**Paper – ll**

**Total Marks -100**

**Electricity and Magnetism**

Electric field due to point charges, Gauss' law Electric potential and Poisson and

Laplace's equation Dielectric medium and Polarization; Capacitance; Moving charges

and magnetic field Ampere's law; Vector potential; Magnetic properties of matter;

Transient current; Faraday's law of electromagnetic induction; Alternating current and

LRO circuit. Maxwell's equations; poynting theorem and poynting Vector.

**Electronics**

Thermionic emission; Space charge; Diode. Triode Tetrode; Pentode and their static

and dynamic characteristics; Amplitude modulation and demodulation or detection;

Various basic circuits for rectification, amplification modulation and detection connected

with radio receivers and transmission; n and p type semiconductors; Biased function;

Transistors; Common base, common emitter and common collector configurations OP

Amplifier; characteristics, modes of operation, applications number systems: decimal,

octal and Hexadecimal; Binary code, Binary arithmetic, BCD code, and parity logic

gates Boolean identities; De Morgan's theorems: logic simplification; Combinational

logic circuits: decoders, parity generator and checker circuits, flip flops:RS, JK and Dtype.

**Atomic Physics**

Bohr theory and quantum numbers including electron spin; Pauli's exclusion principle;

Spectra of simple systems with one or two valence electrons. Photo electric effect

Compton scattering; pair production; Lande's g factor and Zeeman effect; Waves and

particles and De Broglie's Hypothesis; Schrodinger wave equation and its application to

one dimensional harmonic oscillator. Heisenberg's uncertainly principle.

**Nuclear Physics**

Structure of Nuclei; Radioactivity , *,* and decay. Methods of detection, Mass

Spectrometer. Accelerators. Phenomenon of fission; reactor and nuclear power, nuclear

fusion and its application; Nuclear models; Elementary particles and their properties.

**SUGGESTED READINGS**

*1. Perspectives of Modem Physics, A.Beiser.*

*2. Fundamentals of Physics, Halliday & Resnick.*

*3. Introduction to Electromagnetic fields and Waves. D. Corson & P .Lorrain.*

*4. Engineering Electronics. J.D. Ryder.*

*5. Semiconductor Electronics. J.F.Gibbons.*

*6. Physics Course. Berkley.*

*7. Heat and Thermodynamics. W. Zemanasky.*

*8. Nuclear Physics, W.E. Burcham.*

*9. Nuclear Physcis, Kaplan*

*10. Fundamentals of digital electronics, Floyd*

*11. Waves & Vibrations, Pain*