
	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 fibers, 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.