"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: 2018-19

Subject: Physics

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

-	une			Module/Unit:	CI
Course	Lect	Practicals	Total	Physical interpretation	Sub-units planned
B.Sc.	12		12	wave function, Schroding time dependent independent equation and three dimension Requirements of wave function, Eigen value, Eigen to thought orthogonal and orthonorm wave functions, Probability current density (Continuity equation)	wave function, Schroding time dependent independent equation (and and three dimension). Requirements of wave function, Eigen value, Ei
.Sc. I 16	64		S (S o o K T av os os	Dscillations imple harmonic motion SHM), Differential equation f SHM and its solutions, inetic and Potential Energy, otal Energy and their time erages, Damped cillations, Forced cillations.	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.
	04	64	Dro	cticals :	

		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) C	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. III	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 Stat Equation Ouantum mechanics
B.Sc. I	12	-	12	potential relation and transmission coefficient. Barrier potential- Tunnelling effect, α-decay, simple harmonic oscillator.	potential relation and transmission coefficient
D.SC. I	16	-	16	Surface Tension	Surface Tension
S.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.
.50, 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.
90/	-			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

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		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		Module/Unit:	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

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Head OP the
Department of Physics
Vivekanand College, Kolhapur

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Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2018-19

Subject: Physics

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

Month Ju	une			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Nuclear Radiation Detectors	Nuclear Radiation Detectors
B.Sc. II	12		12	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 : Ionizati chamber, G. M. counter, principle, construction working mechanism limitations, merits Scintillation Counter principle, construction working, advantages Introduction to cosm
3.Sc. III	12		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.
Sc. III	- 8	0	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.4) Y & η using flat spiral spring.	3) S. T. by Fergusson modified method.4) Y & η using flat spiral spring.
Month Ju	ly			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Superposition of Harmonic Oscillations	-
B.Sc. II	12	-	12	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.
3.Sc. III	12	-	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,
				oscillations having equal	Superposition of two collinear harmonic oscillations- for oscillations having equal frequencies
				inetious) and oscillations	(Analytical and geometrical methods) and oscillations having different frequencies
				(Danta)	(Beats)



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



B.Sc. III	12	80	80	Nucleus (Nuclear Structure & 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. Practicals: 1) Cardinal points by turn table method. 2) Cardinal points by Newton's method.	Nucleus (Nuclear Structure & 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. 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.	3) Diffraction at single slit.4) Diffraction at cylindrical obstacle.
				5) Diffraction at straight edge	5) Diffraction at straight edge
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



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	12	-	12	and standing waves on a string,	and standing waves on a string,
				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	-	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	-	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.
Month Oct	ober/No	ovember	1	Module/Unit:	Sub-units planned
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	Lect	Practicals	Tota	al Examination	Examination
Month De	cember			Module/Unit:	
	Lect	Practicals	Tota		Sub-units planned
	ures		Tota	our dinai points	Cardinal points
B.Sc. II	12	,	12	Thick lens, combination lenses (system)Card points of an optical sys (definitions only), graphical construct of image using cardinal poin Newton's formula, relation between f and f ' for a optical system, relatibetween lateral, axial a angular	lenses (system)Card points of an optical system only), graphical construction of image using card points, Newton's form relation between f and f ' for a optical system, relation between lateral, axial a
				magnifications.	angular magnifications.
B.Sc. III	12 -		12	Atomic Physics	
.Sc. III -	80		90	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	Zeeman effect on vector atom
	00		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	3) Resistivity of semiconductor crystal with

				temperature by four probe method. 5) Calibration of wire using Carey-foster key	temperature by four probe method. 5) Calibration of wire using Carey-foster key
Month Janu	lary			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, Modified Rayleigh's criterion, comparison between magnification and resolution, resolving power of plane diffraction grating, resolving power of a prism.	Resolution, Resolving power of optical instruments, Rayleigh's criterion for the limit of resolution, Modified Rayleigh's criterion, comparison between magnification and resolution, resolving power of plane diffraction grating, resolving power of a prism.
B.Sc. III	12	-	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 Raman effect.	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.

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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.
				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 Febr	ruary			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Polarization of light	Polarization of light
	ures			Revision of plane of vibration	Revision of plane of vibration
B.Sc. II	12		12	, plane polarization, perpendicular vibration ,parallel vibrations,	, 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	.T.	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		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.
		is in		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			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Laser Physics	Laser Physics



B.Sc. II	12		12	Ordinary Light, Laser, 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	Ordinary Light, Laser, 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		12	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.
B.Sc. III		80	80	Practicals: 1) UJT as voltage sweep generator. 2) Astable multivibrator by using IC 555 timer. 3) Monostable multivibrator by using IC 555 timer. 4) IV characteristics of P-N diode and LED. 5) Inverting amplifier using op - Amp 741.	Practicals: 1) UJT as voltage sweep generator. 2) Astable multivibrator by using IC 555 timer. 3) Monostable multivibrator by using IC 555 timer. 4) IV characteristics of P-N diode and LED. 5) Inverting amplifier using op - Amp 741.
Month April				Module/Unit:	Sub-units planned
Month April Lectures Practicals Total					

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

Academic Year: 2018-19

Subject: Physics

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

				Module/Unit:	Sub-units planned
Course	Lect		Total	Laws of Thermodynamics	Laws of Thermodynamics
B.Sc. II	12	-	12	Thermodynamic system thermodynamic thermodynamic state equation of state,	s, thermodynamic variable
				thermodynamic equilibrium Zeroth Law o thermodynamics, Interna energy, First law of	thermodynamic equilibrium
				thermodynamics, conversion of heat into work, specific heats CP& CV, Applications of First Law	of heat into
				(Isothermal process, Adiabatic process, Isochoric, Isobaric), relation between CP & CV	Adiabatia process.
.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
Sc. III	- 8	30		Duo di 1	Practicals:
ND COL				1) Resonance pendulum.	1) Resonance pendulum.

				 2) S. T. of soap solution. 3) S. T. by Fergusson modified method. 4) Y & η using flat spiral spring. 	 2) S. T. of soap solution. 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		12	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),
B.Sc. III	12		12	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum in solids, Dulong Petit's law (Classical Theory), Einstein	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum in solids, Dulong Petit's law (Classical Theory), Einstein

ESTD. JUNE 1964

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 Au	gust			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,	



B.Sc. III	12	E	12	Magnetic Properties Materials	of Magnetic Properties Materials
B.Sc. III		80	80	Diamagnetic materia Paramagnetic materia ferromagnetic, ferromagnet classical theory diamagnetism ar paramagnetism, Curie law Curie constant, Weiss theory of ferromagnetism, an ferromagnetic domain	Magnetic material permeability, susceptibility magnetization, magnetic materials, lis, lis, lis, lis, lis, lis, lis, l
Month Septem	ber			Module/Unit:	Sub-units planned
ur	ect P	racticals	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
ESTD. S JUNE 1964					

	1.0				
	12	-	12	of thermodynamics, Carno ideal heat engine, Carno cycle (Working, efficiency Carnot's	t's ideal heat engine Comet
				theorem, Entropy (concept significance), change entropy, Entropy changes reversible &	in Significance) change
				irreversible processes, Thin law of thermodynamic Entropy change in conduction of heat,	s, law of thermodynamics
				diffusion of gases ,physica significance of entropy, Un attainability of absolute zero Zero	- Significance of entropy II
B.Sc. III	12			point energy.	point energy.
D.SC. III	12	=	12	Superconductivity	Superconductivity
D.C. III				Idea of superconductivity. Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors, London's Equation and Penetration Depth, Isotope effect	Critical temperature, Critical magnetic field. Meissner effect. Type I and type II Superconductors. London's
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.
				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 Octob	er/Nov	ember		Module/Unit:	Sub-units planned
NO CO					-

	Lec	1 - 1 - 1 - 1	ls Tota	al Examination	Examination
Month D	Decembe	r		Module/Unit:	Sub mit 1
	Leci		S Tota	Thermodynamic Potenti	Sub-units planned
B.Sc. II	ures 12	-	12	Enthalpy, Gibbs, Helmho Internal Energy function Maxwell's thermodynamic	oltz, Enthalpy, Gibbs, Helmho Internal Energy function Maxwell's thermodynamics
				relations, Joule-Thom effect, Clausius- Clapey equation, Expression for (-CV),	ron effect Cl
				CP/CV, TdS equations.	CP/CV, TdS equations.
B.Sc. III	12		12	Instrumentations	
				:Introduction to CRO	Instrumentations :Introduction to CRO
B.Sc. III	-	90		Block Diagram of CRO Applications of CRO: (1 Study of Waveform, (2 Measurement of Voltag Current, Frequency, an Phase Difference.	Applications of CRO: (12) Study of Waveform, (24) Measurement of Voltage
D.50, 111	-	80	80	Practicals:	Practicals:
				1) Self inductance by Owen's bridge.	s 1) Self inductance by Owen's bridge.
				2) Self inductance by Rayleigh's method.	Rayleigh's method.
				3) Self inductance by Maxwell bridge.	Maxwell bridge.
				4) Measurement of BV, BH and θ using earth inductor.	4) Measurement of BV, BH and θ using earth inductor.
onth Januar	v			5) Hysteresis by magnetometer.	
				Module/Unit:	Sub-units planned
u	res Pr	acticals	Total	Theory of Radiation	Theory of Radiation
D. E. S.					

B.Sc. II	12	12	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence emissive power, absorptive power, pressure of radiation Experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.	Thermal radiations, Blackbody radiation and its importance, Black body in practice, its temperature dependence emissive power, absorptive power, pressure of radiation experimental study of black body radiation spectrum, Concept of energy density, Derivation of Planck's law, Deduction of Wien's distribution law, Rayleigh-Jeans Law, Stefan Boltzmann Law and Wien's displacement law from Planck's law.
B.Sc. III	12	12	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 Feb	ruary			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Quantum statistics	Need of quantum statics ,Bose-Einstein distribution law, photon gas, Planck, s
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.	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	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.

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		80	80	Practicals:	Practicals:
				 UJT as voltage sweep generator. Astable multivibrator busing IC 555 timer. Monostable multivibrate by using IC 555 timer. IV characteristics of P-N diode and LED. Inverting amplifier using o - Amp 741. 	 UJT as voltage sweep generator. Astable multivibrator using IC 555 timer. Monostable multivibrator by using IC 555 timer. IV characteristics of P-1 diods and LED.
Month M	arch				
Course	Lect	Dura d'		Module/Unit:	Sub-units planned
	ures	Practicals	Total	Degrees of freedom ,momentum space, position	Degrees of freedo
B.Sc. III	12		12	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.	Microstate and Macrostate Accessible microstates, prior probability thermodynamic
B.5c. III	12		12	transistors:	Bipolar Junction transistors:
William I was a second and a second a second and a second a second and				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	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. — parameter Equivalent

			Analysis of a single-stage Clamplifier using Hybrid Model Input and Output Impedance Current, Voltage and Power Gains.	stage CE amplifier usin
B.Sc. III	- 80	80	Practicals :	Practicals :
			1) Study of divergence of LASER beam.	1) Study of divergence o LASER beam.
			2) Measurement of wavelength of LASER using grating.	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.
Manth A 11			5) Obtain interference fringes using Biprism.	5) Obtain interference fringes using Biprism.
Month April			Module/Linite	
ectures	Practicals	Total	Evaminati-	Sub-units planned
				Examination

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Head place
Department of Physics
Vivekanand College, Kolhapui

"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: 2018-19

Subject: Physics

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

Month Ju	ine			Module/Unit:	Sub-units planned	
Course	Lect ures	Practicals	Total	Operator in Quantum Mechanics	Operator in Quantum Mechanics	
B.Sc.	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. Concept of Hermitian operator.	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	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.	of SHM and its solutions
B.Sc. II	-	64	64	Practicals :	Practicals:
				1) 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.
Month Ju	lv			4) Colpitts oscillator	4) Colpitts oscillator
Course		B	_	Module/Unit:	Sub-units planned
	Lect ures	Practicals	Total	Introduction to Quantum Mechanics	Introduction to Quantum Mechanics
3.Sc. 1	2		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

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B.Sc.	16	15	16	Gravitation:	Gravitation:
I				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 applications
B.Sc.	E.	64	64	Practicals:	Practicals:
II				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	4) Measurement of time period, frequency, average period using using universal counter/frequency
Month	Month August			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. III	12		12	time dependent and independent equation (one and three dimensional) Requirements of wave function, Eigen value, Eigen function, Normalized orthogonal and orthonormal wave functions, Probability current density (Continuity equation). Examples on Normalization of wave function	time dependent and independent equation (one and three dimensional) Requirements of wave function, Eigen value, Eigen function, Normalized orthogonal and orthonormal wave functions, Probability current density (Continuity equation). Examples on Normalization of wave function
B.Sc. I	16		16	Elasticity	Elasticity
B.Sc. 1				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	(m)	64	64	Practicals :	Practicals :
				1) To determine wavelength of 1) Sodium &2)spectrum of Mercury light usingplane diffraction grating.	1) To determine wavelength of 1) Sodium &2)spectrum of Mercury light usingplane diffraction grating.
				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 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 S	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, Angle of contact and wettability, relation between surface tension, excess of pressure and radius of curvature, Experimental determination of surface tension by Jaeger's method, Factors affecting surface tension, Applications of surface tension.	Surface Tension Surface Tension, Angle of contact and wettability, relation between surface tension, excess of pressure and radius of curvature, Experimental determination of surface tension by Jaeger's method, Factors affecting surface tension, Applications of surface tension.



B.Sc. II	Ä	64	64	Practicals :	Practicals :
			`	1) To record and analyze the cooling temperature of hot object as a function of time using a thermocouple.	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	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	4) To determine Mechanical Equivalent of Heat, J, by Callender and Barne's constant flow
				method.	method.
Month C	ctober/	November		Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Examination	Examination
Month D	ecembe	er		Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Elementary band theory Introduction of free electron	Elementary band theory Introduction of free electron
B.Sc. III	12		12	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.	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.



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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	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	ē	64	64	Practicals:	Practicals:
				1) Ic 555 timer.	1) Ic 555 timer.
4	IN.			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.
Month Ja	nuary			Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Dielectric Properties of Materials	Dielectric Properties of Materials
B.Sc. III	12		12	Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons.	Polarization. Local Electric Field at an Atom. Depolarization Field. Electric Susceptibility. Polarizability. Clausius Mosotti Equation. Classical Theory of Electric Polarizability. Normal and Anomalous Dispersion. Cauchy and Sellmeir relations. Langevin-Debye equation. Complex Dielectric Constant. Optical Phenomena. Application: Plasma Oscillations, Plasma Frequency, Plasmons.



B.Sc. I	16	•	16	A.C. Circuits	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	Complex numbers and their application in solving a. c. series LCR circuit, complex impedance, Reactance, Admittance, and Susceptance, Resonance in LCR series circuit, Sharpness of resonance (qualitative treatment only), Q-factor (definition only) A.C. Bridge - Owen's Bridge
B.Sc. II	-	64	64	Practicals: 1) To determine the value of	Practicals: 1)To determine the value of
				Stefan's Constant. 2) To determine the coefficient of thermal conductivity of copper by Searle's Apparatus.	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.	3) To determine the Coefficient of Thermal Conductivity of Cu by Angstrom's Method.
				4) To determine the coefficient of thermal	4) To determine the coefficient of thermal
Month F	ebruary			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	X-Ray Diffraction	X-Ray Diffraction



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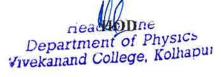
B.Sc.	12	Ar	12	Reciprocal lattice and its properties, concept of Brillouin zone, diffraction of X-rays by crystals, Ewald construction, Bragg's law in reciprocal lattice, X-ray diffraction methods: 1) Laue method. 2) Rotating crystal 3) Powder method - Principle, Construction, Working , analysis of cubic 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	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
B.Sc. II	2	64	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 Ma	arch			Module/Unit:	Sub-units planned



Course	Lect	Practicals	Total	Magnetic Materials and their Properties:	Magnetic Materials and their Properties:
B.Sc.	12	-	12	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferromagnetic, ferrimagnetic and antiferromagnetic materials.	Magnetic intensity, magnetic induction, permeability, magnetic susceptibility. Hysteresis and hysteresis curve, diamagnetic, paramagnetic, ferrimagnetic and antiferromagnetic materials.
B.Sc. I	16	2	16	Network Theorems	Network Theorems
				Introduction, Node, Junction, Branch, Loop, Active and passive elements, Thevenin's theorem, Nortan's theorem and equivalence between them, problems.	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.
				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 A	Month April			Module/Unit:	Sub-units planned
Lectures		Practicals	Total	Examination	Examination
	1 10	1		C17.00	(SV-0027)







Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2018-19

Subject: Physics

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

Month June				Module/Unit:	Sub-units planned
Course	Lect ures	Practicals	Total	Quantum statistics	Quantum statistics
B.Sc. II	12		12	Need of quantum statics, Bose-Einstein distribution law, photon gas, Planck, s radiation law	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	Fermi-Dirac distribution law, free electron in metal ,electron gas, comparison of M.B., B.E., and
				F.D. statistics.	F.D. statistics.
B.Sc. III	12	-	12	Practicals :	Practicals :
				1) Cardinal points by turn table method.	Cardinal points by turn table method.
				2) Cardinal points by Newton's method.	2) Cardinal points by Newton's method.
				3) Diffraction at single slit.	3) Diffraction at single slit.
				4) Diffraction at cylindrical obstacle.	4) Diffraction at cylindrical obstacle.
				5) Diffraction at straight edge	5) Diffraction at straight edge
B.Sc. III		80	80	Magnetic Properties of Materials	Magnetic Properties of Materials
				Magnetic materials, permeability, susceptibility, magnetization, magnetic	Magnetic materials, permeability, susceptibility, magnetization, magnetic

				moment, electron spin, Diamagnetic materials, Paramagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetism, and ferromagnetic domain, Hysteresis loop for ferromagnetic materials.	moment, electron spin, Diamagnetic materials, Paramagnetic materials, ferromagnetic, ferromagnetic, classical theory of diamagnetism and paramagnetism, Curie law, Curie constant, Weiss theory of ferromagnetism, and ferromagnetic domain, Hysteresis loop for ferromagnetic materials.
Month July	ý			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	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),	Mean free path, expression, approximate method derivation of Maxwell's law of distribution of velocities and its experimental verification, Transport Phenomena: transport of momentum (viscosity), transport of thermal energy (conduction), Transport of mass (diffusion),
B.Sc. III	12	-	12	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.
				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	T.	12	Thermodynamic system, thermodynamic variables, 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	-	-12		



B.Sc. III	-	80	80	Practicals:	Practicals:
				1) Cardinal points by turn table method.	1) Cardinal points by turn table method.
				2) Cardinal points by Newton's method.	2) Cardinal points b Newton's method.
				3) Diffraction at single slit.	3) Diffraction at single slit.
				4) Diffraction at cylindrical obstacle.	4) Diffraction at cylindrical obstacle.
				5) Diffraction at straight edge	5) Diffraction at straight edge
Month Sept	ember			No. 1 1 Grand	
B.Sc. II	-	D 1		Module/Unit:	Sub-units planned
D.5¢. II	Lect	Practicals	Total	Laws of Thermodynamics	Laws of Thermodynamics
				Work done during isothermal and adiabatic processes, reversible & irreversible processes, Second law	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 &
				Entropy change in conduction	irreversible processes, Third law of thermodynamics, Entropy change in conduction of heat,
				attainability of absolute zero.	diffusion of gases ,physical significance of entropy, Unattainability of absolute zero.
				point energy.	point energy.



B.Sc. III	12	i G	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	-	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.
		<u> </u>		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
	Lect	Practicals	Total	Examination	Examination
Month Dec	ember			Module/Unit:	Sub-units planned
	Lect	Practicals	Total	Thermodynamic Potentials	Thermodynamic Potentials
	ures			Enthalpy, Gibbs, Helmholtz, Internal Energy functions, Maxwell's thermodynamical	Enthalpy, Gibbs, Helmholtz, Internal Energy functions, 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. II	12		12		
CONT. CO.					
STD. SUNE	(43)				

B.Sc. III	12		12	Instrumentations:Introduction to CRO Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.	Instrumentations:Introduction to CRO Block Diagram of CRO. Applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference.
B.Sc. III		80	80	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum	Lattice Vibration and Thermal Properties of Solid Lattice vibrations, Phonons, normal modes of one dimensional and diatomic chain, Acoustical and optical phonons, Phonons spectrum
Month Janu	lary		1,	Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Theory of Radiation Thermal radiations,	Theory of Radiation 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.



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B.Sc. III	12		12	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.	semiconductor crystal with
				5) Calibration of wire using Carey-foster key	5) Calibration of wire using Carey-foster key
B.Sc. III	<u></u>	80	80	Special functions of ICs	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.	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.
Month Febr	uary			Module/Unit:	Sub-units planned
Course	Lect	Practicals	Total	Classical statistics	Classical statistics



B.Sc. II	12	-	12	Degrees of freedom ,momentum space, position space ,Phase space, Microstate and Macrostate,	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.	Accessible microstates, priory probability thermodynamic 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	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.	Introduction to logic gates, De-Morgan's theorem, NAND and NOR gates as universal gates, R-S and J-K flip flops, half and full adder, parallel binary adder.
B.Sc. III		80	80	Practicals :	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 Ma	rch			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	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.
B.Sc. III	3.5.1	80	80	Bipolar Junction transistors:	Bipolar Junction transistors:
€. 10 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. Analysis of a single-stage CE amplifier using Hybrid Model.	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.

Month April Lectures Practical Module/Unit: Sub-units p	
Total Examination	Sub-units planned Examination

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Department of Physics
Vivekanand College, Kolhabui

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2018-19

Subject: Physics

Name of the teacher: Miss A. S. Patil

Month Ju	ıne			Module/Unit:	Sub-units planned
	Practica	Lectures	Total	Practicals:	Practicals:
	ls			1)Measurements of length (or	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	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	material of Bar by vibration
Month Ju				Module/Unit:	Sub-units planned
B.Sc. I	16		16	Practicals: 1)Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration Module/Unit:	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 Sub-units planned
B.Sc. I	16	1.	16	Practicals:	Practicals:
D.SC. I	10		10	 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum. 	 1) Modulus of rigidity of material of wire by torsional oscillations. 2) Y/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month S	September			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 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: 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. Module/Unit:	Practicals: 1)Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit. Sub-units planned
Month Ja B.Sc. I	inuary 16	12	16	Module/Unit: Practicals:	Practicals:
<i>5.00.</i> 1				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 F	ebruary	- 12		Module/Unit:	Sub-units planned



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

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Department of Physics
Vivekanand College, Kolhabu

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2018-19

Subject: Physics

Name of the teacher: Miss Sneha M. Kumbhar

Month Ju	ine			Module/Unit:	Sub-units planned
	lectures	Practicals	Total	Practicals:	Practicals:
				1)Measurements of length (or	1)Measurements of length (or
B.Sc. I	=0	16	16	diameter) using Vernier calliper, screw gauge,	diameter) using Vernier calliper, screw gauge,
				spherometer and travelling microscope.	spherometer and travelling microscope.
				2) To determine the Moment of Inertia of a Flywheel.	2) To determine the Moment 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 Ju	ıly			Module/Unit:	Sub-units planned
B.Sc.	-	16	16	Practicals:	Practicals:
I				1)Measurements of length (or diameter) using Vernier	1)Measurements of length (or diameter) using Vernier
				calliper, screw gauge,	calliper, screw gauge,
				spherometer and travelling	spherometer and travelling
		36		microscope.	microscope.
	15			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	ugust			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
				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.
	eptember			Module/Unit:	Sub-units planned



B.Sc. I	16	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) Υ/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
Month O	ctober/No	vember		Module/Unit:	Sub-units planned
B.Sc. I	=	-	:00	Examination	Examination
Month D	ecember			Module/Unit:	Sub-units planned
B.Sc. I		16	16	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals: 1)Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month Ja	nuary		1	Module/Unit:	Sub-units planned
B.Sc. I		16	16	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month F	ebruary			Module/Unit:	Sub-units planned



B.Sc. I	3)	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 B.Sc. I	Tarch	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				Module/Unit:	Sub-units planned
Lectures Practicals Total			Total	Examination	Examination

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Department of Physics
Vivekanand College, Kolhabur

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2018-19

Subject: Physics

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

Month J	une			Module/Unit:	Sub-units planned
	lectures	Practical	Total	Practicals:	Practicals:
		S		1)Measurements of length (or	1)Measurements of length (or
D.C. I				diameter) using Vernier	diameter) using Vernier
B.Sc. I				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.
			1	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
			1	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.
7				4) Young's modulus of	4) Young's modulus of
				material of Bar by vibration	material of Bar by vibration
Month A	August	.,		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
				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 S	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) Υ/η of Wire by Searle's method. 3) To determine g by Bar Pendulum. 4) To determine g by Kater's Pendulum.
	ctober/Nov 16	ember	16	Module/Unit: Examination	Sub-units planned Examination
B.Sc. I			16		
Month D				Module/Unit:	Sub-units planned
B.Sc. I	16 B.Sc., I		16	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals: 1)Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month Ja	nuarv			Module/Unit:	Sub-units planned
B.Sc. I	16		16	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals: 1)Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month F	ebruary			Module/Unit:	Sub-units planned



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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	Month March			Module/Unit:	Sub-units planned
B.Sc. I	16	0.0	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 Total		Examination	Examination	

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Department of Physics
Vivekanand College, Kolhapu

Shri Swami Vivekanand Shikshan Sanstha's

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

Academic Year: 2018-19

Subject: Physics

Name of the teacher: Mr. I. M. Mulla

Month Jur	ne			Module/Unit:	Sub-units planned
	lectures	Practicals	Total	Practicals: 1)Measurements of length (or diameter) using Vernier	Practicals: 1)Measurements of length (or diameter) using Vernier
B.Sc. I		16	16	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	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 Jul	ly			Module/Unit:	Sub-units planned
B.Sc. I		16	16	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration	Practicals: 1) Measurements of length (or diameter) using Vernier calliper, screw gauge, spherometer and travelling microscope. 2) To determine the Moment of Inertia of a Flywheel. 3) To determine the Moment of inertia of a disc using auxiliary annular ring. 4) Young's modulus of material of Bar by vibration
Month Au	ugust			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 Se	eptember			Module/Unit:	Sub-units planned



B.Sc. I	16	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. Module/Unit:	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. Sub-units planned
B.Sc. I	-	-	=:	Examination	Examination
Month D	ecember			Module/Unit:	Sub-units planned
B.Sc. I	anuary	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. Module/Unit:	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit. Sub-units planned
B.Sc. I	-	16	16	Practicals: 1) Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.	Practicals: 1)Use a Multimeter for measuring (a) Resistances, (b) AC and DC Voltages, (c), Checking electrical fuses and Continuity. 2) To determine constants of B. G. 3) To compare capacitances using De'Sauty's bridge. 4) To determine impedance of series LCR circuit.
Month February				Module/Unit:	Sub-units planned



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

Techer Incharge



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