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COURSES OF STUDIES

For

B. Sc. I, 11, III, Hou./Gea./labaJN Physics

B. Sc. Part - I:- PHYSICS (HONOURS)

PAPER - I(Theory)

GROUP - A :Special Theory of Relativity

ean Transformation, Inertial frame of reference, Michelson-Morley experiment,
erald contractions, Einstein postulates,Lorentz Transformations and its
s, Length contraction and time dilation, Addition of velocities, Dragging of light
nedium, Relativistic Doppler effect of propagation of light waves, Aberration of
n of mass with velocity, Mass energy relation.

GROUP - B : Mechanics and Properties of Matter

al frame of reference and non-inertial frame reference, Coriolis & Centrifugal
heir simple applications, Generalized co-ordinates, Constraints (holonomic &
c) D'Alembert's principle and Lagrange's equations of motion, Hamilton's
notion and their simple applications.

tational potential and field due to bodies of regular geometrical shapes, Motion
ld due to bodies of regular geometrical shape, Motion in central field, Kepler's
ticles motion in central field.

city and elastic constants, Relation between elastic constants, Bending of beams
rs, Torsion of cylinder and rigidity modulus by flat spiral spring.

ce tension and Surface energy, Principle of virtual works and its application to
on, Ripple and gravity waves, Surface tension by the method of ripples, Effect of
and pressure on surface tension.

Group – C (Waves and Vibration)

estions to be set, one to be answered differential equation of wave, Equation of
vaves, Stationary Waves, Compression Waves in fluids and in external solids free,
forced oscillations in one dimension. Fourier series and its applications to
nd saw tooth waves, vibration of string, Intensity and loudness of sound and
ements, Acoustics of buildings.

PAPER - II (Theory)

ation of Maxwell's law of distribution of velocities and its experimental
Equipartition of energy, Mean free path.

port phenomenon-viscosity, conductivity and diffusion, Brownian motion,
Einstein's theories and experimental determination of Avogadro's number.

linear flow of heat in a metal rod conductivity of periodic flow method. Relation
rmal and electrical conductivities Van der Waal equation of state.

GROUP - B : Thermodynamics

th law of thermodynamics, Definition of temperature, first and second law of
nics, Carnot's engine and Carnot's theorem, Absolute scale of temperature,
uality entropy, Energy changes in reversible and irreversible processes, Enthalpy,
nd Gibb's function, Gibb's Helmholtz equations, Maxwell's equations and its

simple physical problems.

modynamics description of phase transition Chemical potential, Latent heat of
apeyron equation, Ehrenfest scheme of phase transition.

Thompson effect, Liquefaction of gasses with special reference to hydrogen and
uction and measurement of low temperature.

body radiation, Kirchoff's law, Stefan's law, Wiens law, Planck's law and its
verification.

ein and Debye theories of specific heats of solids.

PRACTICAL PAPERS.

'g' by Kater's Pendulum

Young Modulus by Flexure of beam.

Elastic constants by Searle's method

Rigidity modulus by (i) Barton's apparatus (ii) Maxwell's model

Moment of inertia by - Fly-wheel.

Surface tension by Jagger's method

Surface tension by method of Ripples

Surface tension of Soap solutions by bubble method.

Viscosity of water by capillary flow method

Viscosity of air by Rankine's method.

Viscosity by Stokes method.

Laws of transverse Vibration by Sonometer.

Frequency of tuning fork by Melde's experiment.

Velocity of ultrasonic wave in a liquid.

Specific heat of liquid by cooling method.

Thermal conductivity of Ebonite by Lee's Disc Method.

'J' by Joules calorimeter.