YEAR – II	ALLIED PHYSICS	APH301S
SEMESTER – III & IV		HRS/WK - 5
ALLIED		CREDIT - 4

UNIT- I: PROPERTIES OF MATTER & ACOUSTICS (15 hours)

Sound: Transverse vibrations of a stretched string- expression for the velocity of transverse wave – laws of transverse vibrations- A.C frequency measurement using sonometer- velocity of sound in a gas- Ultrasonics-production and uses.

UNIT- II: ELECTRICITY & MAGNETISM (15 hours)

Capacitor-energy of charged capacitors-loss of energy due to sharing of charges DC circuits – growth and decay of charge containing resistance and capacitor (RC) circuit & inductance and resistance (LR) circuit - -potentiometer-measurement of internal resistance of a cell and unknown resistances - Moment and pole strength of a magnet

UNIT- III: OPTICS (15 hours)

Physical Optics: Interference in thin films- Coherent sources- Interference in wedge shaped film- Newton's rings- Measurement of wave length and radius of curvature with theory- Air wedge - Theory of plane transmission grating- determination of wavelength of Hg lines by normal incidence

UNIT- IV: RELATIVITY & QUANTUM MECHANICS (15 hours)

Elements of relativity and Postulates of theory of relativity- Lorentz transformation equations- derivation- length contraction- time dilation- mass energy equivalence.

Quantum mechanics: De Broglie's waves - Uncertainty principle- postulates of wave mechanics- - Schrodinger's equation (one dimensional) - application to a particle in a box.

UNIT- V: ELECTRONICS (15 hours)

Basic electronics: PN Junction diode- transistor-characteristics of CE mode- Zener diode-voltage regulator- LED

Digital electronics: Boolean algebra- - verification AND, OR, NOT gates- construction using diodes and transistors- NAND- verification of Demorgan's theorem - ICs – SSI, MSI, LSI and VLSI.

QUESTION PATTERN

Time: 3 Hours **Max. Marks: 75**

Section – A (10 X 2 = 20)

(Answer ALL the questions)

(Two questions from each Unit)

Section – B (5 X 5 = 25)

(Answer all the questions)

(One question from each Unit; either or pattern and any one of the questions will be a problem; both part)

Section C (3 X 10 = 30)

(Answer any Three Questions out of five)

(One Question from each unit and it may have subdivisions)