

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

ENGINEERING PHYSICS

SEMESTER – I/ II

TEACHING SCHEME	L=3; P/D=2; TA=1
EXAMINATION SCHEME	Theory = 3hours; Marks= 100
PRACTICAL / DRAWING	Internal evaluation marks : 20 External evaluation marks: 30

(A) THEORY:

1. Thermodynamics:

First law of thermodynamics and its application , reversible and irreversible processes, second law of thermodynamics, entropy and its calculation in reversible and irreversible processes, Entropy and second law of thermodynamics, Entropy and disorder, Enthalpy and free energy.

2. Electromagnetism:

Ampere's theorem and its applications to determine magnetic induction in case

- (i) Conductor carrying current.
- (ii) Solenoid
- (iii) Toroid

Lorentz force, Hall effect in metals, High energy particles accelerators, Cyclotron and Betatron.

Gauss's law for magnetism, Types of matter magnetism, Diamagnetism, Paramagnetism, Ferromagnetism, Nuclear Magnetism, three magnetic vectors.

3. Optics:

Spatial and temporal coherence, Interference by division of wave front and amplitude, interference by thin films, measurement of film thickness, Michelson's Interferometer, and light propagation, Fresnel and Fraunhofer diffraction Fraunhofer diffraction at double slits, Multiple slits and circular Aperture, Rayleigh criterion, Resolving power of grating, telescope and prism.

Polarization, polarizing sheets, Malus law, Polarization by reflection and Brewster's law, Huygen's theory for uni-axial and bi-axial crystals. polarization by double refraction, Circular & elliptical polarization by scattering of light.

4. Modern Physics :

Source of light, Cavity radiators, spec tram power distribution, wien's Reyleign, Jean's and Plank's laws, Dual nature of matter and radiation, photoelectric effect, Einstien's photoelectric equation, compton's scattering De Brogile waver, wave and group veloaty, an Cartainty Principle.

X-rays, X- rays detracton and Bragg's law, Quantum physics of hydrogen atom, Bohr's postulate and application in explanation of hydrogen rpectran, Bohr's correspondence principle, frank and Hertz experiment.

Laser Physics :- Stimulated and spontaneous emission, Einstein's A and B coefficients, optical pumping and poplution inversion, Different lasers, gas solid state lasers (He -Ne laser and Rabby laser) and application in holography