

"Dissemination of Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Department of Physics

Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: **Dr.M.M. Karanjkar**

Month June				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total		
B.Sc. III	12	-	12	Physical interpretation of wave function, Schrodinger's time dependent and independent equation (one and three dimensional) Requirements of wave function, Eigen value, Eigen function, Normalized orthogonal and orthonormal wave functions, Probability current density (Continuity equation). Examples on Normalization of wave function	Physical interpretation of wave function, Schrodinger's time dependent and independent equation (one and three dimensional) Requirements of wave function, Eigen value, Eigen function, Normalized orthogonal and orthonormal wave functions, Probability current density (Continuity equation). Examples on Normalization of wave function
B.Sc. I	16	-	16	Gravitation: Newton's Law of Gravitation, Motion of a particle in a central force field (motion in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws (statement only), Satellite in circular orbit and applications, Geosynchronous orbits, Weightlessness, Basic idea of global positioning system (GPS) and its	Gravitation: Newton's Law of Gravitation, Motion of a particle in a central force field (motion in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws (statement only), Satellite in circular orbit and applications, Geosynchronous orbits, Weightlessness, Basic idea of global positioning system (GPS) and its
B.Sc. II	-	64	64	Practicals :	Practicals :



				1) Characteristics of Transistor. 2) Use of sextant to measure height of object. 3) Crystal Oscillator. 4) Colpitts oscillator.	1) Characteristics of Transistor. 2) Use of sextant to measure height of object. 3) Crystal Oscillator. 4) Colpitts oscillator.
Month July				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Introduction to Quantum Mechanics	Introduction to Quantum Mechanics
B.Sc. III	12	-	12	Origin of quantum mechanics, Review of black body radiation, Photoelectric effect, matter waves, De-Broigle hypothesis , experimental evidence of de Broglie theory (Davisson and Germer experiment), wave particle duality, Heisenberg's uncertainty principle and different forms uncertainty principle	Origin of quantum mechanics, Review of black body radiation, Photoelectric effect, matter waves, De-Broigle hypothesis , experimental evidence of de Broglie theory (Davisson and Germer experiment), wave particle duality, Heisenberg's uncertainty principle and different forms uncertainty principle
B.Sc. I	16	-	16	Elasticity Bending of beam, Bending moment, Cantilever (without considering weight of cantilever), Beamsupported at both the ends (without considering weight of beam). Torsional oscillation, Work done in twisting a wire, Twisting couple on a cylinder, Torsional pendulum - Determination of Rigidity modulus and moment of inertia, Determination of Y , η and σ by Searles method	Elasticity Bending of beam, Bending moment, Cantilever (without considering weight of cantilever), Beamsupported at both the ends (without considering weight of beam). Torsional oscillation, Work done in twisting a wire, Twisting couple on a cylinder, Torsional pendulum - Determination of Rigidity modulus and moment of inertia, Determination of Y , η and σ by Searles method



B.Sc. II	-	64	64	Practicals : 1) To record and analyze the cooling temperature of hot object as a function of time using a thermocouple. 2) To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge 3) Temperature of flame. 4) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.	Practicals : 1) To record and analyze the cooling temperature of hot object as a function of time using a thermocouple. 2) To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge 3) Temperature of flame. 4) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method.
Month August				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Applications of Schrodinger's Steady State Equation Quantum mechanics treatment of particle in rigid box (1D and 3D). Step potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α -decay, simple harmonic oscillator.	Applications of Schrodinger's Steady State Equation Quantum mechanics treatment of particle in rigid box (1D and 3D). Step potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α -decay, simple harmonic oscillator.
B.Sc. III	12	-	12		



B.Sc. I	16	-	16	Oscillations Simple harmonic motion (SHM), Differential equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations, Forced oscillations.	Oscillations Simple harmonic motion (SHM), Differential equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations, Forced oscillations.
B.Sc. II	-	64	64	Practicals : 1) To determine wavelength of 1) Sodium & 2) spectrum of Mercury light using plane diffraction grating. 2). Goniometer I- To study cardinal points of optical system. 3) Goniometer II- To study the equivalent focal length of optical system. 4) To study angle of specific rotation of sugar using Polarimeter.	Practicals : 1) To determine wavelength of 1) Sodium & 2) spectrum of Mercury light using plane diffraction grating. 2). Goniometer I- To study cardinal points of optical system. 3) Goniometer II- To study the equivalent focal length of optical system. 4) To study angle of specific rotation of sugar using Polarimeter.
Month September				Module/Unit:	Sub-units planned
B.Sc. III	Lect ures	Practicals	Total	Operator in Quantum Mechanics Definition of an operator in quantum mechanics, commutation relation in quantum mechanics, position,	Operator in Quantum Mechanics Definition of an operator in quantum mechanics, commutation relation in quantum mechanics, position,



	12	-	12	momentum and angular momentum operator, Angular momentum operator in spherical polar coordinate system, Hamilton operator, Hamilton operator commutation relation between x' and p . Expectation value of an operator communication relation between L_2 and components of L , Raising and lowering operator L_+ and L_- . Eigen values of L_2 and L_1 . Concept of parity operator. Concept of Hermitian operator.	momentum and angular momentum operator, Angular momentum operator in spherical polar coordinate system, Hamilton operator, Hamilton operator commutation relation between x' and p . Expectation value of an operator communication relation between L_2 and components of L , Raising and lowering operator L_+ and L_- . Eigen values of L_2 and L_1 . Concept of parity operator. Concept of Hermitian operator.
B.Sc. I	16	-	16	Electricity Introduction – DC and varying currents, LR Circuit, RC circuit and LC circuit, Growth and decay of currents, Theory of B.G. and constants of B.G., time constants τ	Electricity Introduction – DC and varying currents, LR Circuit, RC circuit and LC circuit, Growth and decay of currents, Theory of B.G. and constants of B.G., time constants τ
B.Sc. II	-	64	64	Practicals : 1) Measurement of rise, fall and delay time using a CRO 2) Measurement of distortion of a RF signal generator using distortion factor meter. 3) . Measurement of R, L and C using a LCR bridge/ universal bridge. 4) Measurement of time period, frequency, average	Practicals : 1) Measurement of rise, fall and delay time using a CRO 2) Measurement of distortion of a RF signal generator using distortion factor meter. 3) . Measurement of R, L and C using a LCR bridge/ universal bridge. 4) Measurement of time period, frequency, average



				period using universal counter/frequency counter	period using universal counter/frequency counter
Month October/November				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Examination	Examination
Month December				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Dielectric Properties of Materials	Dielectric Properties of Materials
B.Sc. III	12	-	12	Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons	Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons
B.Sc. I	16	-	16	Surface Tension Surface Tension, Angle of contact and wettability, relation between surface tension, excess of pressure and radius of curvature, Experimental determination of surface tension by Jaeger's method, Factors affecting surface tension, Applications of surface tension.	Surface Tension Surface Tension, Angle of contact and wettability, relation between surface tension, excess of pressure and radius of curvature, Experimental determination of surface tension by Jaeger's method, Factors affecting surface tension, Applications of surface tension.



B.Sc. II	-	64	64	Practicals : 1) Ic 555 timer. 2) Electronic switch using transistor. 3) Characteristics of FET. 4) FET as VVR.	Practicals : 1) Ic 555 timer. 2) Electronic switch using transistor. 3) Characteristics of FET. 4) FET as VVR.
Month January				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Magnetic Materials and their Properties:	Magnetic Materials and their Properties:
B.Sc. III	12	-	12	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferromagnetic, ferrimagnetic and antiferromagnetic materials.	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferromagnetic, ferrimagnetic and antiferromagnetic materials.
B.Sc. I	16	-	16	A.C. Circuits Complex numbers and their application in solving a. c. series LCR circuit, complex impedance, Reactance, Admittance, and Susceptance, Resonance in LCR series circuit, Sharpness of resonance (qualitative treatment only), Q-factor (definition only) A.C. Bridge - Owen's Bridge	A.C. Circuits Complex numbers and their application in solving a. c. series LCR circuit, complex impedance, Reactance, Admittance, and Susceptance, Resonance in LCR series circuit, Sharpness of resonance (qualitative treatment only), Q-factor (definition only) A.C. Bridge - Owen's Bridge



B.Sc. II	-	64	64	Practicals : 1) To determine the wavelength of sodium light using Fresnel Biprism. 2) To determine the Resolving Power of a Prism. 3) To determine the Resolving Power of a Plane Diffraction Grating. 4) To determine wavelength of Laser light using diffraction of single slit.	Practicals : 1) To determine the wavelength of sodium light using Fresnel Biprism. 2) To determine the Resolving Power of a Prism. 3) To determine the Resolving Power of a Plane Diffraction Grating. 4) To determine wavelength of Laser light using diffraction of single slit.
Month February				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Introduction of free electron theory (Classical and Quantum mechanical) , Kronig Penny model, Effective mass of an electron, Band Gaps. Conductors, Semiconductors and insulators. P and N type semiconductors. Conductivity of Semiconductors, mobility, Hall Effect, Hall voltage and Hall coefficient.	Introduction of free electron theory (Classical and Quantum mechanical) , Kronig Penny model, Effective mass of an electron, Band Gaps. Conductors, Semiconductors and insulators. P and N type semiconductors. Conductivity of Semiconductors, mobility, Hall Effect, Hall voltage and Hall coefficient.
B.Sc. III	12	-	12		



B.Sc. I	16	-	16	Magnetism Introduction to magnetization and intensity of Magnetization, Biot-Savart's law & its applications - straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law at earth's surface	Magnetism Introduction to magnetization and intensity of Magnetization, Biot-Savart's law & its applications - straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law at earth's surface
B.Sc. II	-	64	64	Practicals : 1) To determine the value of Stefan's Constant. 2) To determine the coefficient of thermal conductivity of copper by Searle's Apparatus. 3) To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.	Practicals : 1) To determine the value of Stefan's Constant. 2) To determine the coefficient of thermal conductivity of copper by Searle's Apparatus. 3) To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
Month March				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	X-Ray Diffraction Reciprocal lattice and its properties, concept of Brillouin zone , diffraction of X-rays by crystals, Ewald construction, Bragg's law in reciprocal lattice, X-ray diffraction methods: 1) Laue method.	X-Ray Diffraction Reciprocal lattice and its properties, concept of Brillouin zone , diffraction of X-rays by crystals, Ewald construction, Bragg's law in reciprocal lattice, X-ray diffraction methods: 1) Laue method.
B.Sc. III	12	-	12		



B.Sc. I	16	-	16	Network Theorems Introduction, Node, Junction, Branch, Loop, Active and passive elements, Thevenin's theorem, Nortan's theorem and equivalence between them, problems.	Network Theorems Introduction, Node, Junction, Branch, Loop, Active and passive elements, Thevenin's theorem, Nortan's theorem and equivalence between them, problems.
B.Sc. II	-	64	64	Practicals : 1) To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance. 2) To observe the limitations of a multimeter for measuring high frequency voltage and currents. 3) To measure Q of a coil and its dependence on frequency using a Q-meter. 4) Measurement of voltage, frequency, time period and phase angle using CRO	Practicals : 1) To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance. 2) To observe the limitations of a multimeter for measuring high frequency voltage and currents. 3) To measure Q of a coil and its dependence on frequency using a Q-meter. 4) Measurement of voltage, frequency, time period and phase angle using CRO
Month April				Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination



Teacher Incharge




Head of the
HOD
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Department of Physics

Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: Mr S. V. Malgaonkar

Month June				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Crystal Structure	Crystal Structure
B.Sc. II	12	-	12	Types of the solids, Amorphous, crystalline, lattice, lattice translation vectors, lattice with basis (Central , non central elements) Unit cell , Examples of crystal structure NaCl, KCl,	Types of the solids, Amorphous, crystalline, lattice, lattice translation vectors, lattice with basis (Central , non central elements) Unit cell , Examples of crystal structure NaCl, KCl,
B.Sc. III	12	-	12	Magnetic Properties of Materials Magnetic materials, permeability, susceptibility, magnetization, magnetic moment, electron spin, Diamagnetic materials, Paramagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetism, and ferromagnetic domain, Hysteresis loop for ferromagnetic materials.	Magnetic Properties of Materials Magnetic materials, permeability, susceptibility, magnetization, magnetic moment, electron spin, Diamagnetic materials, Paramagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetism, and ferromagnetic domain, Hysteresis loop for ferromagnetic materials.
B.Sc. III	-	80	80	Practicals : 1) Resonance pendulum. 2) S. T. of soap solution.	Practicals : 1) Resonance pendulum. 2) S. T. of soap solution.



				3) S. T. by Fergusson modified method. 4) Y & η using flat spiral spring.	3) S. T. by Fergusson modified method. 4) Y & η using flat spiral spring.
Month July				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Kinetic Theory of Gases and thermometry	Kinetic Theory of Gases and thermometry
B.Sc. II	12	-	12	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),
B.Sc. III	12	-	12	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum in solids, Dulong Petit's law (Classical Theory), Einstein	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum in solids, Dulong Petit's law (Classical Theory), Einstein



B.Sc. III	-	80	80	Practicals : 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method. 3) Diffraction at single slit. 4) Diffraction at cylindrical obstacle. 5) Diffraction at straight edge	Practicals : 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method. 3) Diffraction at single slit. 4) Diffraction at cylindrical obstacle. 5) Diffraction at straight edge
Month August				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Laws of Thermodynamics Thermodynamic system, thermodynamic variables, thermodynamic state, equation of state, thermodynamic equilibrium, Zeroth Law of thermodynamics, Internal energy, First law of thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law (Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV	Laws of Thermodynamics Thermodynamic system, thermodynamic variables, thermodynamic state, equation of state, thermodynamic equilibrium, Zeroth Law of thermodynamics, Internal energy, First law of thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law (Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV
B.Sc. II	12	-	12		



B.Sc. III	12	-	12	Kinetic Theory of Gases and thermometry Law of equipartition of energy (qualitative) and its applications to specific heat of monoatomic and diatomic gases. Thermometry: Concept of heat and temperature, temperature scales, principle of thermometry mercury thermometer, platinum resistance thermometer, thermocouple. (Principle, construction and theory)	Kinetic Theory of Gases and thermometry Law of equipartition of energy (qualitative) and its applications to specific heat of monoatomic and diatomic gases. Thermometry: Concept of heat and temperature, temperature scales, principle of thermometry mercury thermometer, platinum resistance thermometer, thermocouple. (Principle, construction and theory)
B.Sc. III	-	80	80	Practicals : 1) Self inductance by Owen's bridge. 2) Self inductance by Rayleigh's method. 3) Self inductance by Maxwell bridge. 4) Measurement of BV, BH and θ using earth inductor. 5) Hysteresis by magnetometer.	Practicals : 1) Self inductance by Owen's bridge. 2) Self inductance by Rayleigh's method. 3) Self inductance by Maxwell bridge. 4) Measurement of BV, BH and θ using earth inductor. 5) Hysteresis by magnetometer.
Month September				Module/Unit:	Sub-units planned
B.Sc. II	Lect ures	Practicals	Total	Laws of Thermodynamics Work done during isothermal and adiabatic processes, reversible & irreversible processes, Second law	Laws of Thermodynamics Work done during isothermal and adiabatic processes, reversible & irreversible processes, Second law



	12	-	12	<p>of thermodynamics, Carnot's ideal heat engine, Carnot's cycle (Working, efficiency), Carnot's theorem, Entropy (concept & significance), change in entropy, Entropy changes in reversible & irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat, diffusion of gases, physical significance of entropy, Un-attainability of absolute zero. Zero point energy.</p>	<p>of thermodynamics, Carnot's ideal heat engine, Carnot's cycle (Working, efficiency), Carnot's theorem, Entropy (concept & significance), change in entropy, Entropy changes in reversible & irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat, diffusion of gases, physical significance of entropy, Un-attainability of absolute zero. Zero point energy.</p>
B.Sc. III	12	-	12	<p>Superconductivity</p> <p>Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect</p>	<p>Superconductivity</p> <p>Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect</p>
B.Sc. III	-	80	80	<p>1) 'Y' by Koenig's method. 2) 'Y' by cornu's method. 3) Measurement of heat capacity of solid. 4) S. T. tension by drop weight method. 5) Young's modulus by vibration using AFG.</p>	<p>1) 'Y' by Koenig's method. 2) 'Y' by cornu's method. 3) Measurement of heat capacity of solid. 4) S. T. tension by drop weight method. 5) Young's modulus by vibration using AFG.</p>
Month October/November			Module/Unit:	Sub-units planned	



	Lect ures	Practicals	Total	Examination	Examination
Month December				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Thermodynamic Potentials Enthalpy, Gibbs, Helmholtz, Internal Energy functions, Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron equation, Expression for (CP – CV), CP/CV, TdS equations.	Thermodynamic Potentials Enthalpy, Gibbs, Helmholtz, Internal Energy functions, Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron equation, Expression for (CP – CV), CP/CV, TdS equations.
B.Sc. II	12	-	12		
B.Sc. III	12	-	12	Instrumentations :Introduction to CRO Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.	Instrumentations :Introduction to CRO Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.
B.Sc. III	-	80	80	Practicals : 1) Self inductance by Owen's bridge. 2) Self inductance by Rayleigh's method. 3) Self inductance by Maxwell bridge. 4) Measurement of BV, BH and θ using earth inductor. 5) Hysteresis by magnetometer.	Practicals : 1) Self inductance by Owen's bridge. 2) Self inductance by Rayleigh's method. 3) Self inductance by Maxwell bridge. 4) Measurement of BV, BH and θ using earth inductor. 5) Hysteresis by magnetometer.
Month January				Module/Unit:	Sub-units planned



Course	Lect ures	Practicals	Total	Theory of Radiation	Theory of Radiation
B.Sc. II	12	-	12	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence ,emissive power, absorptive power, pressure of radiation ,Experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence ,emissive power, absorptive power, pressure of radiation ,Experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.
B.Sc. III	12	-	12	Digital Electronics Introduction to logic gates, De-Morgan's theorem, NAND and NOR gates as universal gates, R-S and J-K flip flops, half and full adder, parallel binary adder.	Digital Electronics Introduction to logic gates, De-Morgan's theorem, NAND and NOR gates as universal gates, R-S and J-K flip flops, half and full adder, parallel binary adder.



B.Sc. III	-	80	80	Practicals : 1) e/m of electron by Thomson's method. 2) Measurement of dielectric constant. 3) Resistivity of semiconductor crystal with temperature by four probe method. 5) Calibration of wire using Carey-foster key..	Practicals : 1) e/m of electron by Thomson's method. 2) Measurement of dielectric constant. 3) Resistivity of semiconductor crystal with temperature by four probe method. 5) Calibration of wire using Carey-foster key..
Month February				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Classical statistics	Classical statistics
B.Sc. II	12	-	12	Degrees of freedom ,momentum space, position space ,Phase space, Microstate and Macrostate, Accessible microstates, priory probability thermodynamic probability, probability distribution, Maxwell-Boltzmann distribution law, energy or speed, evaluation of constants α and β , Entropy and Thermodynamic probability, Distribution of molecular speeds.	Degrees of freedom ,momentum space, position space ,Phase space, Microstate and Macrostate, Accessible microstates, priory probability thermodynamic probability, probability distribution, Maxwell-Boltzmann distribution law, energy or speed, evaluation of constants α and β , Entropy and Thermodynamic probability, Distribution of molecular speeds.
B.Sc. III	12	-	12	Special functions of ICs IC 555, Block diagram and special functions if ICs, Astable Operation: Circuit diagram, frequency of oscillation and duty cycle, Applications as tone brust oscillator, voltage controlled frequency shifters. Monostable operation: circuit diagram, Applications as touch switch and frequency	Special functions of ICs IC 555, Block diagram and special functions if ICs, Astable Operation: Circuit diagram, frequency of oscillation and duty cycle, Applications as tone brust oscillator, voltage controlled frequency shifters. Monostable operation: circuit diagram, Applications as touch switch and frequency



				divider. Bistable Operation: Circuit diagram and circuit action.	divider. Bistable Operation: Circuit diagram and circuit action.
B.Sc. III	-	80	80	Practicals : 1) UJT as voltage sweep generator. 2) Astable multivibrator by using IC 555 timer. 3) Monostable multivibrator by using IC 555 timer. 4) IV characteristics of P-N diode and LED. 5) Inverting amplifier using op - Amp 741.	Practicals : 1) UJT as voltage sweep generator. 2) Astable multivibrator by using IC 555 timer. 3) Monostable multivibrator by using IC 555 timer. 4) IV characteristics of P-N diode and LED. 5) Inverting amplifier using op - Amp 741.
Month March				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Quantum statistics	Quantum statistics
B.Sc. II	12	-	12	Need of quantum statics ,Bose-Einstein distribution law, photon gas, Planck, s radiation law Fermi-Dirac distribution law, free electron in metal ,electron gas, comparison of M.B., B.E., and F.D. statistics.	Need of quantum statics ,Bose-Einstein distribution law, photon gas, Planck, s radiation law Fermi-Dirac distribution law, free electron in metal ,electron gas, comparison of M.B., B.E., and F.D. statistics.



B.Sc. III	12	-	12	Bipolar Junction transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β . Relations between α and β . Load Line analysis of Transistors. DC Load line and Q point. Active, Cut-off, and Saturation Regions. Voltage Divider Bias Circuit for CE Amplifier. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.	Bipolar Junction transistors: n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β . Relations between α and β . Load Line analysis of Transistors. DC Load line and Q point. Active, Cut-off, and Saturation Regions. Voltage Divider Bias Circuit for CE Amplifier. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.
B.Sc. III	-	80	80	Practicals : 1) Study of divergence of LASER beam. 2) Measurement of wavelength of LASER using grating. 3) Lattice constant using XRD powder. 4) To measure numerical aperture of optical fibre. 5) Obtain interference fringes using Biprism.	Practicals : 1) Study of divergence of LASER beam. 2) Measurement of wavelength of LASER using grating. 3) Lattice constant using XRD powder. 4) To measure numerical aperture of optical fibre. 5) Obtain interference fringes using Biprism.
Month April			Module/Unit:	Sub-units planned	
Lectures	Practicals	Total	Examination	Examination	


Teacher Incharge




Head of the Department of Physics
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Department of Physics

Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: **Dr. G. J. Navathe**

Month June				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Operator in Quantum Mechanics	Operator in Quantum Mechanics
B.Sc. III	12	-	12	Definition of an operator in quantum mechanics, commutation relation in quantum mechanics, position, momentum and angular momentum operator, Angular momentum operator in spherical polar coordinate system, Hamilton operator, Hamilton operator commutation relation between x' and p . Expectation value of an operator communication relation between L_2 and components of L , Raising and lowering operator L_+ and L_- . Eigen values of L_2 and L_1 . Concept of parity operator. Concept of Hermitian operator.	Definition of an operator in quantum mechanics, commutation relation in quantum mechanics, position, momentum and angular momentum operator, Angular momentum operator in spherical polar coordinate system, Hamilton operator, Hamilton operator commutation relation between x' and p . Expectation value of an operator communication relation between L_2 and components of L , Raising and lowering operator L_+ and L_- . Eigen values of L_2 and L_1 . Concept of parity operator. Concept of Hermitian operator.



B.Sc. I	16	-	16	Elasticity Bending of beam, Bending moment, Cantilever (without considering weight of cantilever), Beams supported at both the ends (without considering weight of beam). Torsional oscillation, Work done in twisting a wire, Twisting couple on a cylinder, Torsional pendulum - Determination of Rigidity modulus and moment of inertia, Determination of Y , η and σ by Searles method.	Elasticity Bending of beam, Bending moment, Cantilever (without considering weight of cantilever), Beams supported at both the ends (without considering weight of beam). Torsional oscillation, Work done in twisting a wire, Twisting couple on a cylinder, Torsional pendulum - Determination of Rigidity modulus and moment of inertia, Determination of Y , η and σ by Searles method.
B.Sc. II	-	64	64	Practicals : 1) Characteristics of Transistor. 2) Use of sextant to measure height of object. 3) Crystal Oscillator. 4) Colpitts oscillator.	Practicals : 1) Characteristics of Transistor. 2) Use of sextant to measure height of object. 3) Crystal Oscillator. 4) Colpitts oscillator.
Month July				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Applications of Schrodinger's Steady State Equation	Applications of Schrodinger's Steady State Equation
B.Sc. III	12	-	12	Quantum mechanics treatment of particle in rigid box (1D and 3D). Step potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α -decay, simple harmonic oscillator.	Quantum mechanics treatment of particle in rigid box (1D and 3D). Step potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α -decay, simple harmonic oscillator.



B.Sc. I	16	-	16	Gravitation: Newton's Law of Gravitation, Motion of a particle in a central force field (motion in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws (statement only), Satellite in circular orbit and applications, Geosynchronous orbits, Weightlessness, Basic idea of global positioning system (GPS) and its	Gravitation: Newton's Law of Gravitation, Motion of a particle in a central force field (motion in a plane, angular momentum is conserved, areal velocity is constant), Kepler's Laws (statement only), Satellite in circular orbit and applications, Geosynchronous orbits, Weightlessness, Basic idea of global positioning system (GPS) and its applications
B.Sc. II	-	64	64	Practicals : 1) To determine wavelength of 1) Sodium & 2) spectrum of Mercury light using plane diffraction grating. 2). Goniometer I- To study cardinal points of optical system. 3) Goniometer II- To study the equivalent focal length of optical system. 4) To study angle of specific rotation of sugar using Polarimeter.	Practicals : 1) To determine wavelength of 1) Sodium & 2) spectrum of Mercury light using plane diffraction grating. 2). Goniometer I- To study cardinal points of optical system. 3) Goniometer II- To study the equivalent focal length of optical system. 4) To study angle of specific rotation of sugar using Polarimeter.
Month August				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Physical interpretation of wave function, Schrodinger's	Physical interpretation of wave function, Schrodinger's



B.Sc. III	12	-	12	time dependent and independent equation (one and three dimensional) Requirements of wave function, Eigen value, Eigen function, Normalized orthogonal and orthonormal wave functions, Probability current density (Continuity equation). Examples on Normalization of wave function	time dependent and independent equation (one and three dimensional) Requirements of wave function, Eigen value, Eigen function, Normalized orthogonal and orthonormal wave functions, Probability current density (Continuity equation). Examples on Normalization of wave function
B.Sc. I	16	-	16	Surface Tension Surface Tension, Angle of contact and wettability, relation between surface tension, excess of pressure and radius of curvature, Experimental determination of surface tension by Jaeger's method, Factors affecting surface tension, Applications of surface tension.	Surface Tension Surface Tension, Angle of contact and wettability, relation between surface tension, excess of pressure and radius of curvature, Experimental determination of surface tension by Jaeger's method, Factors affecting surface tension, Applications of surface tension.
B.Sc. II	-	64	64	Practicals : 1) To record and analyze the cooling temperature of hot object as a function of time using a thermocouple. 2) To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge 3) Temperature of flame. 4) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow	Practicals : 1) To record and analyze the cooling temperature of hot object as a function of time using a thermocouple. 2) To calibrate Resistance Temperature Device (RTD) using Null Method/Off-Balance Bridge 3) Temperature of flame. 4) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow



				method.	method.
Month September				Module/Unit:	Sub-units planned
B.Sc. III	Lect ures	Practicals	Total	Introduction to Quantum Mechanics Origin of quantum mechanics, Review of black body radiation, Photoelectric effect, matter waves, De-Broigle hypothesis , experimental evidence of de Broglie theory (Davisson and Germer experiment), wave particle duality, Heisenberg's uncertainty principle and different forms uncertainty principle	Introduction to Quantum Mechanics Origin of quantum mechanics, Review of black body radiation, Photoelectric effect, matter waves, De-Broigle hypothesis , experimental evidence of de Broglie theory (Davisson and Germer experiment), wave particle duality, Heisenberg's uncertainty principle and different forms uncertainty principle
	12	-	12		



B.Sc. I	16	-	16	Oscillations Simple harmonic motion (SHM), Differential equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations, Forced oscillations.	Oscillations Simple harmonic motion (SHM), Differential equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations, Forced oscillations.
B.Sc. II	-	64	64	Practicals : 1) Measurement of rise, fall and delay time using a CRO 2) Measurement of distortion of a RF signal generator using distortion factor meter. 3) . Measurement of R, L and C using a LCR bridge/ universal bridge. 4) Measurement of time period, frequency, average period using using universal counter/frequency counter	Practicals : 1) Measurement of rise, fall and delay time using a CRO 2) Measurement of distortion of a RF signal generator using distortion factor meter. 3) . Measurement of R, L and C using a LCR bridge/ universal bridge. 4) Measurement of time period, frequency, average period using using universal counter/frequency counter
Month October/November				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Examination	Examination
Month December				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Elementary band theory	Elementary band theory



B.Sc. III	12	-	12	Introduction of free electron theory (Classical and Quantum mechanical) , Kronig Penny model, Effective mass of an electron, Band Gaps. Conductors, Semiconductors and insulators. P and N type semiconductors. Conductivity of Semiconductors, mobility, Hall Effect, Hall voltage and Hall coefficient.	Introduction of free electron theory (Classical and Quantum mechanical) , Kronig Penny model, Effective mass of an electron, Band Gaps. Conductors, Semiconductors and insulators. P and N type semiconductors. Conductivity of Semiconductors, mobility, Hall Effect, Hall voltage and Hall coefficient.
B.Sc. I	16	-	16	A.C. Circuits Complex numbers and their application in solving a. c. series LCR circuit, complex impedance, Reactance, Admittance, and Susceptance, Resonance in LCR series circuit, Sharpness of resonance (qualitative treatment only), Q-factor (definition only) A.C. Bridge - Owen's Bridge	A.C. Circuits Complex numbers and their application in solving a. c. series LCR circuit, complex impedance, Reactance, Admittance, and Susceptance, Resonance in LCR series circuit, Sharpness of resonance (qualitative treatment only), Q-factor (definition only) A.C. Bridge - Owen's Bridge
B.Sc. II	-	64	64	Practicals : 1) Ic 555 timer. 2) Electronic switch using transistor. 3) Characteristics of FET. 4) FET as VVR.	Practicals : 1) Ic 555 timer. 2) Electronic switch using transistor. 3) Characteristics of FET. 4) FET as VVR.
Month January				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Dielectric Properties of Materials	Dielectric Properties of Materials



B.Sc. III	12	-	12	<p>Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons.</p>	<p>Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons.</p>
B.Sc. I	16	-	16	<p>Electricity</p> <p>Introduction – DC and varying currents, LR Circuit, RC circuit and LC circuit, Growth and decay of currents, Theory of B.G. and constants of B.G., time constants τ</p>	<p>Electricity</p> <p>Introduction – DC and varying currents, LR Circuit, RC circuit and LC circuit, Growth and decay of currents, Theory of B.G. and constants of B.G., time constants τ</p>



B.Sc. II	-	64	64	Practicals : 1) To determine the wavelength of sodium light using Fresnel Biprism. 2) To determine the Resolving Power of a Prism. 3) To determine the Resolving Power of a Plane Diffraction Grating. 4) To determine wavelength of Laser light using diffraction of single slit.	Practicals : 1) To determine the wavelength of sodium light using Fresnel Biprism. 2) To determine the Resolving Power of a Prism. 3) To determine the Resolving Power of a Plane Diffraction Grating. 4) To determine wavelength of Laser light using diffraction of single slit.
Month February				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Magnetic Materials and their Properties:	Magnetic Materials and their Properties:
B.Sc. III	12	-	12	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferromagnetic, ferrimagnetic and antiferromagnetic materials.	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferromagnetic, ferrimagnetic and antiferromagnetic materials.
B.Sc. I	16	-	16	Magnetism Introduction to magnetization and intensity of Magnetization, Biot-Savart's law & its applications - straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law at earth's surface	Magnetism Introduction to magnetization and intensity of Magnetization, Biot-Savart's law & its applications - straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital law at earth's surface



B.Sc. II	-	64	64	Practicals : 1) To determine the value of Stefan's Constant. 2) To determine the coefficient of thermal conductivity of copper by Searle's Apparatus. 3) To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method. 4) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method	Practicals : 1) To determine the value of Stefan's Constant. 2) To determine the coefficient of thermal conductivity of copper by Searle's Apparatus. 3) To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method. 4) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method
Month March				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	X-Ray Diffraction Reciprocal lattice and its properties, concept of Brillouin zone , diffraction of X-rays by crystals, Ewald construction, Bragg's law in reciprocal lattice, X-ray diffraction methods: 1) Laue method. 2) Rotating crystal 3) Powder method - Principle, Construction, Working , analysis of cubic crystal by powder crystal method	X-Ray Diffraction Reciprocal lattice and its properties, concept of Brillouin zone , diffraction of X-rays by crystals, Ewald construction, Bragg's law in reciprocal lattice, X-ray diffraction methods: 1) Laue method. 2) Rotating crystal 3) Powder method - Principle, Construction, Working , analysis of cubic crystal by powder crystal method
B.Sc. III	12	-	12		



B.Sc. I	16	-	16	Network Theorems Introduction, Node, Junction, Branch, Loop, Active and passive elements, Thevenin's theorem, Norton's theorem and equivalence between them, problems.	Network Theorems Introduction, Node, Junction, Branch, Loop, Active and passive elements, Thevenin's theorem, Norton's theorem and equivalence between them, problems.
B.Sc. II	-	64	64	Practicals : 1) To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance. 2) To observe the limitations of a multimeter for measuring high frequency voltage and currents. 3) To measure Q of a coil and its dependence on frequency using a Q-meter. 4) Measurement of voltage, frequency, time period and phase angle using CRO	Practicals : 1) To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance. 2) To observe the limitations of a multimeter for measuring high frequency voltage and currents. 3) To measure Q of a coil and its dependence on frequency using a Q-meter. 4) Measurement of voltage, frequency, time period and phase angle using CRO
Month April				Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination

Gugali
Teacher Incharge



[Signature]
Head of the
Department of Physics
Vivekanand College, Kolhapur

"Dissemination of Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe
 Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)
Department of Physics
Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: **Dr. S. I. Inamdar**

Month June				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Kinetic Theory of Gases and thermometry	Kinetic Theory of Gases and thermometry
B.Sc. II	12	-	12	Law of equipartition of energy (qualitative) and its applications to specific heat of monoatomic and diatomic gases. Thermometry: Concept of heat and temperature, temperature scales, principle of thermometry mercury thermometer, platinum resistance thermometer, thermocouple. (Principle, construction and theory)	Law of equipartition of energy (qualitative) and its applications to specific heat of monoatomic and diatomic gases. Thermometry: Concept of heat and temperature, temperature scales, principle of thermometry mercury thermometer, platinum resistance thermometer, thermocouple. (Principle, construction and theory)
B.Sc. III	12	-	12	Crystal Structure Types of the solids, Amorphous, crystalline, lattice, lattice translation vectors, lattice with basis (Central , non central elements) Unit cell , Examples of crystal structure NaCl, KCl,	Crystal Structure Types of the solids, Amorphous, crystalline, lattice, lattice translation vectors, lattice with basis (Central , non central elements) Unit cell , Examples of crystal structure NaCl, KCl,
B.Sc. III	-	80	80	Practicals : 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method.	Practicals : 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method.



				3) Diffraction at single slit. 4) Diffraction at cylindrical obstacle. 5) Diffraction at straight edge	3) Diffraction at single slit. 4) Diffraction at cylindrical obstacle. 5) Diffraction at straight edge
Month July				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Kinetic Theory of Gases and thermometry	Kinetic Theory of Gases and thermometry
B.Sc. II	12	-	12	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),
B.Sc. III	12	-	12	Magnetic Properties of Materials Magnetic materials, permeability, susceptibility, magnetization, magnetic moment, electron spin, Diamagnetic materials, Paramagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetism, and ferromagnetic domain, Hysteresis loop for ferromagnetic materials.	Magnetic Properties of Materials Magnetic materials, permeability, susceptibility, magnetization, magnetic moment, electron spin, Diamagnetic materials, Paramagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetism, and ferromagnetic domain, Hysteresis loop for ferromagnetic materials.



B.Sc. III	-	80	80	Practicals : 1) Resonance pendulum. 2) S. T. of soap solution. 3) S. T. by Fergusson modified method. 4) Y & η using flat spiral spring.	Practicals : 1) Resonance pendulum. 2) S. T. of soap solution. 3) S. T. by Fergusson modified method. 4) Y & η using flat spiral spring.
Month August				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Laws of Thermodynamics Work done during isothermal and adiabatic processes, reversible & irreversible processes, Second law of thermodynamics, Carnot's ideal heat engine, Carnot's cycle (Working, efficiency), Carnot's theorem, Entropy (concept & significance), change in entropy, Entropy changes in reversible & irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat, diffusion of gases ,physical significance of entropy, Un-attainability of absolute zero. Zero point energy.	Laws of Thermodynamics Work done during isothermal and adiabatic processes, reversible & irreversible processes, Second law of thermodynamics, Carnot's ideal heat engine, Carnot's cycle (Working, efficiency), Carnot's theorem, Entropy (concept & significance), change in entropy, Entropy changes in reversible & irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat, diffusion of gases ,physical significance of entropy, Un-attainability of absolute zero. Zero point energy.
B.Sc. II	12	-	12		



B.Sc. III	12	-	12	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum in solids, Dulong Petit's law (Classical Theory), Einstein	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum in solids, Dulong Petit's law (Classical Theory), Einstein
B.Sc. III	-	80	80	Practicals : 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method. 3) Diffraction at single slit. 4) Diffraction at cylindrical obstacle. 5) Diffraction at straight edge	Practicals : 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method. 3) Diffraction at single slit. 4) Diffraction at cylindrical obstacle. 5) Diffraction at straight edge
Month September				Module/Unit:	Sub-units planned
B.Sc. II	Lect ures	Practicals	Total	Thermodynamic Potentials Enthalpy, Gibbs, Helmholtz, Internal Energy functions, Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron	Thermodynamic Potentials Enthalpy, Gibbs, Helmholtz, Internal Energy functions, Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron



	12	-	12	equation, Expression for (CP – CV), CP/CV, TdS equations.	equation, Expression for (CP – CV), CP/CV, TdS equations.
B.Sc. III	12	-	12	Instrumentations :Introduction to CRO Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.	Instrumentations :Introduction to CRO Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.
B.Sc. III	-	80	80	1) ‘Y’ by Koenig’s method. 2) ‘Y’ by cornu’s method. 3) Measurement of heat capacity of solid. 4) S. T. tension by drop weight method. 5) Young’s modulus by vibration using AFG.	1) ‘Y’ by Koenig’s method. 2) ‘Y’ by cornu’s method. 3) Measurement of heat capacity of solid. 4) S. T. tension by drop weight method. 5) Young’s modulus by vibration using AFG.
Month October/November				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Examination	Examination
Month December				Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Laws of Thermodynamics	Laws of Thermodynamics



B.Sc. II	12	-	12	<p>Thermodynamic system, thermodynamic variables, thermodynamic state, equation of state,</p> <p>thermodynamic equilibrium, Zeroth Law of thermodynamics, Internal energy, First law of thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law</p> <p>(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV</p>	<p>Thermodynamic system, thermodynamic variables, thermodynamic state, equation of state,</p> <p>thermodynamic equilibrium, Zeroth Law of thermodynamics, Internal energy, First law of thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law</p> <p>(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV</p>
B.Sc. III	12	-	12	<p>Superconductivity</p> <p>Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect</p>	<p>Superconductivity</p> <p>Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect</p>
B.Sc. III	-	80	80	<p>Practicals :</p> <ol style="list-style-type: none"> 1) Self inductance by Owen's bridge. 2) Self inductance by Rayleigh's method. 3) Self inductance by Maxwell bridge. 4) Measurement of BV, BH and θ using earth inductor. 5) Hysteresis by magnetometer. 	<p>Practicals :</p> <ol style="list-style-type: none"> 1) Self inductance by Owen's bridge. 2) Self inductance by Rayleigh's method. 3) Self inductance by Maxwell bridge. 4) Measurement of BV, BH and θ using earth inductor. 5) Hysteresis by magnetometer.
Month January			Module/Unit:	Sub-units planned	



Course	Lect ures	Practicals	Total	Classical statistics	Classical statistics
B.Sc. II	12	-	12	Degrees of freedom ,momentum space, position space ,Phase space, Microstate and Macrostate, Accessible microstates, priory probability thermodynamic probability, probability distribution, Maxwell-Boltzmann distribution law, energy or speed, evaluation of constants α and β , Entropy and Thermodynamic probability, Distribution of molecular speeds.	Degrees of freedom ,momentum space, position space ,Phase space, Microstate and Macrostate, Accessible microstates, priory probability thermodynamic probability, probability distribution, Maxwell-Boltzmann distribution law, energy or speed, evaluation of constants α and β , Entropy and Thermodynamic probability, Distribution of molecular speeds.
				Theory of Radiation Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence ,emissive power, absorptive power, pressure of radiation ,Experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.	



B.Sc. III	12	-	12	Special functions of ICs IC 555, Block diagram and special functions if ICs, Astable Operation: Circuit diagram, frequency of oscillation and duty cycle, Applications as tone burst oscillator, voltage controlled frequency shifters. Monostable operation: circuit diagram, Applications as touch switch and frequency divider. Bistable Operation: Circuit diagram and circuit action.	Special functions of ICs IC 555, Block diagram and special functions if ICs, Astable Operation: Circuit diagram, frequency of oscillation and duty cycle, Applications as tone burst oscillator, voltage controlled frequency shifters. Monostable operation: circuit diagram, Applications as touch switch and frequency divider. Bistable Operation: Circuit diagram and circuit action.
B.Sc. III	-	80	80	Practicals : 1) e/m of electron by Thomson's method. 2) Measurement of dielectric constant. 3) Resistivity of semiconductor crystal with temperature by four probe method. 5) Calibration of wire using Carey-foster key..	Practicals : 1) e/m of electron by Thomson's method. 2) Measurement of dielectric constant. 3) Resistivity of semiconductor crystal with temperature by four probe method. 5) Calibration of wire using Carey-foster key..
Month February				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Theory of Radiation	Theory of Radiation



B.Sc. II	12	-	12	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence ,emissive power, absorptive power, pressure of radiation ,Experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence ,emissive power, absorptive power, pressure of radiation ,Experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.
B.Sc. III	12	-	12	Digital Electronics Introduction to logic gates, De-Morgan's theorem, NAND and NOR gates as universal gates, R-S and J-K flip flops, half and full adder, parallel binary adder.	Digital Electronics Introduction to logic gates, De-Morgan's theorem, NAND and NOR gates as universal gates, R-S and J-K flip flops, half and full adder, parallel binary adder.
B.Sc. III	-	80	80	Practicals : 1) Study of divergence of LASER beam. 2) Measurement of wavelength of LASER using grating. 3) Lattice constant using XRD powder. 4) To measure numerical aperture of optical fibre. 5) Obtain interference fringes using Biprism.	Practicals : 1) Study of divergence of LASER beam. 2) Measurement of wavelength of LASER using grating. 3) Lattice constant using XRD powder. 4) To measure numerical aperture of optical fibre. 5) Obtain interference fringes using Biprism.
Month March				Module/Unit:	Sub-units planned



Course	Lect ures	Practicals	Total	Quantum statistics	Quantum statistics
B.Sc. II	12	-	12	<p>Need of quantum statics ,Bose-Einstein distribution law, photon gas, Planck, s radiation law</p> <p>Fermi-Dirac distribution law, free electron in metal ,electron gas, comparison of M.B., B.E., and</p> <p>F.D. statistics.</p>	<p>Need of quantum statics ,Bose-Einstein distribution law, photon gas, Planck, s radiation law</p> <p>Fermi-Dirac distribution law, free electron in metal ,electron gas, comparison of M.B., B.E., and</p> <p>F.D. statistics.</p>
B.Sc. III	12	-	12	<p>Bipolar transistors:</p> <p>n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β. Relations between α and β. Load Line analysis of Transistors. DC Load line and Q point. Active, Cut-off, and Saturation Regions. Voltage Divider Bias Circuit for CE Amplifier. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.</p>	<p>Junction transistors:</p> <p>n-p-n and p-n-p Transistors. Characteristics of CB, CE and CC Configurations. Current gains α and β. Relations between α and β. Load Line analysis of Transistors. DC Load line and Q point. Active, Cut-off, and Saturation Regions. Voltage Divider Bias Circuit for CE Amplifier. h-parameter Equivalent Circuit. Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.</p>



B.Sc. III	-	80	80	Practicals : 1) UJT as voltage sweep generator. 2) Astable multivibrator by using IC 555 timer. 3) Monostable multivibrator by using IC 555 timer. 4) IV characteristics of P-N diode and LED. 5) Inverting amplifier using op - Amp 741.	Practicals : 1) UJT as voltage sweep generator. 2) Astable multivibrator by using IC 555 timer. 3) Monostable multivibrator by using IC 555 timer. 4) IV characteristics of P-N diode and LED. 5) Inverting amplifier using op - Amp 741.
Month April			Module/Unit:		Sub-units planned
Lectures	Practicals	Total	Examination		Examination


Teacher Incharge




Head of the
Department of Physics
Vivekanand College, Kolhapur

"Dissemination of Education for Knowledge, Science and Culture"
-Shikshanmaharshi Dr. Bapuji Salunkhe
Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Department of Physics

Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: Miss P. Y. Hawaldar

Month June				Module/Unit:	Sub-units planned
	Practicals	lectures	Total	Practicals:	Practicals:
B.Sc. I				Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month July				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month August				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month September				Module/Unit:	Sub-units planned



B.Sc. I	16	-	16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month October/November				Module/Unit:	Sub-units planned
B.Sc. I	16		16	Examination	Examination
Month December				Module/Unit:	Sub-units planned
B.Sc. I	16	B.Sc. I	16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month January				Module/Unit:	Sub-units planned
B.Sc. I	16		16		
B.Sc. I	16		16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month February				Module/Unit:	Sub-units planned



B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law
Month March					
B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law
Month April				Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Module/Unit:	Examination	Sub-units planned
					Examination

P. Y. Hawker
 Teacher Incharge



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"Dissemination of Education for Knowledge, Science and Culture"
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 Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

**Department of Physics
 Annual Teaching Plan**

Academic Year: 2021-22

Subject: Physics

Name of the teacher: **Mr. V. S. Ashtekar**

Month June				Module/Unit:	Sub-units planned
	Practicals	Lectures	Total	Practicals:	
B.Sc. I	-	16	16	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month July				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month August				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month September				Module/Unit:	Sub-units planned



B.Sc. I	16	-	16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	
Month October/November						
B.Sc. I	16		16	Module/Unit: Examination	Sub-units planned Examination	
Month December						
B.Sc. I	16	B.Sc. I	-	16	Module/Unit: Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Sub-units planned Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month January						
B.Sc. I	16			16	Module/Unit: Sub-units planned	
B.Sc. I	16	-		16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month February						
				Module/Unit:	Sub-units planned	



B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law
Month March				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law
Month April				Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Examination	Examination	Examination

Srinivas

Teacher Incharge



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 Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Department of Physics

Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: **Mr. R. P. Mungle**

Month June				Module/Unit:	Sub-units planned
	Practicals	Lectures	Total	Practicals:	Practicals:
B.Sc. I	16	-	16	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month July				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month August				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month September				Module/Unit:	Sub-units planned



B.Sc. I	16	-	16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	
Month October/November				Module/Unit:	Sub-units planned	
B.Sc. I	16		16	Examination	Examination	
Month December				Module/Unit:	Sub-units planned	
B.Sc. I	16	B.Sc. I	-	16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month January				Module/Unit:	Sub-units planned	
B.Sc. I	16			16		
B.Sc. I	16	-		16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month February				Module/Unit:	Sub-units planned	



B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law
Month March				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4) Verification of Kirchoff's voltage and current law
Month April				Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Examination	Examination	

Mungale

Teacher Incharge



[Signature]
 Head of the
 Department of Physics
 Vivekanand College, Kolhapur

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 Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Department of Physics

Annual Teaching Plan

Academic Year: 2021-22

Subject: Physics

Name of the teacher: **Mr. A. V. Shinde**

Month June				Module/Unit:	Sub-units planned
	Practicals	Lectures	Total	Practicals:	Practicals:
B.Sc. I				1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month July				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month August				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month September				Module/Unit:	Sub-units planned



B.Sc. I	16	-	16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month October/November				Module/Unit:	Sub-units planned
B.Sc. I	16		16	Examination	Examination
Month December				Module/Unit:	Sub-units planned
B.Sc. I	16 B.Sc. I	-	16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month January				Module/Unit:	Sub-units planned
B.Sc. I	16		16		
B.Sc. I	16	-	16	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals : 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month February				Module/Unit:	Sub-units planned



B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law
Month March				Module/Unit:	Sub-units planned
B.Sc. I	16	-	16	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law	Practicals : 1) To verify the Thevenin theorem. 2) To verify the Norton theorem. 3) Determination of low resistance using Carey foster's Bridge. 4)) Verification of Kirchoff's voltage and current law
Month April				Module/Unit:	Sub-units planned
Lectures	Practicals	Total	Examination	Examination	Sub-units planned

Sindhu

Teacher Incharge



[Signature]
Head of the
Department of Physics
Vivekanand College, Kolhapur