

Govt. P.G.College, Berinag. Programme-(B.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-i, Mechanics

Students will be able to articulate and describe-

- (1) Concept of scalar and vector field.
- (2) Concept of Gradient, curl and divergence.
- (3) Gauss theorem, Stokes theorem and Green's theorem.
- (4) Linear and rotational quantities

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-ii, Electricity

Students will be able to articulate and describe-

- (1) Concept of Electric field and electrostatic energy stored in electrostatic field
- (2) Gauss theorem and its applications.
- (3) Concept of electric potential and electric potential of various systems
- (4) Method of electrical images and applications
- (5) Polar and non-polar dielectrics.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-iii, Theory of Oscillations

Students will be able to articulate and describe-

- (1) Analysis of Oscillations.
- (2) Simple harmonic motion analysis and application to physical world.
- (3) Concept of Damped harmonic oscillator and applications.
- (4) Forced harmonic oscillators and applications
- (5) Ballistic galvanometer and its applications

Govt. P.G.College, Berinag. Programme-(B.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-i, General properties of matter

Students will be able to articulate and describe-

- (5) Concept of moment of inertia and how to determine the Moment of Inertia of various objects
- (6) Concept of angular momentum for combined motions, translation and rotation.
- (7) Time taken by various objects of same mass, rolled over the inclined surfaces.

- (8) Elasticity and various elastic constants
- (9) Energy stored in an stretched wire.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-ii, Magnetism

Students will be able to articulate and describe-

- (6) Concept of magnetism
- (7) Apply the Biot-Savert's law and Ampere's circuital law in some physical systems.
- (8) Developing to ability of mathematical calculations while applying Biot-Savert law and Ampere's circuital law.
- (9) Hysteresis.
- (10) Soft and Hard magnets
- (11) Alternating current

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-iii, Wave motion and Acoustics

Students will be able to articulate and describe-

- (6) Analysis of wave motion
- (7) Phenomena occurring in waves, i.e., beats, standing waves etc..
- (8) Concept of ultrasonic waves
- (9) Methods to produce ultrasonic waves
- (10) Applications of ultrasonic waves

Govt. P.G.College, Berinag. Programme-(B.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-i, Thermodynamics

Students will be able to articulate and describe-

- (1) Concept of thermodynamic systems, zeroth law of thermodynamics.
- (2) Concept of thermodynamic processes.
- (3) Real and perfect gases.
- (4) Carnot theorem and Carnot engine.
- (5) Clausius-Clapeyron's equations.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-ii, Geometrical Optics

Students will be able to articulate and describe-

- (1) Concept of Fermat's principle.
- (2) Image theory for Lens systems.
- (3) Optical aberrations and dispersions.

- (4) Eye piece and its types and applications.
- (5) Microscopes and Telescopes

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-iii, Elementary Solid State Physics

Students will be able to articulate and describe-

- (1) Analysis of Crystal structure.
- (2) Crystal diffraction in different perspectives.
- (3) Thermal properties of Solids.
- (4) Band theory of solids
- (5) Specific heat: Dulong Petit, Einstein and Debye theory.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-4th, Course-Physics

Course outcomes of Paper-i, Heat Transfer

Students will be able to articulate and describe-

- (1) Concept of heat transfer.
- (2) Concept velocities and speeds of gas molecules.
- (3) Boltzmann-Maxwell distributions.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-4th, Course-Physics

Course outcomes of Paper-ii, Physical optics

Students will be able to articulate and describe-

- (1) Concept of interference and diffraction.
- (2) Newton's Ring, Fresnel's Biprism, Michelson-Interferometer
- (3) Polarisation of light.
- (4) Various polariser and detectors.
- (5) Optical activity and Polarimeters.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-4th, Course-Physics

Course outcomes of Paper-iii, Statistical Mechanics

Students will be able to articulate and describe-

- (1) Concept of Statistics.
- (2) Concept of ensembles.
- (3) Classical and quantum statistical.
- (4) Applications of these statistics.
- (5) Concept of phase-space.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-v, Course-Physics

Course outcomes of Paper-i, Quantum Mechanics

Students will be able to articulate and describe-

- (1) Concept of Black body radiation..
- (2) Schrodinger equation.
- (3) Hamiltonian operator.
- (4) Potential step and Barrier.
- (5) De Broglie hypothesis and matter wave

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-v, Course-Physics

Course outcomes of Paper-ii, Atomic and molecular spectra

Students will be able to articulate and describe-

- (1) Concept of spectrum and its various types.
- (2) Stern-Garlech experiment.
- (3) Fine lines, Zeeman effect, Stark effect, Hyperfine splitting
- (4) Raman spectra-classical and quantum explanations
- (5) Microwave, infrared and ultraviolet spectrum of molecules

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-v, Course-Physics

Course outcomes of Paper-i, Electronics

Students will be able to articulate and describe-

- (1) Kirchhoff laws.
- (2) Thevenin's theorem, Norton theorem and superposition theorem.
- (3) Diodes and Transistors.
- (4) Amplifiers and working.
- (5) Hybrid parameters of transistors
- (6) Field effect transistors, Mosfets and SCR.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-6th, Course-Physics

Course outcomes of Paper-i, Special theory of Relativity & Electromagnetic

Students will be able to articulate and describe-

- (1) Euclidean and Minkowski space; concept of four-dimensions
- (2) Ether hypothesis & resolution of ether mystery
- (3) Length contraction and time dilation
- (4) Concept of relativity and the Einstein.
- (5) Electromagnetic waves and their applications

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-6th, Course-Physics

Course outcomes of Paper-ii, Nuclear Physics & Subatomic Particles

Students will be able to articulate and describe-

- (1) Concept of nucleus and its properties.
- (2) Departure from spherical shape.
- (3) Existence of subatomic particles inside the nucleus.
- (4) Concept of relativity and the Einstein.
- (5) Radiation and particle detectors.

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-6th, Course-Physics

Course outcomes of Paper-iii, Electronics

Students will be able to articulate and describe-

- (1) Concept of feedback amplifiers.
- (2) Concept of oscillators.
- (3) Evolution of various coded in digital electronics.
- (4) Multivibrators.
- (5) Adders and subtractors.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-i, Non-relativistic Quantum Mechanics

Students will be able to articulate and describe-

- (1) Concept Quantum mechanics and need.
- (2) Schrodinger equation to solve the problem quantum mechanically.
- (3) Harmonic Oscillator problem in quantum mechanics.
- (4) Postulates of quantum mechanics.
- (5) Hydrogen atom problem.
- (6) Approximation methods.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-ii, Mathematical methods

Students will be able to articulate and describe-

- (1) Complex analysis.

- (2) Legendre, Hermite, Bessel and Laguerre polynomials.
- (3) Green's function and applications.
- (4) Fourier series and theorem and applications.
- (5) Tensor calculus.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-iii, Classical Mechanics

Students will be able to articulate and describe-

- (1) Concept of virtual work.
- (2) De Alembert principle and derivation.
- (3) Lagrange equations of motion.
- (4) Concept of phase space and configuration space and their need.
- (5) Scattering theory and their explanation classically.
- (6) Hamilton-Jacobi equation

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-iv, General theory of Relativity.

Students will be able to articulate and describe-

- (1) Principle of General covariance.
- (2) Principle of equivalence.
- (3) Einstein field equations.
- (4) Applications of General theory of Relativity.
- (5) Robertson-Walker line element.
- (6) Cosmology theory.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-1st, Course-Physics

Course outcomes of Paper-v, Electronics and Principle of communications

Students will be able to articulate and describe-

- (1) Concept of Modulations.
- (2) Amplitude, frequency and phase modulations.
- (3) Heterodyne phenomenon.
- (4) Demodulation techniques.
- (5) Optical fibre and communications.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-i, Atomic and molecular spectra

Students will be able to articulate and describe-

- (6) Concept of spectrum and its various types.
- (7) Spin-orbit interactions.
- (8) Fine lines, Zeeman effect, Stark effect, Hyperfine splitting
- (9) Raman spectra-classical and quantum explanations
- (10) Microwave, infrared and ultraviolet spectrum of molecules
- (11) Electron spin resonance and magnetic nuclear resonance

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-ii, Electrodynamics

Students will be able to articulate and describe-

- (1) Concept of four-vectors.
- (2) Lorentz transformation of various components of components of four vectors.
- (3) Retarded potentials.
- (4) Electric and magnetic fields due to charged particle moving with constant velocity and with acceleration
- (5) Scattering of radiations with atoms/molecules.
- (6) Radiations by electric and magnetic dipoles

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-iii, Statistical mechanics

Students will be able to articulate and describe-

- (1) Concept of ensembles.
- (2) Ising model and Landau model of phase transitions.
- (3) Concept of partition function and its applications.
- (4) Concept of phase space and gamma space
- (5) Classical statistics.
- (6) Quantum statistics- Bose-Einstein condensation

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-2nd, Course-Physics

Course outcomes of Paper-iv, Computer Architecture and Digital Electronics

Students will be able to articulate and describe-

- (1) Computer system parts and their applications.
- (2) Difference between a microprocessor and microcontroller.
- (3) LAN, WAN.
- (4) Computer network.
- (5) Internet and its working

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-i, Nuclear Physics

Students will be able to articulate and describe-

- (1) Concept of nucleus and its radius and various properties.
- (2) Alpha decay, beta decay and gamma decay and their mechanism.
- (3) Semi-empirical mass formula and Nuclear models.
- (4) Nuclear reactions and mechanism.
- (5) Nuclear force and Deuteron.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-ii, Particle Physics

Students will be able to articulate and describe-

- (1) Elementary particles and their classification.
- (2) Fundamental interactions and their properties.
- (3) SU (2) and SU (3) symmetries.
- (4) Young tableaux.
- (5) Quark model and its reliability.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-iii, Condensed matter physics

Students will be able to articulate and describe-

- (1) Bravais lattices.
- (2) X-ray diffraction methods
- (3) Reciprocal lattices.
- (4) Ewald constructions
- (5) Brillouin zones.
- (6) superconductivity

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-iv, Relativistic quantum mechanics

Students will be able to articulate and describe-

- (1) Concept and need of relativistic quantum mechanics.
- (2) Klein-Gordon equations and Dirac field equations.
- (3) Scattering theory- Partial wave analysis and Born approximation method.
- (4) Einstein coefficients.
- (5) Bilinear covariants.

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-3rd, Course-Physics

Course outcomes of Paper-v, Plasma Physics

Students will be able to articulate and describe-

- (1) Concept of Plasma.
- (2) Debye shielding and Debye sphere.
- (3) Plasma oscillations.
- (4) Alfvén waves.
- (5) Magnetic bottle and Tokamak and pinch effect

Govt. P.G.College Berinag. Programme-(M.Sc.), Semester-4th, Course-Physics

Course outcomes of Paper-ii, Advanced Electronics-i

Students will be able to articulate and describe-

- (1) Concept of Operational amplifiers.
- (2) Log and antilog amplifiers.
- (3) Schmitt Trigger.
- (4) 555 timers and phase locked loop.
- (5) Microwaves production and detections
- (6) Optical communications

Govt. P.G.College Berinag. Programme-(B.Sc.), Semester-4th, Course-Physics

Course outcomes of Paper-ii, Advanced Electronics-ii

Students will be able to articulate and describe-

- (1) Concept of various codes in digital electronics.
- (2) Boolean algebras.
- (3) K-map for simplification of Boolean expressions.
- (4) A to D and D to A converters.
- (5) Flip-Flops.