

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce and Science College, Ahmednagar
(Autonomous)
(Affiliated to Savitribai Phule Pune University, Pune)



Choice Based Credit System (CBCS)
Bachelor of Science (B. Sc.)

Syllabus of
F. Y. B. Sc. Physics

Implemented from
Academic Year 2021 -22

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's
New Arts, Commerce and Science College, Ahmednagar
(Autonomous)

Board of Studies (BOS) in Physics

Sr. No.	Name	Designation
1.	Prof. (Dr.) Avinash V. Mancharkar	Chairman, Head
2.	Dr. Ashok A. Jadhavar	Member
3.	Dr. Appasaheb Torane	Academic Council Nominee
4.	Dr. Vijay M. Mayekar	Academic Council Nominee
5.	Prof. (Dr.) Arun G. Banpurkar	Vice Chancellor Nominee
6.	Prof. (Dr.) Nandu B. Chaure	Alumnus
7.	Dr. Vinay Hasabnis	Industry Expert
8.	Dr. Shrikrushna B. Gaikwad	Member (Co-opt)
9.	Mr. Dattatray K. Sonwane	Member (Co-opt)
10.	Mr. Dipak S. Shelar	Member (Co-opt)

1. Prologue/ Introduction of the programme:

The curriculum for the B. Sc. in Physics designed for the requirement of Choice Based Credit System (CBCS) following the University Grants Commission (UGC) and Savitribai Phule Pune University guidelines. As per the guidelines, we proposed structure including Core courses, Discipline specific courses - Physics and Elective Courses, along with Ability Enhancement and Skill based Courses. In the CBCS pattern, continuous assessment of the students is an integral part. This continuous assessment carried out through systematic based on better understanding of the subject. During the curriculum designing, we have added the skill oriented courses to encourage students for achieving fruitful skills while completing their bachelor degree in Physics. Curriculum is designed to motivate students for the pursuing higher studies in Physics and inculcate enough skills for becoming an entrepreneur.

2. Programme Outcomes (POs)

Students enrolled in the program complete a curriculum that exposes and trains students in a full range of essential skills and abilities.

- I. To inculcate scientific approach to get basic knowledge of concepts of Physics.
- II. To motivate students for participation in scientific events like science exhibition.
- III. To motivate students to scientific institutes, industrial visits, etc. so that they can understood scientific and technological aspects of Physics.
- IV. To enhanced knowledge through problem solving, minor and major projects, seminars, tutorials, etc.
- V. To motivate students to peruse higher career in physics.
- VI. To give hands on experience to conduct various experiments, which help students to learn various concepts of Physics.
- VII. To motivate to solve real life problems with experimental and computational tools, this will helps to develop ability to address real world problems.
- VIII. To train students in skills related to conduct experiments, research and education through major and mini projects.
- IX. To help students to build-up a progressive and successful career in Physics.
- X. To motivate students to use the knowledge for the society.
- XI. During the regular learning process, we provide them soft skill for their bright future.

Program Structure and Course Titles

Sr. No.	Class	Semester	Course Code	Course Title	Credits
1.	F.Y.B.Sc.	I	BSC-PH 101 T	Mechanics and Properties of Matter	02
2.			BSC-PH 102 T	Physics Principles and Applications	02
3.			BSC-PH 103 P	Physics Laboratory- 1A	1.5
4.		II	BSC-PH 201 T	Heat and Thermodynamics	02
5.			BSC-PH 202 T	Electricity and Magnetism	02
6.			BSC-PH 203 P	Physics Laboratory- 1B	1.5
7.	S.Y.B.Sc.	III	BSC-PH 301 T	Mathematical Methods in Physics I	02
8.			BSC-PH 302 T (A)	Electronics I	02
9.			OR		
10.			BSC-PH 302 T (B)	Instrumentation I	
11.			BSC-PH 303 P	Physics Laboratory-2A	02
12.		IV	BSC-PH 401 T	Oscillations, Waves and Sound	02
13.			BSC-PH 402 T	Optics	02
14.			BSC-PH 403 P	Physics Laboratory-2B	02
15.	T.Y.B.Sc.	V	BSC-PH 501 T	Mathematical Methods in Physics II	02
16.			BSC-PH 502 T	Electrodynamics	02
17.			BSC-PH 503 T	Classical Mechanics	02
18.			BSC-PH 504 T	Atomic and Molecular Physics	02
19.			BSC-PH 505 T	Computational Physics	02
20.			BSC-PH 506 T (X)	Elective I	02
21.			BSC-PH 507 P	Physics Laboratory-3A	02
22.			BSC-PH 508 P	Physics Laboratory-3B	02
23.			BSC-PH 509 P	Project 1	02
24.			BSC-PH 510 T (X)	Skill Enhancement Course – I T	02

25.			BSC-PH 511 P (X)	Skill Enhancement Course – I P	02
26.		VI	BSC-PH 601 T	Solid State Physics	02
27.			BSC- PH 602 T	Quantum Mechanics	02
28.			BSC- PH 603 T	Thermodynamics and Statistical Physics	02
29.			BSC- PH 604 T	Nuclear Physics	02
30.			BSC- PH 605 T (A)	Electronics II	02
31.			OR		
32.			BSC- PH 605 T (B)	Advanced Electronics	
33.			BSC- PH 606 T (X)	Elective II	02
34.			BSC- PH 607 P	Physics Laboratory-4A	02
35.			BSC- PH 608 P	Physics Laboratory-4B	02
36.			BSC- PH 609 P	Project 2	02
37.			BSC- PH 610 T (X)	Skill Enhancement Course – II T	02
38.			BSC- PH 611 P (X)	Skill Enhancement Course – II P	02

Group I: Elective Courses

The college will offer any two Special Electives from the following list as Elective I, Elective II for T.Y.B.Sc. Semester V and Semester VI.

Sr. No.	Title	Semester	Course Code	Course Title	Credits
1.	Elective I	V	BSC-PH 506 T (A)	Astronomy and Astrophysics - I	02
2.			BSC-PH 506 T (B)	Elements of Material Science	02
3.			BSC-PH 506 T (C)	Biophysics	02
4.			BSC-PH 506 T (D)	Renewable Energy Studies I	02
5.			BSC-PH 506 T (E)	Applied Optics - I	02
6.	Elective II	VI	BSC-PH 606 T (A)	Astronomy and Astrophysics - II	02
7.			BSC-PH 606 T (B)	Medical Electronics	02

8.			BSC-PH 606 T (C)	Physics of Nanomaterials	02
9.			BSC-PH 606 T (D)	Renewable Energy Studies II	02
10.			BSC-PH 606 T (E)	Lasers	02

Group II: Skill Enhancement Course

The college will offer any two Skill Enhancement Courses from the following list as Skill Enhancement Course – I, Skill Enhancement Course – II for semester V and VI.

Sr.No.	Title	Semester	Course Code	Course Title	Credits
1.	Skill Enhancement Course – I	V	BSC-PH 510 T (A)	Biomedical Instrumentation	02
2.			BSC-PH 511 P (A)		02
3.			BSC-PH 510 T (B)	Solar Thermal System: Installation and Maintenance	02
4.			BSC-PH 511 P (B)		02
5.			BSC-PH 510 T (C)	Sensors and Transducers	02
6.			BSC-PH 510 P (C)		02
7.			BSC-PH 510 T (D)	Physics Workshop Skills	02
8.			BSC-PH 511 P (D)		02
9.	Skill Enhancement Course – II	VI	BSC- PH 610 T (A)	Solar PV System: Installation and Maintenance	02
10.			BSC- PH 611 P (A)		02
11.			BSC- PH 610 T (B)	Scientific data Analysis	02
12.			BSC- PH 611 P (B)		02
13.			BSC- PH 610 T (C)	Applications of IOT	02
14.			BSC- PH 611 P (C)		02
15.			BSC- PH 610 T (D)	Instrumentation for Agriculture	02
16.			BSC- PH 611 P (D)		02

Semester -I	Paper -I
Course Code: BSC-PH 101 T	Title of the Course: Mechanics and Properties of Matter
Credits: 2	Total Hours: 30 Hrs.

Course Objectives	Course Outcomes
<ol style="list-style-type: none"> 1. Explain the basics of Newtonian Mechanics. 2. Motivate students to use mechanics to the real life problems. 3. Explain terms like work, energy, power with the help of examples. 4. Explain various physical properties of the matter. 5. Inculcate numerical problem solving skills. 	<ol style="list-style-type: none"> 1) Understand the mechanics of motion, 2) Understand the relation between the work, energy and power 3) Understand the mechanism of motion of system of particles. 4) Study various physical properties of the matter. 5) Demonstrate quantitative problem solving skills in all the topics covered

Unit I: Introduction to Motion**(06 Hrs.)**

Kinematics, Types of motion, Distance and Displacement, Average velocity, Average speed, velocity, Newton's laws of motion and its real life applications, Law of Conservation of total Linear Momentum, Force, components of the force vector, types of forces, Frames of reference, Problems.

Unit II: Work Energy and Power**(06 Hrs.)**

Work, Work done by a constant force and variable force. Energy, Types of Energy, Law of conservation of energy, Work Energy Theorem, Power, Problems.

Unit III: Motion of System of Particles**(05 Hrs.)**

Center of Mass of a Rigid Body and its motion, Definition of Torque, Torque about an Axis, Angular Momentum, Relation between Torque and Angular Momentum, Moment of Inertia (Definition Unit and Dimensions), Moment of Inertia of a Rod, Ring, Disc, Radius of Gyration, Problems.

Unit IV: Properties of Matter 1**(05 Hrs.)**

Elasticity: 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), Problems.

Unit V: Properties of Matter 2**(08Hrs)**

Fluid Mechanics: Pascal's law and its applications, Viscosity, Reynold's number, Equation of continuity. Surface Tension: Intermolecular forces, Factors affecting the surface tension of a liquid, Excess of pressure inside a liquid drop, Jaeger's method for determination of surface tension, Capillarity, Bernoulli's Theorem and its applications, Problems.

Suggested Readings:

1. Fundamentals of Physics: Resnick, Halliday & Walker 9/e, Wiley.
2. Mechanics: D. S. Mathur, S. Chand and Company, New Delhi.
3. Elements of Properties of Matter: D. S. Mathur, S. Chand, New Delhi.
4. Concepts of Physics: H. C. Verma, Bharati Bhavan Publisher.
5. Problems in Physics: P. K. Srivastava, Wiley Eastern Ltd.
6. Applied Fluid Mechanics: Mott Robert, Pearson Benjamin Cummir VI Edition. Pearson Education/Prentice Hall International, New Delhi.
7. Properties Of Materials (Nature And Properties Of Materials: III), Prof. Ashish Garg, Department of Materials Science and Engineering, IIT Kanpur, <https://nptel.ac.in/courses/113/104/113104096/>
8. Classical Physics, Prof. V. Balakrishnan, Department of Physics, Indian Institute of Technology, Madras, <https://nptel.ac.in/courses/122/106/122106027/>

Semester -I	Paper -II
Course Code: BSC-PH 102 T	Title of the Course: Physics Principles and Applications
Credits: 2	Total Hours: 30 Hrs.

Course Objectives	Course Outcomes
<ol style="list-style-type: none"> 1. Explain historical development of the atomic models and corresponding theory. 2. Explain construction and working of the LASER with properties. 3. Explain the real life applications of the LASER in various fields. 4. Explain the electromagnetic spectrum in details. 5. Explain various applications of the electromagnetic spectrum for human being. 	<ol style="list-style-type: none"> 1) Get an idea about basics of the atoms using different atomic models. 2) Understand the types of LASER and their applications in real life. 3) Inculcate the basics of molecule structure, various bonds. 4) Learn about the history and general properties of Electromagnetic radiations. 5) Demonstrate quantitative problem solving skills

Unit I: Physics of Atoms**(8Hrs.)**

Introduction to Atom, Atomic Models, Thomson's Atomic Model, Rutherford's Atomic Model, Bohr's Atomic Model, Atomic Spectra: Emission line Spectrum, Absorption line, Uses of Atomic Spectra, Classical planetary model of Hydrogen Atom, The Bohr Theory of the Hydrogen Atom, The Hydrogen Spectrum, Frank-Hertz experiment Problems

Unit II: LASERS & Applications**(07 Hrs.)**

Introduction to LASERS, Basic Principle of Lasers: Three Processes, Characteristics of Lasers: brief explanation, Boltzmann Distribution Law, Population Inversion and Pumping, Types of Lasers: He-Ne Laser, Ruby Laser, Applications of Lasers, Problems

Unit III: Physics of Molecules**(07 Hrs.)**

Introduction to Bonding Mechanisms, Forces between Atoms, Types of Bonding: Ionic Bonds, Covalent Bonds, van der Waal's Bonds, Hydrogen Bond, Metallic Bond, Rotation energy levels of a diatomic molecule, Vibration energy levels of a diatomic molecule, Problems.

Unit IV: Sources of Electromagnetic Waves**(08 Hrs.)**

Introduction to Electromagnetic Waves: Historical Perspective, General properties of Electromagnetic radiations, Electromagnetic spectrums and its sources, Production of electromagnetic waves: Hertz experiment, Plank's hypothesis of Photons, Applications of various waves in electromagnetic spectrum, Microwave oven, Solar cell and its types, Problems.

Suggested Readings:

1. Concepts of Modern Physics: A Beiser (6th ed., McGraw Hill, 2003)
2. Modern Physics: Raymond A. Serway, Clement J. Moses, Curt A. Moyer
3. Sears and Zemansky's University Physics: H.D. Young R. A. Freedman, Sandin (11th Ed. Pearson Education)
4. LASERS: M. N. Avdhanulu, S. Chand Publications.
5. Atomic and Molecular Physics, Professor Amal Kumar Das, : IIT Kharagpur, <https://nptel.ac.in/courses/115/105/115105100/>
6. Laser: Fundamentals And Applications, Prof. Manabendra Chandra, Department Of Chemistry, IIT Kanpur, <https://nptel.ac.in/courses/104/104/104104085/>
7. Electromagnetic Fields - Prof. Harishankar Ramachandran, Department of Electrical Engineering, IIT Madras, <https://nptel.ac.in/courses/108/106/108106073/>
8. Electromagnetic Theory, Prof. Pradeep Kumar K, Department of Electrical and Electronic Engineering, <https://nptel.ac.in/courses/108/104/108104087/>

Semester -I	Paper -III
Course Code: BSC-PH 103 P	Title of the Course: Physics Laboratory 1A
Credits: 1.5	Total Hours: 45 Hrs. (12 Practicals)

Course Objectives	Course Outcomes
<ol style="list-style-type: none"> 1. Explain various measuring instruments with their applications in real life. 2. Explain the theoretical concept with the help of experiments. 3. Give hand on skills to conduct the practical. 4. Motivate and encourage students to solve real life problems through experiments. 	<ol style="list-style-type: none"> 1. Handling of the various basic measuring instruments. 2. Experimentally analyzed the theory taught during lectures, 3. Hands on Experiments help students to learn various concepts of Physics. 4. Experimental tools helps to develop ability to address real world problems.

Section I- Mechanics and Properties of Matter (Any 5)

Sr. No	Title of the experiment
1)	Study and use of various measuring Instruments. 1. Vernier caliper 2. Micrometer Screw Gauge 3. Travelling Microscope
2)	Study of Modulus of Rigidity of wire using Torsional Oscillations
3)	Determination of coefficient of Viscosity by Poiseuille's method
4)	Determination of “Y” and “η” by flat spiral spring
5)	Determination of “Y” by bending method.
6)	Study of surface tension by Jaeger’s method
7)	Study of Poisson’s ratio of rubber using rubber tube /rubber chord
8)	Study of surface tension of liquid using Fergusson Method

Section II-Physics Principles and Applications (Any 5)

Sr. No.	Title of the experiment
1)	Study of Spectrometer and determination of angle of prism
2)	Study of Spectrometer calibration and determination of refractive indices of different colors
3)	Study of divergence of LASER beam
4)	Study of total internal reflection using LASER
5)	Determination of Plank's constant
6)	Determination of wavelength of LASER light by plane diffraction grating
7)	Study of I-V characteristics of solar cell

- Study tour visit report / mini project / science exhibition participation or any other activity equivalent to **Two** practicals

Semester -II	Paper -I
Course Code: BSC-PH 201 T	Title of the Course: Heat and Thermodynamics
Credits: 2	Total Lectures: 30 Hrs.

Course Objectives	Course Outcomes
1) Explain basics of heat and thermodynamics, 2) Explain system, surrounding, closed and open system, extensive and intensive properties. 3) Explain kinetic, potential, enthalpy and internal energy. 4) Explain construction and working of various temperature measuring thermometers 5) Explain various applications of the thermometry for day-to-day life.	1) Understand the fundamentals of heat. 2) Understand the various concepts, processes of thermodynamics. 3) Analyzed the basics of applied thermodynamics, and various applications. 4) Study and analyzed the principle of thermometry. 5) Study of various thermometers used in thermometry. 6) Developed problem solving skills in the below mentioned topics.

Unit I: Fundamentals of Heat**(06 Hrs.)**

Introduction, Heat, work, temperature, Ideal gas law and Van der Waal Law, Heat capacity and specific heat capacity, Concept Thermal expansion of solids, liquids and gases, Heat transfer Mechanism, Newton's law of cooling, Laws of Heat, transfer, Problems.

Unit II: Work Energy and Power**(08 Hrs.)**

Thermodynamic state and its Equation with example, Zeroth Law of Thermodynamics, Internal Energy (U), First law of thermodynamics, Quasi-static process, Work done in volume changes - Internal Energy (U), Indicator (PV) diagram, Various Thermodynamics Processes: Isothermal process, Adiabatic process, Isobaric process, Isochoric process, Cyclic processes, Reversible process and PV diagram. Limitations of first law of thermodynamics, Problems.

Unit III: Applied Thermodynamics**(10 Hrs.)**

Conversion of heat into work and its converse, Entropy and second law of thermodynamics, Temperature - entropy diagram, Heat Engines: Carnot's cycle & its efficiency,

Otto cycle & its efficiency, Diesel cycle & its efficiency, Refrigerator: Principle and its applications, Air Conditioning: Principle and its applications, Problems.

Unit IV: Thermometry**(06 Hrs.)**

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.

Suggested Readings:

1. Concept of Physics: H. C. Verma, Bharati Bhavan Publisher.
2. Heat and Thermodynamics: Brijlal, N. Subrahmanyam, S. Chand and Company Ltd.
3. Heat and Thermodynamics: Mark W. Zemansky, Richard H. Dittman, 7th Edition, McGraw Hill International Edition.
4. Fundamental of Physics: Haliday and Resnick, Wiley Publication.
5. Thermodynamics and Statistical Physics: J. K. Sharma, K. K. Sarkar, Himalaya Publishing House.
6. Thermal Physics (Heat and Thermodynamics): A. B. Gupta, H. P. Roy books and Allied (P) Ltd. Calcutta.
7. Instrumentation: Devices & Systems, Rangan, Mani, and Sarma.
8. Concepts Of Thermodynamics, Prof. Suman Chakraborty, Department of Mechanical Engineering and Prof. Aditya Bandyopadhyay, Department of Cryogenic Engineering, IIT Kharagpur, <https://nptel.ac.in/courses/112/105/112105266/>
9. Thermodynamics, Prof. S.R Kale, Department of Mechanical Engineering, IIT Delhi, <https://nptel.ac.in/courses/112/102/112102255/>
10. Laws Of Thermodynamics, Prof. Sankar Kumar Som, Department of Mechanical Engineering and Prof. Suman Chakraborty, Department of Mechanical Engineering, IIT Kharagpur, <https://nptel.ac.in/courses/112/105/112105220/>

Semester -II	Paper -II
Course Code: BSC-PH 202 T	Title of the Course: Electricity and Magnetism
Credits: 2	Total Hours: 30 Hrs.

Course Objectives	Course Outcomes
1) Explain the basics of electrostatics with the help of numerical problems. 2) Explain electric and magnetic field in details. 3) Explain basic theory of dielectrics. 4) Teach use of Coulomb's law and Gauss' law for the electrostatic force 5) Explain Ampere's law, Faraday's law of induction with the help of problems.	1) Understand Fundamental laws and concepts in electricity and magnetism, 2) Learn properties of static electric and magnetic fields and how they arise. 3) Analyze different problems in electromagnetism using mathematical methods. 4) Understand various magnetic properties of the magnetic materials. 5) Understand applications of magnetic materials.

Unit I: Electrostatics**(08 Hrs.)**

Revision of Coulomb's law: Statement, Variation of forces with distances, Superposition principle: Statement, Explanation with illustration, Energy of system of charges, Concept of electric field, Due to point charge, Due to group charges, Electrical lines of forces and its properties, Concept of electric flux, Gauss's law in electrostatics, Problems

Unit II: Dielectrics**(08 Hrs.)**

Introduction to dielectric materials, Electric Dipole, Electric dipole, Dipole moment, Electric potential and intensity at any point due to dipole, Polar and non-polar molecules, Electric polarization of dielectric material, Gauss' law in dielectric, Electric vectors and its relation, Applications of Gauss's Law, Problems

Unit III: Magnetostatics**(07 Hrs.)**

Introduction to magnetization, Magnetic Induction and Intensity of magnetization, Biot-Savart's law: Statement, Long straight conductor, Circular Coil, Ampere's circuital law:

Statement, Field of Solenoid, Field of Toroid, Gauss law for magnetism, Applications of Ampere's circuital law, Problems

Unit IV: Magnetic Properties of Materials**(07 Hrs.)**

Definitions: Magnetization (M), Magnetic Intensity (H), Magnetic Induction (B), Magnetic Susceptibility, Magnetic Permeability, Relation between B, M and H, Hysteresis and Hysteresis Curve, Types of Magnetic Materials: Diamagnetic materials, Paramagnetic materials, Ferromagnetic materials, Antiferromagnetic materials.

Suggested Readings:

1. Fundamentals of Physics: Halliday Resnik and Walker, 8th Edition.
2. Electromagnetics: B. B. Laud.
3. Foundations of Electromagnetic theory: Reitz, Milford, Christey.
4. Electricity and Electronics: D.C. Tayal, Himalaya Publishing House, Mumbai.
5. Introduction to Electrodynamics: D.G. Griffith.
6. Electricity and Magnetism: Brij Lal, Subramanyan, Ratan Prakashan (Revised edition, 1997).
7. Electricity and Magnetism: Khare, Shrivastav (Revised edition, 1997).
8. Electromagnetism, Prof. Nirmal Ganguli, Department of Physics, IISER Bhopal, <https://nptel.ac.in/courses/115/106/115106122/>
9. Electromagnetic Fields - Prof. Harishankar Ramachandran, Department of Electrical Engineering, IIT Madras, <https://nptel.ac.in/courses/108/106/108106073/>
10. Electromagnetic Theory, Prof. Pradeep Kumar K, Department of Electrical and Electronic Engineering, <https://nptel.ac.in/courses/108/104/108104087/>
11. Electrodynamics - Web course, Prof. Amol Dighe, Theoretical Physics, TIFR, <https://nptel.ac.in/courses/115/101/115101004/>
12. Mod-01 Lec-08 Summary of classical electromagnetism, on Classical Physics by Prof.V.Balakrishnan, Department of Physics, IIT Madras, <https://www.youtube.com/watch?v=bsybS5fZGjY>

Semester -II	Paper -III
Course Code: BSC-PH 203 P	Title of the Course: Physics Laboratory 1B
Credits: 1.5	Total Experiments: 45 Hrs. (12 Practicals)

Course Objectives	Course Outcomes
<ol style="list-style-type: none"> 1) Given hands on skill for the practicals of heat and thermodynamics. 2) Explain the various thermodynamically concepts through experiments. 3) Explain use of various instruments like Voltmeter, Ammeter and Multimeter. 4) Explain various important characteristics of electrical devices. 	<ol style="list-style-type: none"> 1) Hands on Experiments help students to learn various concepts of Physics. 2) Experimental tools helps to develop ability to learn physics through experiments. 3) To motivate students for participation in scientific events, study visits, etc. 4) Understand scientific and technological aspects of experimental Physics.

Section I- Heat and Thermodynamics (Any 5)

Sr. No.	Title of the experiment
1)	Interpretation of Isothermal and Adiabatic curve on P-V diagram and theoretical study of Carnot's cycle by drawing graphs of Isothermal and Adiabatic curves
2)	Study of temperature coefficient of Thermistor.
3)	Study of Thermocouple and determination of inversion temperature
4)	Study of thermal conductivity by Lee's method
5)	Study of specific heat of Graphite
6)	Study of Solar constant
7)	Determination of calorific values of different fuels
8)	Minor project equivalent to 2 experiments.

Section II- Electricity and Magnetism (Any 5)

Sr. No.	Title of the experiment
1)	Study of charging and discharging of capacitor
2)	Study of LR circuit
3)	Study of LCR circuit
4)	Study of Kirchhoff's Laws
5)	Study of Diode characteristics
6)	Study of Voltmeter, Ammeter and Multimeter (AC, DC, ranges and least count)
7)	Determination of frequency of AC mains
8)	Comparison of capacitor using De Sauty's method
9)	Study tour report equivalent to 2 experiments.

- Study tour visit report / mini project / science exhibition participation or any other activity equivalent to **Two** practicals.