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

Shri Swami Vivekanand Shikshan Sanstha's

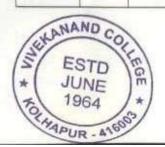
Vivekanand College, Kolhapur (Autonomous) Department of Physics Annual Teaching Plan

Academic Year: 2022-23

Subject: Physics

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

Month J	une			Module/Unit:	Sub-units planned	
Course	Lect	Practicals	Total	Physical interpretation of wave function, Schrodinger's	Physical interpretation of wave function, Schrodinger's	
B.Sc.	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	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 :	



		34		1) To record and analyze to cooling temperature of hot object as a function of time using a thermocouple.	cooling town
				2) To calibrate Resistance Temperature Device (RTD) using Null Method/Off- Balance Bridge	2) To calibrate Resistance Temperature Device (RTD using Null Method/Off- Balance Bridge
				3) Temperature of flame.	3) Temperature of flame.
				4) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow	
Month J	ļ			method.	method.
Course				Module/Unit:	Sub-units planned
B.Sc.	Lect ures	Practicals	Total	Introduction to Quantum Mechanics	
B.Sc. 10	6		12	Origin of quantum mechanics, Review of black body radiation, Photoelectric effect, matter waves, De-Broiglie hypothesis experimental evidence of de Broglie theory (Davisson and Germer experiment), wave particle duality, Heisenberg's uncertainty principle and different forms uncertainty principle	mechanics, Review of blace body radiation, Photoelectric effect, matter waves, De Broiglie hypothesis experimental evidence of d Broglie theory (Davisson and Germer experiment), wave particle duality, Heisenberg's
I	-		16	Elasticity	Elasticity
				Twisting couple on a	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

				modulus and moment of inertia, Determination of Y, and σ by Searles method	modulus and moment of inertia, Determination of Y, τ and σ by Searles method
B.Sc.	97	64	64	Practicals:	Practicals:
				1) To determine wavelength of 1) Sodium &2)spectrum of Mercury light usingplane diffraction grating.	1) To determine wavelength
				2). Goniometer I-To study cardinal points of opticalsystem.	2). Goniometer I-To study cardinal points of opticalsystem.
				3) Goniometer II- To study the equivalent focal length of optical system.	3) Goniometer II- To study the equivalent focal length of opticalsystem.
Manth				4) To study angle of specific rotation of sugar using Polarimeter.	4) To study angle of specific rotation of sugar using Polarimeter.
Month A	6			Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Operator in Quantum Mechanics	Operator in Quantum Mechanics
Qo.				m om out	Definition of an operator in quantum mechanics, commutation relation in quantum mechanics, position, momentum and angular momentum operator, Angular

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B.Sc.	12		10		
III	12		12	momentum operator spherical polar coordinal system, Hamilton operator Hamilton operator commutation relation betwee x' and p. Expectation value of an operator communication relation between L2 and components of L, Raising and lowering operator L+ and L-Eigen values of L2 and L1 Concept of parity operator. Concept of Hermitian operator.	system, Hamilton operator, Hamilton operator commutation relation between x' and p. Expectation value of an operator communication relation between L2 and components of L, Raising and lowering operator L+ and L Eigen values of L2 and L1. Concept of parity operator
B.Sc. I	16	-	16	Gravitation:	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:
				 Characteristics of Transistor. Use of sextant to measure height of object. 	Characteristics of Transistor. Use of sextant to measure
				2) 6 4 10 111	height of object.
				4) C. I. W	3) Crystal Oscillator.4) Colpitts oscillator
10 60					

Month	Septem	ber		Module/Unit:	Sub-units planned
B.Sc.	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	Applications of Schrodinger's Steady State Equation Quantum mechanics treatment of particle in rigid box (1D and 3D). Step
B.Sc. I				transmission coefficient. Barrier potential- Tunnelling effect, α-decay, simple harmonic oscillator.	potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α-decay, simple harmonic oscillator.
B.Sc. I	16	=	16	Surface Tension	Surface Tension
B.Sc. II		64		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, 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.
,.5 c , 11		04	64	Practicals:	Practicals:
				1) Measurement of rise, fall and delay time using a CRO	1) Measurement of rise, fall and delay time using a CRO
				2) Measurement of distortion of a RF signal generator using distortion factor meter.	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.	3) . Measurement of R, L and C using a LCR bridge/ universal bridge.
So,				4) Measurement of time period, frequency, average period using using universal counter/frequency counter	4) Measurement of time period, frequency, average period using using universal counter/frequency counter

		er/November		Module/Unit:	Sub-units planned	
	Lec		Total	Examination	Examination	
Mont	th Decen	ıber		Module/Unit:	Sub-units planned	
	Lec	et Practicals	Total	Dielectric Properties of		
700	ures	S		Materials 17 oper nes of	Dielectric Properties of Materials	
B.Sc.			12	Polarization. Local Electric Field at an Ator Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation Classical Theory of Electric Polarizability. Normal an Anomalous Dispersion Cauchy and Sellmer relations. Langevin-Deby equation. Complex Dielectric Constant. Optical Phenomena Application: Plasma Oscillations, Plasma Frequency, Plasmons	Field at an At Depolarization Field. Elect Susceptibility. Polarizability. Clausius Mosotti Equation Clausius Mosotti Equation Clausius Mosotti Equation. Clausius Mosotti Elect Polarizability. Polarizability. Normal at Anomalous Dispersi Cauchy and Sellmare relations. Langevin-Debe equation. Complex Dielect Constant. Optical Phenometrical Application:	
B.Sc. I	16	-	16	Electricity	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 T	varying currents, LR Circu RC circuit and LC circu	
3.Sc. II	-	64	64	Practicals:	Practicals:	
				1) Ic 555 timer.	1) Ic 555 timer.	
				2) Electronic switch using transistor.	2) Electronic switch using transistor.	
				3) Characteristics of FET.	3) Characteristics of FET.	
				4) FET as VVR.	4) FET as VVR.	
onth Ja				Module/Unit:	Sub-units planned	
ourse	Lect ures	Practicals	Total	Introduction of free electron theory (Classical and	Introduction of free electron theory (Classical and	

B.Sc. 12		Quantum mechanical), Kronig Penny model, Effective mass of an electro Band Gaps. Conductors, Semiconductors and insulators. P and N type semiconductors. Conductivit of Semiconductors, mobility Hall Effect, Hall voltage and Hall coefficient.	Band Gaps. Conductors, Semiconductors and insulators. P and N type semiconductors. Conductivity
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 - 6	4 64	Practicals: 1) To determine the wavelength of sodium light using Fresenel 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 Fresenel 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		Maria 1 (XXXII	Sub-units planned

Course	Lect	Practicals	Total	Magnetic Materials and their Properties:	nd Magnetic Materials an their Properties:
B.Sc.	12	-	12	Magnetic intensity, magnet induction, permeability magnetic susceptibility. Hysteresis and hysterest curve, diamagnetic paramagnetic, ferromagnetic ferrimagnetic an antiferromagnetic materials.	Magnetic intensity, magnet y, induction, permeability y, magnetic susceptibility is Hysteresis and hysteres c, c, paramagnetic, ferromagnetic
B.Sc. I	16	-	16	Magnetism	Magnetism
.Sc. II				coil, solenoid carrying current, Divergence and curl of magnetic field, Magnetic vector potential, Ampere's circuital lawat earth's surface	and intensity of Magnetization, Biot-Savart's law & its applications straight conductor, circular coil, solenoid carrying current, Divergence and curl of magnetic field Magnetic
.Sc. II	- 6	54	64	Practicals:	Practicals:
				1)To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.	1) To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.
			1	2) To observe the limitations of a multimeter for measuring high frequency voltage and currents.	2) To observe the limitations of a multimeter for measuring high frequency voltage and currents.
			i	is dependence on frequency	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	4) Measurement of voltage, frequency, time period and phase angle using CRO
Month M	larch			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	X-Ray Diffraction Reciprocal lattice and its	X-Ray Diffraction Reciprocal lattice and its
B.Sc. III	12		12	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	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. 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	<u>=</u>)	64	64	Practicals:	Practicals:
				1)To determine the value of Stefan's Constant.	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.	Coefficient of Thermal
				4) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method	4) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method
Month A	pril			Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination

Techer Incharge



Head OP the
Department of Physics
Vivekanand College, Kolhapur

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

Academic Year: 2022-23

Subject: Physics

Name of the teacher: Mr. C. J. Kamble

Month June				Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Superposition of Harmonic Oscillations	Superposition of Harmonic Oscillations
B.Sc. II	12	5	12	Linearity and superposition principle, Composition of two simple harmonic motions, Superposition of two collinear harmonic oscillations—for oscillations—having—equal frequencies (Analytical and geometrical methods)—and—oscillations—having different frequencies (Beats)	Linearity and superposition principle, Composition of two simple harmonic motions, Superposition of two collinear harmonic oscillations—for oscillations—having—equal frequencies (Analytical and geometrical methods)—and oscillations having different frequencies (Beats)
B.Sc. III	12	a ii	12	Nuclear Radiation Detectors Introduction: Ionization chamber, G. M. counter, (principle, construction, working mechanism, Iimitations, merits) Scintillation Counter (principle, construction, working, advantages) Introduction to cosmic radiations, Wilson cloud chamber, Bubble chamber.	Nuclear Radiation Detectors Introduction: Ionization chamber, G. M. counter, (principle, construction, working mechanism, limitations, merits) Scintillation Counter (principle, construction, working, advantages) Introduction to cosmic radiations, Wilson cloud chamber, Bubble chamber.
B.Sc. III	/,E/	80	80	Practicals:	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	 Cardinal points by turn table method. Cardinal points by Newton's method. Diffraction at single slit. Diffraction at cylindrical obstacle. Diffraction at straight edge
Month Jul				Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Superposition of Harmonic Oscillations	Superposition of Harmonic Oscillations
B.Sc. II	12	(*)	12	Superposition of two perpendicular harmonic oscillations- for oscillations having	Superposition of two perpendicular harmonic oscillations- for oscillations having
			×	equal frequencies (Graphical and analytical methods) and oscillations having different	equal frequencies (Graphical and analytical methods) and oscillations having different
				frequencies (Lissajous figures), Uses of Lissajous figures.	frequencies (Lissajous figures), Uses of Lissajous figures.
B.Sc. III	12	:=	12	Nucleus (Nuclear Structure	Nucleus (Nuclear Structure
				& General Properties of nuclei)	& General Properties of nuclei)
				Introduction, Constituents of nuclei, Nuclear size, Nuclear magnetic moment, Electric quadrupole moment, Nuclear spin, Unit of atomic mass (amu), Mass defect, Packing fraction, Packing fraction curve, Binding energy, B.E. curve, Nuclear forces, Liquid drop model, Semiempirical B.E. formula, Magic numbers, Introduction of elementary particles.	Introduction, Constituents of nuclei, Nuclear size, Nuclear magnetic moment, Electric quadrupole moment, Nuclear spin, Unit of atomic mass (amu), Mass defect, Packing fraction, Packing fraction curve, Binding energy, B.E. curve, Nuclear forces, Liquid drop model, Semiempirical B.E. formula, Magic numbers, Introduction of elementary particles.

B.Sc. III	4	80	80	Practicals :	Practicals:
				1) 'Y' by Koenig's method.	1) 'Y' by Koenig's method.
				2) 'Y' by cornu's method.	2) 'Y' by cornu's method.
				3) Measurement of heat capacity of solid.	3) Measurement of heat capacity of solid.
				4) S. T. tension by drop weight method.	4) S. T. tension by drop weight method.
				5) Young's modulus by vibration using AFG.	5) Young's modulus by vibration using AFG.
Month Aug	gust			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Coupled Oscillations: Normal modes of vibration,	Coupled Oscillations: Normal modes of vibration,
B.Sc. II	12	Vite	12	normal coordinates, degrees of freedom, types of coupling,	normal coordinates, degrees of freedom, types of coupling,
				frequency of oscillatory systems, Energy transfer in coupled oscillatory system.	frequency of oscillatory systems, Energy transfer in coupled oscillatory system.



B.Sc. III	12	-	12	Particles Accelerators	Particles Accelerators
B.Sc. III		80	80	Need of accelerators, Types of accelerators (Qualitative) orbital accelerators, Cyclotron, (Principle, construction, working, theory, merits, demerits) . Limitation of cyclotron, Synchrocyclotron, (construction, working, theory) . Betatron, (principle, construction, working, mathematical theory, merits) Accelerators in India. Practicals: 1) Resonance pendulum. 2) S. T. of soap solution. 3) S. T. by Fergusson modified method. 4) Y & n using flat spiral spring.	Need of accelerators, Types of accelerators (Qualitative) orbital accelerators, Cyclotron, (Principle, construction, working, theory, merits, demerits) . Limitation of cyclotron, Synchrocyclotron, (construction, working, theory) . Betatron, (principle, construction, working, mathematical theory, merits) Accelerators in India. 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 Sept	Month September			Module/Unit:	Sub-units planned
B.Sc. II	Lect	Practicals	Total	Waves Motionand Ultrasonic waves Waves Motion: Transverse waves on a string, travelling	Waves Motionand Ultrasonic waves Waves Motion: Transverse waves on a string, travelling



	12	=	12	and standing waves on a string,	and standing waves on a string,
		āl		Normal modes of a string, Group velocity and Phase velocity, Plane waves, Spherical waves.	Normal modes of a string, Group velocity and Phase velocity, Plane waves, Spherical waves.
				Ultrasonic waves: Piezo- electric effect, Production of ultrasonic waves by Piezo- electric	Ultrasonic waves: Piezo- electric effect, Production of ultrasonic waves by Piezo- electric
				generator, Detection of ultrasonic waves, Properties ultrasonic waves, Applications of	generator, Detection of ultrasonic waves, Properties ultrasonic waves, Applications of
				ultrasonic waves.	ultrasonic waves.
B.Sc. III	12	ж	12	Radioactive Decay	Radioactive Decay
				Natural radioactivity, Artificial radioactivity, Study of alpha decay by magnetic spectrograph, Velocity of alpha particles, Range of α- particles, α- disintegration energy, fine structure of αrays. Beta decay, Study by β - ray spectrometer, continuous nature, neutrino hypothesis, Gamma Decay, origin & gamma rays, γ- ray spectrum, internal conversion, Isomerism.	Natural radioactivity, Artificial radioactivity, Study of alpha decay by magnetic spectrograph, Velocity of alpha particles, Range of α- particles, α- disintegration energy, fine structure of αrays. Beta decay, Study by β - ray spectrometer, continuous nature, neutrino hypothesis, Gamma Decay, origin & gamma rays, γ- ray spectrum, internal conversion, Isomerism.
B.Sc. III	is-	80	80	Practicals :	Practicals :
				1) Lloyd's single mirror.	1) Lloyd's single mirror.
				2) Double refracting prism	2) Double refracting prism
				3) Diameter of lycopodium powder.	3) Diameter of lycopodium powder.
				4) Spherical aberration.	4) Spherical aberration.
ND CO/				5) Absorption of spectrum of KMno4 solution.	5) Absorption of spectrum of KMno4 solution.

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Month Octo	Month October/November			Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Examination	Examination
Month Dec	ember			Module/Unit:	Sub-units planned
B.Sc. II	Lect ures 12	Practicals	Total	Cardinal points Thick lens, combination of lenses (system)Cardinal points of an optical system (definitions only), graphical construction of image using cardinal points, Newton's formula, relation between f and f ' for any optical system, relation between lateral, axial and angular magnifications.	Cardinal points Thick lens, combination of lenses (system)Cardinal points of an optical system (definitions only), graphical construction of image using cardinal points, Newton's formula, relation between f and f ' for any optical system, relation between lateral, axial and angular magnifications.
B.Sc. III	12		12	Atomic Physics Quantum numbers , spatial quantization, vector atom model, Alkali Spectra, Optical spectral series, Spectral term spectral notation, energy level diagram of sodium, spin orbit interaction Zeeman effect, Explanation of Anomalous Zeeman effect on vector atom model, Anomalous Splitting of D1 and D2 Line	Atomic Physics Quantum numbers , spatial quantization, vector atom model, Alkali Spectra, Optical spectral series, Spectral term spectral notation, energy level diagram of sodium, spin orbit interaction Zeeman effect, Explanation of Anomalous Zeeman effect on vector atom model, Anomalous Splitting of D1 and D2 Line



B.Sc. III	35.	80	80	Practicals:	Practicals:
				1) Self inductance by Owen's bridge.	1) Self inductance by Owen's bridge.
				2) Self inductance by Rayleigh's method.	2) Self inductance by Rayleigh's method.
				3) Self inductance by Maxwell bridge.	3) Self inductance by Maxwell bridge.
				4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
				5) Hysteresis by magnetometer.	5) Hysteresis by magnetometer.
Month Janu	iary		,	Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Resolving Power of optical instruments	Resolving Power of optical instruments
B.Sc. II	12	-	12	Resolution, Resolving power of optical instruments, Rayleigh's criterion for the limit of	Resolution, Resolving power of optical instruments, Rayleigh's criterion for the limit of
	3*3			resolution, Modified Rayleigh's criterion, comparison between magnification and resolution,	resolution, Modified Rayleigh's criterion, comparison between magnification and resolution,
	.190			resolving power of plane diffraction grating, resolving power of a prism.	resolving power of plane diffraction grating, resolving power of a prism.



Month Fe Course	Lect	Practicals	Total	Practicals:	Sub-units planned
Month Fe	or uar y			Module/Unit:	Sub
	hruany			5) Calibration of wire using Carey-foster key	method. 5) Calibration of wire using Carey-foster key
				3) Resistivity of semiconductor crystal with temperature by four probe method.	3) Resistivity of semiconductor crystal with temperature by four probe
				2) Measurement of dielectric constant.	
				1) e/m of electron by Thomson's method.	1) e/m of electron by Thomson's method.
B.Sc. II	Ί -	80	80	Practicals:	Practicals :
			12	Molecular Physics Molecular system, type of bonds, diatomic molecule as a rigid rotator rotational states of diatomic molecule, Raman effect, Experimental study of Raman effect, classical theory of Raman effect, Applications of Ramar effect.	a rigid rotator rotational states of diatomic molecule Raman effect, Experimenta study of Raman effect,



B.Sc. II	12	10		
		12	1) Study of divergence of LASER beam.	1) Study of divergence of LASER beam.
			2) Measurement of wavelength of LASER using grating.	grating.
			3) Lattice constant using XR powder.	3) Lattice constant using XRD powder.
			4) To measure numerical aperture of optical fibre.	4) To measure numerical aperture of optical fibre.
B.Sc. III	12		5) Obtain interference fringe using Biprism.	5) Obtain interference fringes using Biprism.
		12	Principle of Superposition ,Coherence and condition fo interference, Division o amplitude	,Coherence and condition for interference, Division of amplitude
			and division of wave front. Division of wave front — Lloyds single mirror(determination of	Division of wave front
			wavelength of light of monochromatic source),Division of amplitude- Interference in thin	1
			parallel films (reflected light only), Wedge shaped films, Newton's rings and its application	parallel films (reflected light only), Wedge shaped films, Newton's rings and its application
C12.0		1	for determination of wavelength and refractive index of light.	for determination of wavelength and refractive index of light.
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B.Sc. III	12		12	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 S55 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.
B.Sc. III	*	80	80	Space Science Cosmology, Big-bang theory, oscillating theory, steady-state theory, Hubble's law, cosmological tests, Milky way galaxy, our solar system, features of sun, interior of sunspots, static characteristics of earth and mars.	Space Science Cosmology, Big-bang theory, oscillating theory, steady-state theory, Hubble's law, cosmological tests, Milky way galaxy, our solar system, features of sun, interior of sunspots, static characteristics of earth and mars.
Month Apri	1			Module/Unit:	Sub-units planned
Lectures	Lectures Practicals Total		Examination	Examination	

Teacher Incharge

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Head of the
Departmentof Physics
Vivekanand College, Kolhabur

"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: 2022-23

Subject: Physics

Name of the teacher: Mr. S. V. Malgaonkar

Month June	Month June			Module/Unit:	Sub-units planned
Course	Lect	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	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	2	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	Practicals	Total	Kinetic Theory of Gases and thermometry	Kinetic Theory of Gases and thermometry
B.Sc. II	12	্বন্য	12	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of
				velocities and its experimental verification, Transport Phenomena: transport of momentum	velocities and its experimental verification, Transport Phenomena: transport of momentum
		195		(viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),	(viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),
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:	Practicals:
				1) Self inductance by Owen's bridge.	1) Self inductance by Owen's bridge.
				2) Self inductance by Rayleigh's method.	2) Self inductance by Rayleigh's method.
				3) Self inductance by Maxwell bridge.	3) Self inductance by Maxwell bridge.
			10	4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
				5) Hysteresis by magnetometer.	5) Hysteresis by magnetometer.
Month Aug	gust			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Laws of Thermodynamics Thermodynamic system, thermodynamic variables,	Laws of Thermodynamics Thermodynamic system, thermodynamic variables,
B.Sc. II	12		12	thermodynamic state, equation of state,	thermodynamic state, equation of state,
				thermodynamic equilibrium, Zeroth Law of thermodynamics, Internal energy, First law of	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	thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law
				(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV	(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV



B.Sc. III	12	80	80	Magnetic Properties of Materials Magnetic materials, permeability, susceptibility, magnetization, magnetic moment, electron spin, Diamagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetic domain, Hysteresis loop for ferromagnetic materials. 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	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,
Month Sept	ember	11	-10	Module/Unit:	Sub-units planned
B.Sc. II	Lect	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	of thermodynamics, Carnot's ideal heat engine, Carnot's cycle (Working, efficiency), Carnot's	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 &	theorem, Entropy (concept & significance), change in entropy, Entropy changes in reversible &
				irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat,	irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat,
	1961			diffusion of gases ,physical significance of entropy, Unattainability of absolute zero. Zero	diffusion of gases ,physical significance of entropy, Unattainability of absolute zero. Zero
				point energy.	point energy.
B.Sc. III	12	18	12	Instrumentations :Introduction to CRO	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.	1) 'Y' by Koenig's method.
				2) 'Y' by cornu's method.	2) 'Y' by cornu's method.
				3) Measurement of heat capacity of solid.	3) Measurement of heat capacity of solid.
				4) S. T. tension by drop weight method.	4) S. T. tension by drop weight method.
				5) Young's modulus by vibration using AFG.	5) Young's modulus by vibration using AFG.
Month Oct	ober/No	vember		Module/Unit:	Sub-units planned
ND CO.					<u></u>

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	Lect	Practicals	Total	Examination	Examination
Month Dec	ember			Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Thermodynamic Potentials Enthalpy, Gibbs, Helmholtz,	Thermodynamic Potentials Enthalpy, Gibbs, Helmholtz,
B.Sc. II	12		12	Internal Energy functions, Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron equation, Expression for (CP – CV), CP/CV, TdS equations.	Internal Energy functions, Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron equation, Expression for (CP – CV), CP/CV, TdS equations.
B.Sc. III	12	-	12	Superconductivity Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect	Superconductivity Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect
B.Sc. III	2	80	80	Practicals: 1) Self inductance by Owen's	Practicals: 1) Self inductance by Owen's
				bridge. 2) Self inductance by Rayleigh's method.	bridge. 2) Self inductance by Rayleigh's method.
				3) Self inductance by Maxwell bridge.	3) Self inductance by Maxwell bridge.
				4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
				5) Hysteresis by magnetometer.	5) Hysteresis by magnetometer.
Month Janu	uary	l.		Module/Unit:	Sub-units planned

Course	Lect	Practicals	Total	Theory of Radiation	Theory of Radiation
	ures			Thermal radiations,	Thermal radiations,
B.Sc. II	12		12	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.	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 brust 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 brust 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:	Practicals:
				1) e/m of electron by Thomson's method.	1) e/m of electron by Thomson's method.
				2) Measurement of dielectric constant.	2) Measurement of dielectric constant.
				3) Resistivity of semiconductor crystal with temperature by four probe method.	,
				5) Calibration of wire using Carey-foster key	5) Calibration of wire using Carey-foster key
Month Febr	uary	1		Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Classical statistics	Classical statistics
,	ures			Degrees of freedom	Degrees of freedom
B.Sc. II	12		12	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.	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	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	a	80	80	Practicals:	Practicals:
				 UJT as voltage sweep generator. Astable multivibrator by using IC 555 timer. Monostable multivibrator by using IC 555 timer. IV characteristics of P-N diode and LED. Inverting amplifier using op - Amp 741. 	 UJT as voltage sweep generator. Astable multivibrator by using IC 555 timer. Monostable multivibrator by using IC 555 timer. IV characteristics of P-N diode and LED. Inverting amplifier using op - Amp 741.
Month Mar	rch			Module/Unit:	Sub-units planned
Course	Lect	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.	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



				Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.	Circuit. Analysis of a single- stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.
B.Sc. III	% 1	80	80		Practicals: 1) Study of divergence of
				LASER beam.	LASER beam.
				2) Measurement of wavelength of LASER using grating.	· · · · · · · · · · · · · · · · · · ·
				3) Lattice constant using XRD powder.	3) Lattice constant using XRD powder.
				4) To measure numerical aperture of optical fibre.	4) To measure numerical aperture of optical fibre.
		ll		5) Obtain interference fringes using Biprism.	5) Obtain interference fringes using Biprism.
Month Apri	1			Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination

Teacher Incharge

ESTD. FOR JUNE 1964

HeadHoffthe
Department of Physics
Vivekanand College, Kolhapill

"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: 2022-23

Subject: Physics

Name of the teacher: Dr. S. S. Latthe

Month June		Module/Unit:	Sub-units planned		
Course	Lect	Practicals	Total	Nucleus (Nuclear Structure & General Properties of nuclei)	Nucleus (Nuclear Structure & General Properties of nuclei)
B.Sc. II	12		12	Introduction, Constituents of nuclei, Nuclear size, Nuclear magnetic moment, Electric quadrupole moment, Nuclear spin, Unit of atomic mass (amu), Mass defect, Packing fraction, Packing fraction curve, Binding energy, B.E. curve, Nuclear forces, Liquid drop model, Semiempirical B.E. formula, Magic numbers, Introduction of elementary particles.	Introduction, Constituents of nuclei, Nuclear size, Nuclear magnetic moment, Electric quadrupole moment, Nuclear spin, Unit of atomic mass (amu), Mass defect, Packing fraction, Packing fraction curve, Binding energy, B.E. curve, Nuclear forces, Liquid drop model, Semiempirical B.E. formula, Magic numbers, Introduction of elementary particles.
B.Sc. III	12	.50	12	Particles Accelerators Need of accelerators, Types of accelerators (Qualitative) orbital accelerators, Cyclotron, (Principle, construction, working, theory, merits, demerits) . Limitation of cyclotron, Synchrocyclotron, (construction, working, theory) . Betatron, (principle, construction, working, mathematical theory, merits) Accelerators in India.	Particles Accelerators Need of accelerators, Types of accelerators (Qualitative) orbital accelerators, Cyclotron, (Principle, construction, working, theory, merits, demerits) . Limitation of cyclotron, Synchrocyclotron, (construction, working, theory) . Betatron, (principle, construction, working, mathematical theory, merits) Accelerators in India.



B.Sc. III	-	80	80	Practicals :	Practicals :
				1) Resonance pendulum.	1) Resonance pendulum.
				2) S. T. of soap solution.	2) S. T. of soap solution.
				3) S. T. by Fergusson modified method.	3) S. T. by Fergusson modified method.
				4) Y & η using flat spiral spring.	4) Y & η using flat spiral spring.
Month July	y			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Superposition of Harmonic Oscillations	Superposition of Harmonic Oscillations
B.Sc. II	12	~	12	Superposition of two perpendicular harmonic oscillations- for oscillations having	Superposition of two perpendicular harmonic oscillations- for oscillations having
				equal frequencies (Graphical and analytical methods) and oscillations having different	equal frequencies (Graphical and analytical methods) and oscillations having different
				frequencies (Lissajous figures), Uses of Lissajous figures.	frequencies (Lissajous figures), Uses of Lissajous figures.
B.Sc. III	12	re:	12	Superposition of Harmonic Oscillations	Superposition of Harmonic Oscillations
				Linearity and superposition principle, Composition of two simple harmonic motions,	Linearity and superposition principle, Composition of two simple harmonic motions,
				Superposition of two collinear harmonic oscillations for oscillations having equal frequencies	Superposition of two collinear harmonic oscillations- for oscillations having equal frequencies
				(Analytical and geometrical methods) and oscillations having different frequencies	(Analytical and geometrical methods) and oscillations having different frequencies
				(Beats)	(Beats)



B.Sc. III	<u>.</u>	80	80	Practicals:	Practicals:
		,		1) 'Y' by Koenig's method.	1) 'Y' by Koenig's method.
				2) 'Y' by cornu's method.	2) 'Y' by cornu's method.
				3) Measurement of heat capacity of solid.	3) Measurement of heat capacity of solid.
		:		4) S. T. tension by drop weight method.	4) S. T. tension by drop weight method.
				5) Young's modulus by vibration using AFG.	5) Young's modulus by vibration using AFG.
Month Aug	gust		<u></u>	Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Coupled Oscillations: Normal modes of vibration,	Coupled Oscillations: Normal modes of vibration,
B.Sc. II	12		12	normal coordinates, degrees of freedom, types of coupling, frequency of oscillatory	normal coordinates, degrees of freedom, types of coupling, frequency of oscillatory
		p-		systems, Energy transfer in coupled oscillatory system.	systems, Energy transfer in coupled oscillatory system.



B.Sc. III	12	=	12	Nuclear Radiation Detectors	Nuclear Radiation Detectors
				Introduction: Ionization chamber, G. M. counter, (principle, construction, working mechanism, limitations, merits) Scintillation Counter (principle, construction, working, advantages) Introduction to cosmic radiations, Wilson cloud chamber, Bubble chamber.	Introduction: Ionization chamber, G. M. counter, (principle, construction, working mechanism, limitations, merits) Scintillation Counter (principle, construction, working, advantages) Introduction to cosmic radiations, Wilson cloud chamber, Bubble chamber.
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 Sept	ember		<u> </u>	Module/Unit:	Sub-units planned
B.Sc. II	Lect	Practicals	Total	Waves Motionand Ultrasonic waves Waves Motion: Transverse waves on a string, travelling	Waves Motionand Ultrasonic waves Waves Motion: Transverse waves on a string, travelling



	12		12	and standing waves on a string, Normal modes of a string, Group velocity and Phase velocity, Plane waves, Spherical waves. Ultrasonic waves: Piezoelectric effect, Production of ultrasonic waves by Piezoelectric generator, Detection of ultrasonic waves, Properties ultrasonic waves, Applications of ultrasonic waves.	and standing waves on a string, Normal modes of a string, Group velocity and Phase velocity, Plane waves, Spherical waves. Ultrasonic waves: Piezoelectric effect, Production of ultrasonic waves by Piezoelectric generator, Detection of ultrasonic waves, Properties ultrasonic waves, Applications of ultrasonic waves.
B.Sc. III	12		12	Radioactive Decay Natural radioactivity, Artificial radioactivity, Study of alpha decay by magnetic spectrograph, Velocity of alpha particles, Range of α -particles, α - disintegration energy, fine structure of α -ray spectrometer, continuous nature, neutrino hypothesis, Gamma Decay, origin & gamma rays, γ - ray spectrum, internal conversion, Isomerism.	Radioactive Decay Natural radioactivity, Artificial radioactivity, Study of alpha decay by magnetic spectrograph, Velocity of alpha particles, Range of α - particles, α - disintegration energy, fine structure of α rays. Beta decay, Study by β - ray spectrometer, continuous nature, neutrino hypothesis, Gamma Decay, origin & gamma rays, γ - ray spectrum, internal conversion, Isomerism.
B.Sc. III	-	80	80	Practicals:	Practicals :
				1) Lloyd's single mirror.	1) Lloyd's single mirror.
				2) Double refracting prism	2) Double refracting prism
				3) Diameter of lycopodium powder.	3) Diameter of lycopodium powder.
				4) Spherical aberration.	4) Spherical aberration.
				5) Absorption of spectrum of KMno4 solution.	5) Absorption of spectrum of KMno4 solution.



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Month Oct	Month October/November			Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Examination	Examination
Month Dec	ember	*		Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Cardinal points Thick lens, combination of	Cardinal points Thick lens, combination of
B.Sc. II	12		12	lenses (system)Cardinal points of an optical system (definitions only), graphical construction of image using cardinal points, Newton's formula, relation between f and f ' for any optical system, relation between lateral, axial and angular magnifications.	lenses (system)Cardinal points of an optical system (definitions only), graphical construction of image using cardinal points, Newton's formula, relation between f and f ' for any optical system, relation between lateral, axial and angular magnifications.
B.Sc. III	12		12	Atomic Physics Quantum numbers , spatial quantization, vector atom model, Alkali Spectra, Optical spectral series, Spectral term spectral notation, energy level diagram of sodium, spin orbit interaction Zeeman effect, Explanation of Anomalous Zeeman effect on vector atom model, Anomalous Splitting of D1 and D2 Line	Atomic Physics Quantum numbers , spatial quantization, vector atom model, Alkali Spectra, Optical spectral series, Spectral term spectral notation, energy level diagram of sodium, spin orbit interaction Zeeman effect, Explanation of Anomalous Zeeman effect on vector atom model, Anomalous Splitting of D1 and D2 Line



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B.Sc. III	-	80	80	Practicals:	Practicals:
				1) e/m of electron by Thomson's method.	1) e/m of electron by Thomson's method.
				2) Measurement of dielectric constant.	2) Measurement of dielectric constant.
				3) Resistivity of semiconductor crystal with temperature by four probe method.	3) Resistivity of semiconductor crystal with temperature by four probe method.
				5) Calibration of wire using Carey-foster key	5) Calibration of wire using Carey-foster key
Month Janu	iary			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Resolving Power of optical instruments	Resolving Power of optical instruments
B.Sc. II	12	·=	12	Resolution, Resolving power of optical instruments, Rayleigh's criterion for the limit of	Resolution, Resolving power of optical instruments, Rayleigh's criterion for the limit of
				resolution, Modified Rayleigh's criterion, comparison between magnification and resolution,	resolution, Modified Rayleigh's criterion, comparison between magnification and resolution,
				resolving power of plane diffraction grating, resolving power of a prism.	resolving power of plane diffraction grating, resolving power of a prism.
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B.Sc. III	12		12	Molecular Physics	Molecular Physics
				Molecular system, type of bonds, diatomic molecule as a rigid rotator rotational states of diatomic molecule, Raman effect, Experimental study of Raman effect, classical theory of Raman effect, Applications of Raman effect.	Molecular system, type of bonds, diatomic molecule as a rigid rotator rotational states of diatomic molecule, Raman effect, Experimental study of Raman effect, classical theory of Raman effect, Applications of Raman effect.
B.Sc. III	3	80	80	Practicals:	Practicals:
				1) Self inductance by Owen's bridge.	1) Self inductance by Owen's bridge.
				2) Self inductance by Rayleigh's method.	2) Self inductance by Rayleigh's method.
			1	3) Self inductance by Maxwell bridge.	3) Self inductance by Maxwell bridge.
				4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
				5) Hysteresis by	5) Hysteresis by
	=			magnetometer.	magnetometer.
Month February				Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Polarization of light	Polarization of light



B.Sc. II	12	25	12	Revision of plane of vibration , plane polarization, perpendicular vibration ,parallel vibrations,	Revision of plane of vibration , plane polarization, perpendicular vibration ,parallel vibrations,
				polarization by reflection and refraction, Idea of polarization, polarization by double	polarization by reflection and refraction, Idea of polarization, polarization by double
				refraction, Huygens explanation of double refraction through uniaxial crystals, Nicol	refraction, Huygens explanation of double refraction through uniaxial crystals, Nicol
				prism(construction, working), production and detection of circularly and elliptically polarized	prism(construction, working), production and detection of circularly and elliptically polarized
				light, optical rotation - laws of rotation of plane of polarization, polarimeter.	light, optical rotation - laws of rotation of plane of polarization, polarimeter.
B.Sc. III	12	=	12	Principle of Superposition ,Coherence and condition for interference, Division of amplitude	Principle of Superposition ,Coherence and condition for interference, Division of amplitude
				and division of wave front, Division of wave front – Lloyds single mirror(determination of	and division of wave front, Division of wave front – Lloyds single mirror(determination of
				wavelength of light of monochromatic source),Division of amplitude- Interference in thin	wavelength of light of monochromatic source),Division of amplitude-Interference in thin
				parallel films (reflected light only), Wedge shaped films, Newton's rings and its application	parallel films (reflected light only), Wedge shaped films, Newton's rings and its application
				for determination of wavelength and refractive index of light.	for determination of wavelength and refractive index of light.



B.Sc. III	<u> </u>	80	80	Practicals:	Practicals :
				1) Study of divergence of LASER beam.	1) Study of divergence of LASER beam.
				Measurement of wavelength of LASER using grating.	2) Measurement of wavelength of LASER using grating.
				3) Lattice constant using XRD powder.	3) Lattice constant using XRD powder.
				4) To measure numerical aperture of optical fibre.	4) To measure numerical aperture of optical fibre.
				5) Obtain interference fringes using Biprism.	5) Obtain interference fringes using Biprism.
Month Mar	ch	J.		Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Laser Physics Ordinary Light, Laser,	Laser Physics Ordinary Light, Laser,
B.Sc. II	12		12	Spontaneous and stimulated emission, Populations Inversion, Monochromaticity, directionality, Pumping (optical, electrical) Ruby laser He-Ne laser, Diode laser, Laser applications, (Industrial, medical, nuclear, optical), Types of lasers	Spontaneous and stimulated emission, Populations Inversion, Monochromaticity, directionality, Pumping (optical, electrical) Ruby laser He-Ne laser, Diode laser, Laser applications, (Industrial, medical, nuclear, optical), Types of lasers



B.Sc. III	12	Væ	12	Space Science	Space Science
				Cosmology, Big-bang theory, oscillating theory, steady-state theory, Hubble's law, cosmological tests, Milky way galaxy, our solar system, features of sun, interior of sunspots, static characteristics of earth and mars.	Cosmology, Big-bang theory, oscillating theory, steady-state theory, Hubble's law, cosmological tests, Milky way galaxy, our solar system, features of sun, interior of sunspots, static characteristics of earth and mars.
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 Apri	Month April			Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination



Head by the
Department Physics
Vivekanand College, Kolhapur

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

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

Month June				Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Physical interpretation of wave function, Schrodinger's time dependent and	Physical interpretation of wave function, Schrodinger's time dependent and
B.Sc. III	12		12	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	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	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	/e	64	64	Practicals:	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.	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 J	uly			Module/Unit:	Sub-units planned
Course	Lect	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-Broiglie 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-Broiglie 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.	16	a a a a a a a a a a a a a a a a a a a	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	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



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				idea of global positioning system (GPS) and its	system (GPS) and its applications
B.Sc.	4	64	64	Practicals:	Practicals:
II				l) Characteristics of Transistor.	1) Characteristics of Transistor.
				2) Use of sextant to measure height of object.	2) Use of sextant to measure height of object.
				3) Crystal Oscillator.	3) Crystal Oscillator.
				4) Colpitts oscillator.	4) Colpitts oscillator.
Month A	August			Module/Unit:	Sub-units planned
Course	Lect	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 L2 and components of L, Raising and lowering operator L+ and L Eigen values of L2 and L1. Concept of parity operator.	momentum operator, Angular



				Concept of Hermitian operator.	Concept of Hermitian operator.
B.Sc. I	16		16	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.	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 determine wavelength of 1) Sodium &2)spectrum of Mercury light usingplane diffraction grating. 2). Goniometer I-To study cardinal points of opticalsystem. 3) Goniometer II- To study the equivalent focal length of opticalsystem.	Practicals: 1) To determine wavelength of 1) Sodium &2)spectrum of Mercury light usingplane diffraction grating. 2). Goniometer I-To study cardinal points of opticalsystem. 3) Goniometer II- To study the equivalent focal length of opticalsystem.



				4) To study angle of specific rotation of sugar using Polarimeter.	4) To study angle of specific rotation of sugar using Polarimeter.
Month Se	eptembe	er		Module/Unit:	Sub-units planned
B.Sc.	Lect	Practicals	Total	Applications of Schrodinger's Steady State Equation Quantum mechanics treatment of particle in rigid box (1D and 3D). Step	Applications of Schrodinger's Steady State Equation Quantum mechanics treatment of particle in rigid box (1D and 3D). Step
	12	•	12	potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α-decay, simple harmonic oscillator.	potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α-decay, simple harmonic oscillator.



B.Sc. I	16	=	16	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.	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	5)	64	64	Practicals :	Practicals :
				1) Measurement of rise, fall and delay time using a CRO	1) Measurement of rise, fall and delay time using a CRO
				2) Measurement of distortion of a RF signal generator using distortion factor meter.	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.	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	4) Measurement of time period, frequency, average period using using universal counter/frequency counter
Month O	Month October/November			Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Examination	Examination
Month D	ecembe	er	-1.	Module/Unit:	Sub-units planned
	Lect	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	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 T	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 T
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 Ja	Lect ures	Practicals	Total	Module/Unit: Dielectric Properties of Materials	Sub-units planned Dielectric Properties of Materials



B.Sc.	12	=	12	Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability.	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.	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	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	30	64	64	Practicals:	Practicals :
				To determine the wavelength of sodium light using Fresenel Biprism.	1) To determine the wavelength of sodium light using Fresenel Biprism.
				2) To determine the Resolving Power of a Prism.	2) To determine the Resolving Power of a Prism.
				3) To determine the Resolving Power of a Plane Diffraction Grating.	3) To determine the Resolving Power of a Plane Diffraction Grating.
			1	4) To determine wavelength of Laser light using diffraction of single slit.	4) To determine wavelength of Laser light using diffraction of single slit.
Month F	ebruary			Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	X-Ray Diffraction	X-Ray Diffraction
B.Sc. III	12		12	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	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. 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 lawat earth's surface	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 lawat earth's surface



B.Sc. II	#	64	64	Practicals:	Practicals:
				1)To determine the value of Stefan's Constant.	
				2) To determine the coefficient of thermal conductivity of copper by Searle's Apparatus.	coefficient of thornes
				3) To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.	1 2 acternine me
				4) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method	4) To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method
Month Ma	ırch			Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total		Magnetic Materials and their Properties:
B.Sc.	12		12	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferrimagnetic and ferrimagnetic	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic,



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:	Practicals:
				1) To observe the loading effect of a multimeter while measuring voltage across a low resistance and high resistance.	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.	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.	3) To measure Q of a coil and its dependence on frequency using a Q-meter.
Month A	1			4) Measurement of voltage, frequency, time period and phase angle using CRO	4) Measurement of voltage, frequency, time period and phase angle using CRO
Month Apri	1			Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination



Head of the Department of Physics Vivekanand College, Kolhapur

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

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

Month June				Module/Unit:	Sub-units planned
Course	Lect	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	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) 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	y			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Kinetic Theory of Gases and thermometry	Kinetic Theory of Gases and thermometry
B.Sc. II	12	2	12	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of
				velocities and its experimental verification, Transport Phenomena: transport of momentum	velocities and its experimental verification, Transport Phenomena: transport of momentum
				(viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),	(viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),
B.Sc. III	12	-	12	Crystal Structure	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,	Amorphous, crystalline, lattice, lattice translation vectors, lattice with basis



B.Sc. III	PET CONTRACTOR	80	80	Practicals:	Practicals:
				1) Self inductance by Owen's bridge.	1) Self inductance by Owen's bridge.
				2) Self inductance by Rayleigh's method.	2) Self inductance by Rayleigh's method.
				3) Self inductance by Maxwell bridge.	3) Self inductance by Maxwell bridge.
	100			4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
				5) Hysteresis by magnetometer.	5) Hysteresis by magnetometer.
Month Au	gust			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Laws of Thermodynamics	Laws of Thermodynamics
B.Sc. II	ures 12	.=.	12	Thermodynamic system, thermodynamic thermodynamic equation of state,	Thermodynamic system, thermodynamic variables, thermodynamic state, equation of state,
				thermodynamic equilibrium, Zeroth Law of thermodynamics, Internal energy, First law of	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	thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law
				(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV	(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV



B.Sc. III	12	80	80	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 ferromagnetic domain, Hysteresis loop for ferromagnetic materials. 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	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 ferromagnetic domain, Hysteresis loop for ferromagnetic materials. 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 Sep	tember		•	Module/Unit:	Sub-units planned
B.Sc. II	Lect	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



Entropy change in coof heat, diffusion of gases significance of entrattainability of absortance Zero	significance), change in entropy, Entropy changes in reversible & irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat, physical ropy, Un- significance), change in entropy changes in reversible & irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat,
law of thermode Entropy change in coof heat, diffusion of gases significance of entrattainability of absolutero	dynamics, onduction of heat, ,physical ropy, Un- law of thermodynamics, Entropy change in conduction of heat, diffusion of gases ,physical significance of entropy, Un-
significance of entrattainability of absorbero	ropy, Un- significance of entropy, Un-
	Zero
point energy.	point energy.
B.Sc. III 12 - 12 Instrumentations :Introduction to CR	Instrumentations RO :Introduction to CRO
Block Diagram of Applications of C Study of Wavefor Measurement of Current, Frequence Phase Difference.	CRO: (1) Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage,
B.Sc. III - 80 80 1) 'Y' by Koenig's n	method. 1) 'Y' by Koenig's method.
2) 'Y' by cornu's me	,
3) Measurement capacity of solid.	of heat 3) Measurement of heat capacity of solid.
4) S. T. tension by drumethod.	rop weight 4) S. T. tension by drop weight method.
5) Young's mod vibration using AFG	
Month October/November Module/Unit:	Sub-units planned

(4)

*80

	Lect ures	Practicals	Total	Examination	Examination
Month Dec	ember			Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Thermodynamic Potentials	Thermodynamic Potentials
B.Sc. II	ures 12	i e	12	Enthalpy, Gibbs, Helmholtz, Internal Energy functions,	Enthalpy, Gibbs, Helmholtz, Internal Energy functions, Maxwell's thermodynamical
				Maxwell's thermodynamical relations, Joule-Thomson effect, Clausius- Clapeyron equation, Expression for (CP – CV),	relations, Joule-Thomson effect, Clausius- Clapeyron equation, Expression for (CP – CV),
				CP/CV, TdS equations.	CP/CV, TdS equations.
B.Sc. III	12		12	Superconductivity	Superconductivity
				Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect	Idea of superconductivity, Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect
B.Sc. III	1	80	80	Practicals:	Practicals:
				1) Self inductance by Owen's bridge.	1) Self inductance by Owen's bridge.
				2) Self inductance by Rayleigh's method.	2) Self inductance by Rayleigh's method.
				3) Self inductance by Maxwell bridge.	3) Self inductance by Maxwell bridge.
				4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
				5) Hysteresis by magnetometer.	5) Hysteresis by magnetometer.
Month Jan	uary			Module/Unit:	Sub-units planned

Course	Lect	Practicals	Total	Theory of Radiation	Theory of Radiation
B.Sc. II	ures 12	-	12	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature	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.	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 brust oscillator, voltage controlled frequency shifters. Monostable operation: circuit diagram, Applications as touch switch and frequency divider. Bistable Operation: Circuit diagram and circuit action.	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:



B.Sc. III	=:	80	80	Practicals:	Practicals:
				1) e/m of electron by Thomson's method.	1) e/m of electron by Thomson's method.
				2) Measurement of dielectric constant.	2) Measurement of dielectric constant.
				3) Resistivity of semiconductor crystal with temperature by four probe method.	· ·
				5) Calibration of wire using Carey-foster key	5) Calibration of wire using Carey-foster key
Month Febr	ruary		I	Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Classical statistics	Classical statistics
B.Sc. II	ures 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	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	ŝ	80	80	Practicals:	Practicals:
				 UJT as voltage sweep generator. Astable multivibrator by using IC 555 timer. Monostable multivibrator by using IC 555 timer. IV characteristics of P-N diode and LED. Inverting amplifier using op - Amp 741. 	 UJT as voltage sweep generator. Astable multivibrator by using IC 555 timer. Monostable multivibrator by using IC 555 timer. IV characteristics of P-N diode and LED. Inverting amplifier using op - Amp 741.
Month Mar	ch			Module/Unit:	Sub-units planned
Course	Lect	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:	Bipolar Junction transistors:
O COLLA				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.	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

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				Analysis of a single-stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.	Circuit. Analysis of a single- stage CE amplifier using Hybrid Model. Input and Output Impedance, Current, Voltage and Power Gains.
B.Sc. III	120	80	80	Practicals :	Practicals:
				1) Study of divergence of LASER beam.	1) Study of divergence of LASER beam.
				2) Measurement of wavelength of LASER using grating.	2) Measurement of wavelength of LASER using grating.
				3) Lattice constant using XRD powder.	3) Lattice constant using XRD powder.
				4) To measure numerical aperture of optical fibre.	4) To measure numerical aperture of optical fibre.
				5) Obtain interference fringes using Biprism.	5) Obtain interference fringes using Biprism.
Month Apri	1			Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination



Head of the
Department of Physics
Vivekanand College, Kolhapur

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

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

Month J	une			Module/Unit:	Sub-units planned
	Practica	Lectures	Total	Practicals:	Practicals:
	ls			1)Measurements of length (or	1)Measurements of length (or
D.C. I	1.0		1.6	diameter) using Vernier	diameter) using Vernier
B.Sc. I	16	**	16	calliper, screw gauge,	calliper, screw gauge,
				spherometer and travelling	spherometer and travelling
				microscope.	microscope.
				2) To determine the Moment	2) To determine the Moment
				of Inertia of a Flywheel.	of Inertia of a Flywheel.
				3) To determine the Moment	3) To determine the Moment
				of inertia of a disc using	of inertia of a disc using
				auxiliary annular ring.	auxiliary annular ring.
				4) Young's modulus of	4) Young's modulus of
				material of Bar by vibration	material of Bar by vibration
Month J	uly			Module/Unit:	Sub-units planned
B.Sc.	16	-	16	Practicals:	Practicals:
I				1)Measurements of length (or	1)Measurements of length (or
				diameter) using Vernier	diameter) using Vernier
				calliper, screw gauge,	calliper, screw gauge,
				spherometer and travelling	spherometer and travelling
				microscope.	microscope.
				2) To determine the Moment	2) To determine the Moment
				of Inertia of a Flywheel.	of Inertia of a Flywheel.
				3) To determine the Moment	3) To determine the Moment
				of inertia of a disc using	of inertia of a disc using
				auxiliary annular ring.	auxiliary annular ring.
				4) Young's modulus of	4) Young's modulus of
				material of Bar by vibration	material of Bar by vibration
Month A	August	-1/1		Module/Unit:	Sub-units planned
B.Sc. I	16		16	Practicals:	Practicals:
				1)Modulus of rigidity of	1)Modulus of rigidity of
				material of wire by torsional	material of wire by torsional
				oscillations.	oscillations.
				2) Y/η of Wire by Searle's	2) Y/η of Wire by Searle's
		D.		method.	method.
				3)To determine g by Bar	3)To determine g by Bar
				Pendulum.	Pendulum.
				4) To determine g by Kater's	4) To determine g by Kater's
				Pendulum.	Pendulum.
Month	September		_	Module/Unit:	Sub-units planned
MICHILIT	26 hreunoer			Module/Offic.	Out and planted



B.Sc. I	16 October/No		16	Practicals: 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Υ/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater' Pendulum.	oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar
B.Sc. I	16	vember		Module/Unit:	Sub unit 1
	10		16	Examination	Sub-units planned Examination
Moud					~Xummation
Month D				Module/Unit:	
B.Sc. I	16 B.Sc.		16	Practicals:	Sub-units planned Practicals:
Month Jan				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.	(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
	uary 16			Module/Unit:	series LCR circuit.
			16	using De'Sauty's bridge. 4) To determine impedance of	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.
				1	1



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 M			ř	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 A	pril			Module/Unit:	Sub-units planned
Lectures		Practical s	Total	Examination	Examination





Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

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

Month J				Module/Unit:	
	Practica	Lectures	Total	Practicals:	Sub-units planned
	ls			1) Measurant C	Practicals:
B.Sc. I	16			1)Measurements of length	
	10		16	diameter) using Vern	nier diameter) using Ver
				calliper, screw gau	ge callings
				spherometer and travelli	ing and
				inicroscope.	i. and travell
				2) To determine the Mome	ent 2) To determine d
	1	1		of inertia of a Flywheel	cr ascermine the Mom
		1		3) 10 determine the Mome	of Inertia of a Flywheel.
1	1	1		of mertia of a disc using	
				auxillary annular ring	
	1	1		4) Young's modulus of	auxiliary annular ring
Month Jul	V			material of Bar by vibration	4) Young's modulus of
B.Sc. 10				Module/Unit:	material of Bar by vibration
[,	-	16	Practicals:	Sub-units planned
	1		10	1)Measurements of length (o	Practicals:
	- 1	1		diameter) using Vernie	
		1	1	calling	(using Verni
1	1	1	1	Sauge	, calliper, screw
	1			spnerometer and travelling microscope.	spherometer and travelling
		1		2) To datamai at a s	microscope.
				2) To determine the Moment	2) To determine the Momen
	II.	1	1	of Inertia of a Flywheel.	of Inertia of a Flywheel.
	1	1	1	3) To determine the Moment	3) To determine the Moment
	1			of inertia of a disc using	of inertia of a disc using
	1	9	1	auxiliary annular ring.	auxiliary annular ring.
		1	'	4) Young's modulus of	4) Young's modulus of
onth Augu	st		1	naterial of Bar by vibration	material of Por least
Sc. I 16		10		viodule/Unit:	material of Bar by vibration Sub-units planned
	1	16		Practicals:	Practicals:
		1	1)Modulus of rigidity of	1)Model Color
	1		n	naterial of wire by torsional	1)Modulus of rigidity of
		1	0	scillations.	material of wire by torsional
			2) Y/η of Wire by Searle's	Oscillations
		1	111	ethod.	2) Y/η of Wire by Searle's
		1	3)	To determine g by Bar	method.
		1	Pe	naulum	3)To determine g by Bar
			(4)	To detarmain 1	Pendulum.
			Pe	ndulum	4) To determine g by Kater's
			1.		Pendulum.
th Septem	ber		N.	1.1.0	1
-			Me	odule/Unit:	Sub-units planned



Month (October/No	ovember.		Practicals: 1) Modulus of rigidity of material of wire by torsiona oscillations. 2) Υ/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.	oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar
B.Sc. I	16	- Carloci	16	Module/Unit:	Sub-units planned
			10	Examination	Examination
Month F)ecember				
B.Sc. I	16 B.Sc.			Module/Unit:	Sub
D.SC. 1	I B.Sc.	-	16	Practicals:	Sub-units planned Practicals:
Month Jan				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.	(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
				Module/Unit:	series LCR circuit.
	16	•:	16 16	Practicals:	Sub-units planned Practicals:
antl. E.				3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	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
onth Febru	ıary			Module/Unit:	circuit.



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	Module/Unit: 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	Sub-units planned 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 Lectures	Practical s	Total	Module/Unit: Examination	Sub-units planned Examination



Herrogf the
Department of Physics
Vivekanand College, Kolhaput

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

Name of the teacher: Miss P. Y. Hawaldar

Practica			Module/Unit:	Sub-units planned
ls	Lectures	Total	Practicals: 1)Measurements of length (or	Practicals: 1)Measurements of length (or
B.Sc. I 16	=	16	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	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. 16	5.	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) Υ/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) Υ/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	5 0	16	Practicals:	Practicals:
				1) Modulus of rigidity of material of wire by torsional oscillations.	1) Modulus of rigidity of material of wire by torsional oscillations.
				2) Y/η of Wire by Searle's	2) Y/η of Wire by Searle's
				method.	method.
				3)To determine g by Bar	3) To determine g by Bar
				Pendulum.	Pendulum.
				4) To determine g by Kater's Pendulum.	4) To determine g by Kater's Pendulum.
Month O	ctober/Nov	ember		Module/Unit:	Sub-units planned
B.Sc. I	16		16	Examination	Examination
Month D	ecember			Module/Unit:	Sub-units planned
B.Sc. I	16 B.Sc.	=	16	Practicals :	Practicals:
	1			1)Use a Multimeter for	1)Use a Multimeter for
				measuring (a) Resistances, (b)	measuring (a) Resistances,
				AC and DC Voltages, (c),	(b) AC and DC Voltages, (c),
				Checking electrical fuses and Continuity.	Checking electrical fuses and Continuity.
				2) To determine constants of	2) To determine constants of
				B. G.	B. G.
				3) To compare capacitances	3) To compare capacitances
				using De'Sauty's bridge.	using De'Sauty's bridge.
				4) To determine impedance of	4) To determine impedance of
				series LCR circuit.	series LCR circuit.
Month Ja				Module/Unit:	Sub-units planned
B.Sc. I	16		16		
B.Sc. I	16	=	16	Practicals :	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.	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 Fe	l ebruary			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 N	larch			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 A	pril			Module/Unit:	Sub-units planned
Lectures		Practical s	Total	Examination	Examination

P.Y. Hawldor Teacher Incharge



Head of the
Department of Physics
Tivekanand College, Kolhapur

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

Name of the teacher: Mr. R. P. Mungale

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: B.Sc. 16 - 16 Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, calliper, screw	Vernier gauge, velling oment . oment using
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 B.Sc. 16 I Dracticals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 2) To determine the Moment	Vernier gauge, velling oment . oment using
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: B.Sc. 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 disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 2) To determine the Moment	gauge, velling oment oment using
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: B.Sc. 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 disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 2) To determine the Moment	oment oment using
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: B.Sc. 16 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 of Inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 2) To determine the Moment	oment oment using
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: B.Sc. 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 of Inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibra duxerial of Bar by vibra sub-units planned 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 of Inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibra diameterial of Bar by vibra diameterial of Bar by vibra sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier diameter) using Vernier diameter and travelling microscope. 2) To determine the Moment 2) To determine the Moment of Inertia of a Flywheel of Inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibra diametrial of Bar by vibra	oment using
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 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 M of inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned 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 M	oment using
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: B.Sc. 16 I Practicals: 1)Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 3) To determine the M of inertia of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibra material	oment using
of inertia of a disc using auxiliary annular ring. 4) Young's modulus of adjust auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Month July Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier diameter) using Vernier adjusted auxiliary annular ring. 4) Young's modulus of material of a disc auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Colored auxiliary annular ring. Colored auxiliary ann	using
auxiliary annular ring. 4) Young's modulus of 4) Young's modulus of 4) Young's modulus of material of Bar by vibration Month July Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 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 2) To determine the M	C
4) Young's modulus of material of Bar by vibration Month July Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 4) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment 3) Young's modulus of material of Bar by vibration Module/Unit: Sub-units planned Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope.	. •
material of Bar by vibration material of Bar by vibration Month July Module/Unit: Sub-units planned	. •
Month July B.Sc. 16 I Module/Unit: Sub-units planned Practicals: 1)Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment Sub-units planned Practicals: 1)Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment Sub-units planned Practicals: 1)Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope.	
B.Sc. 16 I Practicals: 1)Measurements of length (or diameter) using Vernier diameter) using Vernier diameter) using Vernier calliper, screw gauge, calliper, screw spherometer and travelling microscope. 2) To determine the Moment 2) To determine the M	tion
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diameter) using Vernier diameter) using V calliper, screw gauge, calliper, screw spherometer and travelling microscope. 2) To determine the Moment 2) To determine the M	- 41-
calliper, screw gauge, calliper, screw spherometer and travelling spherometer and travelling microscope. 2) To determine the Moment 2) To determine the M	
spherometer and travelling spherometer and travelling microscope. microscope. 2) To determine the Moment 2) To determine the M	ernier
microscope. microscope. 2) To determine the Moment 2) To determine the M	gauge,
2) To determine the Moment 2) To determine the M	velling
	oment
of metha of a rhywheef. Of metha of a rhywheef	
3) To determine the Moment 3) To determine the M	
of inertia of a disc using of inertia of a disc	
auxiliary annular ring. auxiliary annular ring.	using
4) Young's modulus of 4) Young's modulus of	
material of Bar by vibration material of Bar by vibra	tion
Month August Module/Unit: Sub-units planned	
B.Sc. I 16 - 16 Practicals: Practicals:	
1)Modulus of rigidity of 1)Modulus of rigidity of	f
material of wire by torsional material of wire by torsi	
oscillations. oscillations.	
2) Y/η of Wire by Searle's 2) Y/η of Wire by Searl	e's
method. method.	
3)To determine g by Bar 3)To determine g by Ba	r
Pendulum. Pendulum.	
4) To determine g by Kater's 4) To determine g by Kater's	ater's
Pendulum. 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 C	ctober/Nov	/ember	_	Module/Unit:	Sub-units planned
B.Sc. I	16	Cintoci	16	Examination	Examination
Month D	December			Module/Unit:	Sub-units planned
B.Sc. I	16 B.Sc. I	70	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 Ja				Module/Unit:	Sub-units planned
B.Sc. I 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 F	ebruary			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 N	Aarch			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	
				Module/Unit:	Sub-units planned	
Month /		Practical	Total	Examination	Examination	
Lectures		Practical	1 (3)(0)			

Marsleff Teacher Incharge



Department of Physics Vivekanand College, Kolliaou

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2022-23

Subject: Physics

Name of the teacher: Mr. Anurath Nagnath Gore

Month July				Module/Unit:	Sub-units planned
Course B.Sc. I	Paper Mechanics – II	Lectures 16	Total 16	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	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		Practicals 32	32	applications. 1. Measurement of Planck's constant using Black body radiation. 2. To determine the value of Stefan's 4 th. power of low. 3. To study Lissajous figures by using CRO. 4. To determine the frequency of an electrically maintained tuning fork by Melde's experiment and to verify λ2– T Law. 5. Goniometer I-To study cardinal points of optical system. 6. To determine the Resolving Power of a Plane Diffraction Grating. 7. Characteristics of Transistor. 8. A. C/D. C Sentivity by C.R.O	C.R.O
Month Augu	Month August			Module/Unit:	Sub-units planned
Course B.Sc. I	Paper Mechanics – II	Lectures 16	Total 1.6	Simple harmonic motion (SHM), Differential	Simple harmonic motion (SHM), Differential



B.Sc. II	Practicals	32	32	equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations, Forced oscillations. 1. Measurement of Planck's constant using Black body radiation. 2. To determine the value of Stefan's 4 th. power of low. 3. To study Lissajous figures by using CRO. 4. To determine the frequency of an electrically maintained tuning fork by Melde's experiment and to verify λ2– T Law. 5. Goniometer I-To study cardinal points of optical system. 6. To determine the Resolving Power of a Plane Diffraction Grating. 7. Characteristics of Transistor. 8. A. C/D. C Sentivity by C.R.O	equation of SHM and its solutions, Kinetic and Potential Energy, Total Energy and their time averages, Damped oscillations, Forced oscillations. 1. Measurement of Planck's constant using Black body radiation. 2. To determine the value of Stefan's 4 th. power of low. 3. To study Lissajous figures by using CRO. 4. To determine the frequency of an electrically maintained tuning fork by Melde's experiment and to verify λ2– T Law. 5. Goniometer I-To study cardinal points of optical system. 6. To determine the Resolving Power of a Plane Diffraction Grating. 7. Characteristics of Transistor. 8. A. C/D. C Sentivity by C.R.O
Month September					
Course	paper	Lectures	Total	Module/Unit:	Sub-units planned
B.Sc. I	Mechanics – II	16	16	Unit-II- 3 .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	Unit-II- 3 .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
Course		Practicals	Total	Module/Unit:	Sub-units planned



B.Sc-II	32	32	1. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method. 2. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method. 3. To determine coefficient of viscosity of water by capillary flow method (Poiseuille's Method. 4. Viscosity of liquid by Searl's viscometer. 5. Goniometer II- To study the equivalent focal length of optical system. 6. To determine the Resolving Power of a Prism. 7. Transistor as a regulated power supply. 8. Costant of B.G.	1. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method. 2. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method. 3. To determine coefficient of viscosity of water by capillary flow method (Poiseuille's Method. 4. Viscosity of liquid by Searl's viscometer. 5. Goniometer II- To study the equivalent focal length of optical system. 6. To determine the Resolving Power of a Prism. 7. Transistor as a regulated power supply. 8. Costant of B.G.
Month October			Module/Unit:	Sub-units planned
Course- B.Sc. I	Lecture	Total	Unit-II .4. Surface	Unit-II .4. Surface Tension:
Mechanics – II	16	16	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 App	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.
Course	Practicals	Total	Module/Unit:	Sub-units planned
B.Sc-II			1. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method. 2. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method. 3. To determine coefficient of viscosity of water by capillary flow method (Poiseuille's	1. To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton's disc method. 2. To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow method. 3. To determine coefficient of viscosity of water by capillary flow method (Poiseuille's
ANDO	Li-			



Month December			Method. 4. Viscosity of liquid by Searl's viscometer. 5. Goniometer II- To study the equivalent focal length of optical system. 6. To determine the Resolving Power of a Prism. 7. Transistor as a regulated power supply. 8. Costant of B.G Module/Unit:	Method. 4. Viscosity of liquid by Searl's viscometer. 5. Goniometer II- To study the equivalent focal length of optical system. 6. To determine the Resolving Power of a Prism. 7. Transistor as a regulated power supply. 8. Costant of B.G Sub-units planned
			Modale onto	-
Course: B.ScI Paper- ELECTRICITY AND MAGNETISM – II	Lecture 16	Total 16	Unit-1.1. Vector Differential (07) Introduction, Del operator, gradient of	1. Vector Differential: (07) Introduction, Del operator, gradient of scalar field and its physical
			scalar field and its physical significance, divergence of vector field and its physical significance, curl of vector field	significance, divergence of vector field and its physical significance, curl of vector field
B.Sc-II	Practicals 32	Total 32	1. To determine the the thermal conductivity of good conductor by Forb's Method. 2. Temperature of flame. 3. To determine the velocity of sound in air by resonating bottle. 4. To determine the velocity of sound in air by Kundt's tube. 5. Determination of Cuachy's constant. 6. Determination of wavelength of light using Newton's ring. 7. Resistance of B.G. by half deflection method. 8. Bridge rectifier with π filter.	 To determine the the thermal conductivity of good conductor by Forb's Method. Temperature of flame. To determine the velocity of sound in air by resonating bottle. To determine the velocity of sound in air by Kundt's tube. Determination of Cuachy's constant. Determination of wavelength of light using Newton's ring. Resistance of B.G. by half deflection method Bridge rectifier with π filter
Month January				
Course- B.ScI			Module/Unit:	Module/Unit:
Paper- ELECTRICITY AND MAGNETISM – II	Lecture 16	Total 16	Unit-1.2.Vector Integral Line integral, surface integral, volume integral (definitions only), Gauss divergence theorem (statements and proof), Statements of Stoke's theorem, Greens symmetrical theorem	Unit-1.2. Vector Integral Line integral, surface integral, volume integral (definitions only), Gauss divergence theorem (statements and proof), Statements of Stoke's theorem, Greens symmetrical theorem



Course- B.ScII	Practicals 32	Total 32	Module/Unit:	Module/Unit:
			1. To determine the the thermal conductivity of good conductor by Forb' Method. 2. Temperature of flame. 3. To determine the velocity of sound in air bresonating bottle. 4. To determine the velocity of sound in air bresonating bottle. 5. Determination of Cuachy's constant. 6. Resolving power of grating. 7. Transistor as regulated power supply.	Method. 2. Temperature of flame. 3. To determine the velocity of sound in air by resonating bottle. 4. To determine the velocity of sound in air by Kundt's tube. 5. Determination of Cuachy's constant. 6. Resolving power of grating. 7. Transistor as regulated
Month February	Lecture	Total	Module/Unit	power supply. Sub-units planned
Paper- ELECTRICITY AND MAGNETISM - II Durse- B.Sc-II	Practicals 7	: 1 2 6	I. Electrostatics: (10) Electrostatic field, electric flux, Gauss's theorem of electrostatics, electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere, calculation of electric field from potential, capacitance of an isolated spherical conductor, parallel plate, spherical and cylindrical condenser, energy per unit volume in electrostatic field.	1. Electrostatics: (10) Electrostatic field, electric flux, Gauss's theorem of electrostatics, electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere, calculation of electric field from potential, capacitance of an isolated spherical conductor, parallel plate, spherical and cylindrical condenser, energy per unit volume in electrostatic field.
		to or reconstruction of the second of the se	mf across two junction of thermosymf across two junction of thermocouple with emperature. To investigate the otion of coupled scillators. Coilpitt's oscillator. Determination of ickness of thin film ing interference of edge shaped thin film.	1.To determine the temperature of coefficient of resistance of platinum resistance thermometer. 2. Variation of thermos emf across two junction of thermocouple with temperature. 3. To investigate the motion of coupled oscillators. 4. Coilpitt's oscillator. 5. Determination of hickness of thin film using nterference of wedge haped thin film. 6. Polarimeter.



20			8.High resistance by Leakage method.	8.High resistance by Leakage method.
Month March	Lecture	Total	Module/Unit	Sub-units planned
Course- B.ScI				
Paper- ELECTRICITY AND MAGNETISM – II	16	16	unit-II.4. Dielectrics: Dielectric medium, polarization vector, displacement vector, Gauss's theorem in dielectrics, Parallel plate capacitor completely filled with dielectric.	unit-II.4. Dielectrics Dielectric medium, polarization vector, displacement vector, Gauss's theorem in dielectrics, Parallel plate capacitor completely filled with dielectric.
Course- B.Sc-II			Module/Unit	Sub-units planned
	Practicals 32	Total 32	1.To determine the temperature of coefficient of resistance of platinum resistance thermometer. 2. Variation of thermos emf across two junction of thermocouple with temperature. 3. To investigate the motion of coupled oscillators. 4. Coilpitt's oscillator. 5. Determination of thickness of thin film using interference of wedge shaped thin film. 6. Polarimeter. 7. Calibration of bridge wire by Griffith's method. 8. High resistance by Leakage method.	1.To determine the temperature of coefficient of resistance of platinum resistance thermometer. 2. Variation of thermos emf across two junction of thermocouple with temperature. 3. To investigate the motion of coupled oscillators. 4. Coilpitt's oscillator. 5. Determination of thickness of thin film using interference of wedge shaped thin film. 6. Polarimeter. 7. Calibration of bridge wire by Griffith's method. 8. High resistance by Leakage method.
Month April	Lecture	Total	Module/Unit	Sub-units planned
	-		Examination	Examination



Hello of the
Department of Physics
Vivekanand College, Kolhapur