

Teaching Report
Academic Year-2019-2020
Dept of Physics

Term I

F.Y.B.Sc.

Name: Mr. Barne N.D. PHY-111 Mechanics and Properties of Matter

Months	Topics	Lectures
08 July 2019 -30 July 2019	1. Motion: Introduction to motion, Types of motion, Displacement, Velocity, Acceleration, Inertia, Newton's laws of motion with their explanations, Various types of forces in nature, Frames of reference (Inertial and Non inertial), Laws of motion and its real life applications, Problems	09
31 July 2019- 26 Aug 2019	2. Work and Energy: Kinetic energy, Work Energy Theorem, Work done with constant force, Work done with varying force (spring force), Conservative and Non conservative forces, Potential energy, Law of energy conservation, Gravitational potential energy, Problems	07
	Unit Test	
27 Aug 2019- 10 Sept 2019	3. Fluid Mechanics: Concept of viscous force and viscosity, Coefficient of viscosity, Steady and Turbulent flow, Reynolds number, Equation of continuity, Bernoulli's Principle, Applications of Bernoulli's Principle (Ventury Meter, Pitot Tube), Applications of viscous fluids, Problems.	08

INTERNAL TEST		
11 Sept2019-4 Oct 2019	4. Properties of Matter: Surface tension, Angle of contact, Factors affecting surface tension, Jaeger's method for determination of surface tension, Applications of surface tension. Stress and Strain, Hook's law and Coefficient of elasticity, Young's modulus, Bulk modulus, Modulus of rigidity, Work done during longitudinal strain, Volume strain, Shearing strain, Poisson's ratio, Relation between three elastic moduli, (Y , η , K), Applications of elasticity, Problems.	12

Mr. Barne N.D.

Teaching Report
Academic Year-2019-2020
Dept of Physics
Term I
T.Y.B.Sc.

Name: Mr. Barne N.D.PH 333 Classical Mechanics

Months	Topics	Topics
19July2019- 27July2019	1. Mechanics of system of particles Introduction –Newton’s laws	10
	Applications of Newton’s laws of motion Projectile motion in various medium,	
	Rocket motion,	
	Motion of a charged particle in constant electric, magnetic and electromagnetic field.	
	General features of motion, equation of orbit, Deduction of Kepler’s laws of planetary motion, Orbits of artificial satellite, Problems.	
	System of particles, Centre of mass, Conservation of linear momentum, angular momentum,	
	Energy of system of particles (statements only) Problems	
29 July2019-8 Aug2019	2. Motion in Central Force Field Central force, equivalent one body problem	
	Motion in central force field	
	General features of motion, equation of orbit	
	Deduction of Kepler’s laws of planetary motion	

	Orbits of artificial satellite Problems	
	Problems	
	Unit Test	
10 Aug 2019- 23 Aug 2019	3. Scattering of particles Elastic and inelastic scattering,	
	Elastic scattering - Laboratory and centre of mass system.	
	Scattering, Relation between scattering angles in laboratory and centre of mass system.	
	Problems	
27 Aug 2019- 13 Sept 2019	4. Lagrangian and Hamiltonian formulation 1 Limitations of Newtonian formulation	III weak of Sept2019
	Types of constraints, degrees of freedom, generalized coordinates, configuration space	
	D' Alembert's principle of virtual work	
	Lagrangian equation from D' Alembert's principle, cyclic coordinates, problems	
	Phase space, Hamiltonian's equations State of Systems, Ensembles	
20 Sept 2019- 28 Sept 2019	5. Canonical Transformation and Poisson's Bracket Generating function	I week of 2019
	Condition for Canonical transformation and problems.	
	Definition , Identities	
	Internal Exam	

Mr. Barne N.D.

Teaching Report

2019-2020

DEPARTMENT OF PHYSICS

Term II

F.Y.B.Sc.

Name: Mr. Barne N.D.

PHY-121 Heat and Thermodynamics

Months	Topic taken	Periods
10 Dec .2019- 31Dec 2019	1. Fundamentals of Thermodynamics Concept of thermodynamic state, Equation of state, Van der Waal's equation of state, Thermal equilibrium, Zeroth law of thermodynamics, Thermodynamic processes: Adiabatic, Isothermal, Isobaric and Isochoric changes, Indicator diagram, Work done during isothermal change, Adiabatic relations, Work done during adiabatic change, Internal energy, Internal energy as state function, First law of thermodynamics, Reversible and Irreversible changes, Problems.	10
01 Jan.2019- 13Jan 2020	2. Applied Thermodynamics Conversion of heat into work and its converse, Second law of thermodynamics, Concept of entropy, Temperature - entropy diagram, T-dS equations, Clausius - Clapeyron latent heat equations, Problems.	09
	Unit Test	
14 Jan 2020- 05Feb2020	3. Heat Transfer Mechanisms Carnot's cycle and Carnot's heat engine and its efficiency, Heat Engines: Otto cycle & its efficiency, Diesel cycle & its efficiency, Refrigerators: General principle and coefficient of performance of refrigerator, Simple structure of Vapor compression refrigerator, Air Conditioning: Principle and its applications, Problems	09
10 Feb 2020- 12 Feb 2020	INTERNAL EXAM	

17 Feb 2020-25 Feb 2020	4. Thermometry Concept of heat & temperature, Principle of thermometry, Temperature scales & inter-conversions, Principle, Construction and Working: (Liquid thermometers, Liquid filled thermometers, Gas filled thermometers, Bimetallic thermometers, Platinum resistance thermometer, Thermocouple), Problems	08
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Mr. Barne N. D.

Teaching Report
Academic Year-2019-2020
Dept of Physics
Term II
T.Y.B.Sc.

Name: Mr. Barne N.D.

Subject: PHY 341 Classical Electrodynamics

Months	Topics	Lectures
09 Dec 2019- 04 Jan 2020	1. Electrostatics: 1.1. Coulomb's law, Gauss law, Electric field, Electrostatic Potential 1.2. Potential energy of system of charges. 1.3. Statement of Poisson's equation, Boundary Value problems in electrostatics-solution of Laplace equation in Cartesian system, 1.4. Method of image charges: Point charge near an infinite grounded conducting plane, Point charge near grounded conducting sphere. 1.5. Polarization P, Electric displacement D, Electric susceptibility and dielectric constant, bound volume and surface charge densities. 1.6. Electric field at an exterior and interior point of dielectric.	16
05 Jan 2020-24 Jan 2020	2.Magnetostatics: 2.1. Concepts of magnetic induction, magnetic flux and magnetic field 2.2. Magnetic induction due to straight current carrying conductor, Energy density in magnetic field, magnetization of matter. Relationship between B,H and M. 2.3 Biot-Savart's law, Ampere's law for force between two current carrying loops, Ampere's circuital law, 2.4Equation of continuity, Magnetic vector potential A. 2.5. Magnetic susceptibility and permeability,	16

	Hysteresis loss, B-H curve.	
25 Jan 2020- 24 Feb 2020	3. Electrodynamics: 3.1. Concept of electromagnetic induction, Faradays law of induction, Lenz's law, displacement current, generalization of Amperes' law 3.2. Maxwell's equations (Differential and Integral form) and their physical significance 3.3. Polarization, reflection & refraction of electromagnetic waves through media 3.4. Wave equation and plane waves in free space. 3.5. Poynting theorem & Poynting vector, Polarizations of plane wave. 3.6. Microscopic form of ohm's law ($J = \sigma \cdot E$)	16

Mr. Barne N. D.

Date: 04/07/2020

To,
The Principal,
Hutatma Rajguru Mahavidyalaya,
Rajgurunagar.

Subject:-Submission of syllabus completion report for academic year-
2019-20

Reference: - Your notice on staff notice board.

Respected Sir,

Here I submitted syllabus completion report for academic year 2019-20.

In this academic year theory workload is 07 lectures and 16 lectures for practical. I taught the following paper in this term

Sr. No.	Class	Name of Paper	No. of lectures allotted per week
1	F.Y.B.Sc.	PHYSICS PAPER II PHY121	03
2	T.Y.B.Sc.	PHY341	04
3	S.Y.B.Sc.	PRACTICAL	16

Thanking You,

Mr. Barne N. D.