SEMESTER-II (Pool-A)

COURSE NAME : APPLIED PHYSICS
(CHOI-A51)

Number of Credit: - 02 **Maximum marks: 50**

Course title: Applied Physics

Unit I – DC Circuit, Electrical circuit elements (R, L and C), voltage and current sources, Ohm's law, AC Circuit, Basic terminologies of AC circuit, Three phase supply, phase sequence, star connection, delta connection, measurements of three phase power under balanced condition. Basics of auto-transformer and three-phase transformer connections.

Unit II – Rectilinear, curvilinear and space motion, Tangential, normal and polar coordinates, Introduction of Force, Mass and acceleration, Newton's second law of motion, Equation of motion and solution of problems, Work and Energy, Impulse and Momentum.

Unit-III – Diodes, Characteristic of ideal and real diode, Breakdown in diode, Zener diode, Varactor diode, Tunnel diode, Rectifiers – Half and Full-wave rectifiers. Transistors: Introduction to pnp and npn transistors, current components, active, cutoff and saturation regions, CC, CB and CE configuration.

Unit IV – Thermodynamics: Temperature and heat, temperature scale, quantitative idea of temperature scale, melting and boiling point, latent heat, state of matter, triple point, specific heat, Zeroth, first and second law of thermodynamics, Carnot cycle.

Unit V – Crystal structure, conductor, semiconductor, insulator, Introduction to nanoscience and nanotechnology.

Text/Reference Books:

1. Fitzgerald, Arthur Eugene, David E. Higginbotham, and Arvin Grabel, "Basic electrical engineering," McGraw-Hill Series in Electrical Engineering, Auckland: McGraw-Hill, 1981, 5th ed.(1981).
2. Smarajit Ghosh, "Fundamentals of Electrical and Electronics Engineering", PHI Publication, 1st Edition, 2007.
3. Mechanics by M P Saxena, P R Singh, S S Rawat and N S Saxena (4th ed., College Book House, 1999)
4. Mechanics by D S Mathur (S. Chand & Co., 2001)
5. Thermal Physics, A. Kumar and S.P. Taneja, 2014, R. Chand Publications.
6. Principles of Electronics by V.K. Mehta, S. Chand, 2002.
7. Solid State Physics, Puri and Bubber.
8. Introduction to Solid state Physics by C. Kittel, (John Wiley), VII Ed.,1995.
9. Irving. H. Shames, "Engineering Mechanics," Prentice Hall Book Company, 1966.
10. Robert L. Boylestad, Louis Nashelsky, "Electronics Devices and Circuits Theory", Prentice Hall, 10th Edition, 2009.