Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher	**Dr. Veer Shivaji Shamrao**	**Year: 2019-20**	**Semester: 3**
Subject:	**Physics**	**Paper PH212: ELECTRONICS**	**Class: S.Y.B.Sc.**

Part I : Teaching Plan						**Part II : Evaluation of Plan**			
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Sr. No.	**Month**	**Week**	**No. of working days**	**No. of periods available**	**Topics to be taught**	**No. of periods engaged**	**Topics taught**	**Deviation in periods**	**Remarks**
1	Jun	2&3	11	6	**NETWORK THEOREMS** Kirchhoff's laws (revision) Voltage and Current divider circuits Thevenin's theorem Norton's theorem	6	**NETWORK THEOREMS** Kirchhoff's laws (revision) Voltage and Current divider circuits Thevenin's theorem Norton's theorem	Nil	
		4&5	12	6	Super-position theorem Maximum power transfer theorem (All theorems 1.3 to with proof) Problems.	6	Super-position theorem Maximum power transfer theorem (All theorems 1.3 to 1.6 with proof) Problems.	Nil	
2	July	1&2	12	6	**BIJUNCTION TRANSISTOR** Revision of bipolar junction transistor, types, symbols and basic action. Configurations (Common Base, Common Emitter & Common Collector)	6	**BIJUNCTION TRANSISTOR** Revision of bipolar junction transistor, types, symbols and basic action Configurations (Common Base, Common Emitter & Common Collector)	Nil	
		3&4	12	6	. Current gain factors (α &β) and their relations. Input, output and transfer characteristics of CE, CB & CC configurations. Biasing methods: Base bias, Emitter feedback and voltage divider DC load lines (CE), Operating point (Q point) Transistor as a switch Problems.	6	. Current gain factors (α &β) and their relations. Input, output and transfer characteristics of CE, CB & CC configurations. Biasing methods: Base bias, Emitter feedback and voltage divider DC load lines (CE), Operating point (Q point) Transistor as a switch Problems.	Nil	
3	Aug	1&2	9	3	**OPERTAIONAL AMPLIFIERS** Introduction Ideal and practical Characteristics Operational amplifier: IC 741- Block diagram and Pin diagram Concept of virtual groundInverting and non-	3	**OPERTAIONAL AMPLIFIERS** Introduction Ideal and practical Characteristics Operational amplifier: IC 741- Block diagram and Pin diagram Concept of virtual groundInverting and non-	Nil	

Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher Dr. Veer Shivaji Shamrao **Year:** 2019-20 **Semester:** 3

Subject: Physics **Paper PH212: ELECTRONICS** **Class:** S.Y.B.Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Jun	2&3	11	6	**NETWORK THEOREMS** Kirchhoff's laws (revision) Voltage and Current divider circuits Thevenin's theorem Norton's theorem	6	**NETWORK THEOREMS** Kirchhoff's laws (revision) Voltage and Current divider circuits Thevenin's theorem Norton's theorem	Nil	
		4&5	12	6	Super-position theorem Maximum power transfer theorem (All theorems 1.3 to with proof) Problems.	6	Super-position theorem Maximum power transfer theorem (All theorems 1.3 to 1.6 with proof) Problems.	Nil	
2	July	1&2	12	6	**BIJUNCTION TRANSISTOR** Revision of bipolar junction transistor, types, symbols and basic action. Configurations (Common Base, Common Emitter & Common Collector)	6	**BIJUNCTION TRANSISTOR** Revision of bipolar junction transistor, types, symbols and basic action Configurations (Common Base, Common Emitter & Common Collector)	Nil	
		3&4	12	6	. Current gain factors (α &β) and their relations. Input, output and transfer characteristics of CE, CB & CC configurations. Biasing methods: Base bias, Emitter feedback and voltage divider DC load lines (CE), Operating point (Q point) Transistor as a switch Problems.	6	. Current gain factors (α &β) and their relations. Input, output and transfer characteristics of CE, CB & CC configurations. Biasing methods: Base bias, Emitter feedback and voltage divider DC load lines (CE), Operating point (Q point) Transistor as a switch Problems.	Nil	
3	Aug	1&2	9	3	**OPERTAIONAL AMPLIFIERS** Introduction Ideal and practical Characteristics Operational amplifier: IC 741- Block diagram and Pin diagram Concept of virtual groundInverting and non-	3	**OPERTAIONAL AMPLIFIERS** Introduction Ideal and practical Characteristics Operational amplifier: IC 741- Block diagram and Pin diagram Concept of virtual groundInverting and non-	Nil	

					inverting operational amplifiers with concept of gain		inverting operational amplifiers with concept of gain		
		3&4	2	2	Operational amplifier as an adder and substracter.Problems	2	Operational amplifier as an adder and substracter.Problems	Nil	
		5	6	3	**OSCILLATROS** Concept of positive and negative feedback Barkhausein criteria for an oscillator Construction, working and applications ofPhase shift oscillator using IC-741Problems.	3	**OSCILLATROS** Concept of positive and negative feedback Barkhausein criteria for an oscillator Construction, working and applications ofPhase shift oscillator using IC-741Problems.	Nil	
4	Sep.	1&2	7	4	**POWER SUPPLY** Concept and working of rectifier half wave, full wave and bridge rectifierRipple voltageRC filter circuit	4	**POWER SUPPLY** Concept and working of rectifier half wave, full wave and bridge rectifierRipple voltageRC filter circuit	Nil	
		3&4	10	6	Unregulated and regulated power supplyConcept of load and line regulation Zener as regulator Problems.	6	Unregulated and regulated power supplyConcept of load and line regulation Zener as regulator Problems.		
		5	6	6	**NUMBER SYSTEM AND LOGIC GATES** Number systems: Binary, Binary coded decimal (BCD), Octal, Hexadecimal Addition and subtraction of binary numbers and binary fractions using one's and two's complement. Basic logic gates (OR, AND, NOT) Derived gates: NOR, NAND, EXOR, EXNOR with symbols and truth tables Boolean Algebra De Morgan's theorems and its verification Problems	3 6	**NUMBER SYSTEM AND LOGIC GATES** Number systems: Binary, Binary coded decimal (BCD), Octal, Hexadecimal Addition and subtraction of binary numbers and binary fractions using one's and two's complement. Basic logic gates (OR, AND, NOT) Derived gates: NOR, NAND, EXOR, EXNOR with symbols and truth tables Boolean Algebra De Morgan's theorems and its verification Problems	Nil	

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Signature of Teacher

Signature of Head of Department
Head
Department of Physics
Arts,Science & Commerce
College,Indapur, Dist.Pune

Signature of Faculty In-charge
Incharge
Science Faculty
Arts,Science & Commerce
College,Indapur, Dist.P

Signature of the Principal
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NDAPUR-413106 DIST-PUNE

Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher	**Prof.(Dr.) Veer Shivaji Shamrao**	**Year: 2019-20**	**Semester: 1**
Subject: Physics		**Paper: PHCT-113 Electronics**	**Class: M.Sc.**

Part I : Teaching Plan						**Part II : Evaluation of Plan**			
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Sr. No.	**Month**	**Week**	**No. of working days**	**No. of periods available**	**Topics to be taught**	**No. of periods engaged**	**Topics taught**	**Deviation in periods**	**Remarks**
1	**Jun.**	2&3	11	8	**Semiconductor Devices and its Applications** **1.1 SCR:** Construction, working, Characteristics and applications as half wave and full wave rectifier **1.2 DIAC and TRIAC:** Construction, working, characteristics and applications as fan regulator	8	**Semiconductor Devices and its Applications** **1.1 SCR:** Construction, working, Characteristics and applications as half wave and full wave rectifier **1.2 DIAC and TRIAC:** Construction, working, characteristics and applications as fan regulator	Nil	
		4&5	12	8	**1.3 DC-DC converter and SMPS:** Concept and applications **Operational Amplifier** Function generator using two OPAMPS with variable controls,Astable and Monostable multivibrators using OPAMPs, Precision rectifiers, Instrumentation amplifier **2.2 Timer IC 555:** Applications as PAM, PWM, FM and FSK generator	6	**1.3 DC-DC converter and SMPS:** Concept and applications **FOperational Amplifier** Function generator using two OPAMPS with variable controls, Astable and Monostable multivibrators using OPAMPs, Precision rectifiers, Instrumentation amplifier **2.2 Timer IC 555:** Applications as PAM, PWM, FM and FSK generator	Nil	
2	**July**	1&2	12	7	**2.3 Voltage Controlled Oscillator (IC566):** Block diagram and working	6	**2.3 Voltage Controlled Oscillator (IC566):** Block diagram and working	Nil	
		3&4	12	6	**2.4 Phase Locked Loop (IC565):** Block diagram and working and applications as FM detector, FSK detector, Frequency multiplier and Frequency Translator	6	**2.4 Phase Locked Loop (IC565):** Block diagram and working and applications as FM detector, FSK detector, Frequency multiplier and Frequency Translator	Nil	

		5	3	3	**Digital Logic Circuits I: Combinational Logic** Review ofBoolean identities and its use to minimize Boolean expressionsUse of Karanaugh Map to design 4-variable logic circuits like BCD to 7-segment decoder, Binary-to-Gray and Gray-to-Binary code converter. **Digital Logic Circuits II: Sequential Logic** 4-bit serial, parallel and combinational counter.Study of IC 7490 with applications as	3	**Digital Logic Circuits I: Combinational Logic** Review ofBoolean identities and its use to minimize Boolean expressionsUse of Karanaugh Map to design 4-variable logic circuits like BCD to 7-segment decoder, Binary-to-Gray and Gray-to-Binary code converter. **Digital Logic Circuits II: Sequential Logic** 4-bit serial, parallel and combinational counter.Study of IC 7490 with applications as	Nil	
3	**Aug.**	1&2	9	3	MODcounters (01 to 99)Study of IC 7495 and its use as SISO, SIPO, PIPO and PISO.UP-DOWN counters, Ring counter and their applications	3	MODcounters (01 to 99)Study of IC 7495 and its use as SISO, SIPO, PIPO and PISO.UP-DOWN counters, Ring counter and their applications		
		3&4	9	6	**Data Converters Credit-1** **4.1 Digital to Analog converters:** Binary weighted and R-2R ladder type with practical circuit (Using Input switches, Level amplifiers, Control gates and Buffer amplifier)	6	**Data Converters Credit-1** **4.1 Digital to Analog converters:** Binary weighted and R-2R ladder type with practical circuit (Using Input switches, Level amplifiers, Control gates and Buffer amplifier)	Nil	
		5	6	3	Control gates and Buffer amplifier) **.2 Analog to Digital converters:** Single slope, Dual slope, Flash (Simultaneous) type, Counter	6	Control gates and Buffer amplifier) **.2 Analog to Digital converters:** Single slope, Dual slope, Flash (Simultaneous) type, Counter	Nil	
4	**Sep.**	1&2	10	4	ramp type, Continuous type and Successive approximation type	4	ramp type, Continuous type and Successive approximation type	Nil	

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Head
Department of Physics
Arts Science & Commerce

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Arts,Science & Commerce

Signature of the Principal

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TEACHING AND EVALUATION PLAN

me of the teacher Mr. Kamble Akin Vasant **Year:** 2019-20 **Semester:** 5

bject: Physics **Paper:** PHY-354: Atomic and Molecular Physics **Class:** T.Y.B.Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1 r. o.	2 Month	3 Week	4 No. of working days	5 No. of periods available	6 Topics to be taught	7 No. of periods engaged	8 Topics taught	9 Deviation in periods	10 Remarks
	Jun.	2&3	11	6	**Atomic structure** Revision of various atomic models Vector atom model (Concepts of space quantization and electron spin) Pauli Exclusion Principle and electron configuration, Quantum states, Spectral notations of quantum states. Problems	6	**Atomic structure** 1. Revision of various atomic models 2. Vector atom model (Concepts of space quantization and electron spin) 3. Pauli Exclusion Principle and electron configuration, Quantum states, Spectral notations of quantum states. Problems	Nil	
		4&5	12	6	**One and Two Valence electron systems** 1. Spin-Orbit Interaction (Single valence electron atom), Energy levels of Na-atom, Selection rules,	6	**One and Two Valence electron systems** 1. Spin-Orbit Interaction (Single valence electron atom), Energy levels of Na-atom, Selection rules,	Nil	
2	July	1&2	12	6	Spectra of sodium atom, Sodium doublet Spectral terms of two electron atoms, terms for equivalent electrons	6	Spectra of sodium atom, Sodium doublet Spectral terms of two electron atoms, terms for equivalent electrons	Nil	
		3&4	12	6	Singlet-Triplet separations for interaction energy of LS coupling, Lande's interval rule, Spectra of Helium atom. . Problems	6	Singlet-Triplet separations for interaction energy of LS coupling, Lande's interval rule, Spectra of Helium atom; Problems	Nil	
		5	3	3	**Zeeman Effect** . Zeeman Effect Experimental arrangement . Normal and anomalous Zeeman Effect	3	**Zeeman Effect** . Zeeman Effect Experimental arrangement . Normal and anomalous Zeeman Effect	Nil	
3	Aug.	1&2	9	3	Stark effect (Qualitative discussion) Applications of Zeeman effects Problems	3	Stark effect (Qualitative discussion) Applications of Zeeman effects; Problems	Nil	
		3&4	9	6	**Molecular spectroscopy** 1. Introduction of molecular spectra and its types 2. Rotational energy levels, Rotational spectra of rigid diatomic molecule	6	**Molecular spectroscopy** 1. Introduction of molecular spectra and its types 2. Rotational energy levels, Rotational spectra of rigid diatomic molecule 3. Vibrational energy levels	Nil	

					3. Vibrational energy levels 4. Rotational and Vibrational spectra 5. Electronic spectra of molecules 6. Applications of UV-Vis spectroscopy 7. Problems		4. Rotational and Vibrational spectra 5. Electronic spectra of molecules 6. Applications of UV-Vis spectroscopy 7. Problems		
		5	6	3	**Raman spectroscopy** History of Raman effect, Molecular polarizability Classical theory and Quantum theory of Raman Effect	3	**Raman spectroscopy** .History of Raman effect, Molecular polarizability Classical theory and Quantum theory of Raman Effect	Nil	
4	**Sep.**	1&2	10	3	Characteristics Raman Lines and Applications of Raman spectroscopy. Problems	3	Characteristics Raman Lines and Applications of Raman spectroscopy Problems	Nil	

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TEACHING AND EVALUATION PLAN

Name of the teacher: Holkunde Viresh Chandrakant		Year: 2019-20	Semester: 5
Subject: Physics	Paper: PHY-352: Electrodynamics		Class: T.Y. B. Sc

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	June	2&3	11	6	**Electrostatics** **a.** Revision of Coulomb's law, Gauss law, Electric field, Electrostatic Potential. **b.** Potential energy of system of charges. **c.** Statement of Poisson's and Laplace's equation, Boundary Value problems in electrostatics- Solution of Laplace equation in Cartesian system, Boundary conditions.	6	**Electrostatics** **a.** Revision of Coulomb's law, Gauss law, Electric field, Electrostatic Potential. **b.** Potential energy of system of charges. **c.** Statement of Poisson's and Laplace's equation, Boundary Value problems in electrostatics- Solution of Laplace equation in Cartesian system, Boundary conditions.	Nil	
		4&5	12	6	**d.** Polarization **P**, Electric displacement **D**, Electric susceptibility and dielectric constant, bound volume and surface charge densities. **e.** Electric field at an exterior and interior point of dielectric	6	**d.** Polarization **P**, Electric displacement **D**, Electric susceptibility and dielectric constant, bound volume and surface charge densities. **e.** Electric field at an exterior and interior point of dielectric	Nil	
2	July	1&2	12	6	**Magnetostatics** a. Concepts of magnetic induction, magnetic flux and magnetic field. b. Magnetic induction due to straight current carrying conductor, magnetization of matter, relationship between **B, H** and **M.**	6	**Magnetostatics** a. Concepts of magnetic induction, magnetic flux and magnetic field. b. Magnetic induction due to straight current carrying conductor, magnetization of matter, relationship between **B, H** and **M.**	Nil	
		3&4	12	6	Boundary conditions at the interface of two magnetic media (Normal and tangential components).	6	Boundary conditions at the interface of two magnetic media (Normal and tangential components).	Nil	

		5	3	3	Biot-Savart's law, Ampere's force law, Magnetic force between two current carrying loops, Ampere's circuital law.	3	Biot-Savart's law, Ampere's force law, Magnetic force between two current carrying loops, Ampere's circuital law.	Nil	
3	Aug.	1&2	9	3	Equation of continuity, Magnetic vector potential **A**, Magnetic susceptibility and permeability	3	Equation of continuity, Magnetic vector potential **A**, Magnetic susceptibility and permeability		
		3&4	9	6	Day to day applications of Electrodynamics. Concept of electromagnetic induction, Faradays law of induction, Lenz's law, displacement current, generalization of Amperes' law. Maxwell's equations (Differential and Integral form) and their physical significance	6	Day to day applications of Electrodynamics. Concept of electromagnetic induction, Faradays law of induction, Lenz's law, displacement current, generalization of Amperes' law. Maxwell's equations (Differential and Integral form) and their physical significance	Nil	
		5	6	3	Polarization, reflection and refraction of electromagnetic waves through media.	3	Polarization, reflection and refraction of electromagnetic waves through media.	Nil	
4	Sep.	1&2	10	3	Wave equation and plane waves in free space. Poynting theorem and Poynting vector.	3	Wave equation and plane waves in free space. Poynting theorem and Poynting vector.	Nil	

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TEACHING AND EVALUATION PLAN

Name of the teacher : Mrs. Raut Swati Amol **Year: 2019-20** **Semester: 3**

Subject: Physics **Paper: PHOT234M2: Material Science-I** **Class: M Sc-II**

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Jun	2&3	11	8	**Properties of Materials and Defects in Solids** a) Mechanical, electrical, magnetic, thermal and optical properties (in brief – 2L only) b) Point defects - Vacancies, interstitials, non-stoichiometry, substitution, Schottky and Frenkel defects with proofs c) Line defects - Edge and screw dislocations, properties of dislocations – force on dislocation,	8	**Properties of Materials and Defects in Solids** a) Mechanical, electrical, magnetic, thermal and optical properties (in brief – 2L only) b) Point defects - Vacancies, interstitials, non-stoichiometry, substitution, Schottky and Frenkel defects with proofs c) Line defects - Edge and screw dislocations, properties of dislocations – force on dislocation,	Nil	
		4&5	12	8	d) Surface defects – grain boundaries with explanation of high angle, low angle, tilt and twist boundaries, stacking fault e) Volume defect- twin boundary	8	d) Surface defects – grain boundaries with explanation of high angle, low angle, tilt and twist boundaries, stacking fault e) Volume defect- twin boundary	Nil	
2	July	1&2	12	8	**Expt-1** Humidity measurement	8	**Expt-1** Humidity measurement	Nil	
		3&4	12	8	**Solid Solutions and Diffusion in Solids** a) Solid solubility with few examples, Types of solid solutions Substitutional	8	**Solid Solutions and Diffusion in Solids** a) Solid solubility with few examples, Types of solid solutions Substitutional	Nil	
		5	3	3	Interstitial, Factors governing solid solubility (Hume - Rothery rule), Atomic size and size factor in solid solutions, Vegard's law, Explanation of strain in solid solutions b) Mechanism of Diffusion, Fick's first and second laws of diffusion, solution to Fick's second law (without proof, introduction of error function), Factors governing diffusion,	3	Interstitial, Factors governing solid solubility (Hume - Rothery rule), Atomic size and size factor in solid solutions, Vegard's law, Explanation of strain in solid solutions b) Mechanism of Diffusion, Fick's first and second laws of diffusion, solution to Fick's second law (without proof, introduction of error function), Factors governing diffusion,	Nil	

					Experimental determination of D, Applications of diffusion: Corrosion resistance of duralumin, Carburization of steel, Decarburization of steel, Doping of semiconductors		Experimental determination of D, Applications of diffusion: Corrosion resistance of duralumin, Carburization of steel, Decarburization of steel, Doping of semiconductors		
3	Aug	1&2	9	4	**Expt-2** To determine specific heat of graphite	4	**Expt-2** To determine specific heat of graphite	Nil	
		3&4	9	8	**Expt-3** Temperature dependent resistivity measurement of a material **Expt-4** To determine the dipole moment of a given liquid	8	**Expt-3** Temperature dependent resistivity measurement of a material **Expt-4** To determine the dipole moment of a given liquid	Nil	
		5	6	4	**Expt-5** To determine the magnetic susceptibility of FeCl3	4	**Expt-5** To determine the magnetic susceptibility of FeCl3	Nil	
		5	2	4	**Expt-6** Plotting of crystal structures using Software	4	**Expt-6** Plotting of crystal structures using Software	Nil	
4	Sep	1&2	10	4	**Expt-7** Density of ceramic material using XRD	4	**Expt-7** Density of ceramic material using XRD		

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TEACHING AND EVALUATION PLAN

Name of the teacher : Mrs. Raut Swati Amol	**Year:** 2019-20		**Semester:** 3
Subject: Physics	**Paper:** PHOT234M2: Material Science-I	**Class:** M Sc-II	

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Jun.	2&3	11	8	**Properties of Materials and Defects in Solids** a) Mechanical, electrical, magnetic, thermal and optical properties (in brief – 2L only) b) Point defects - Vacancies, interstitials, non-stoichiometry, substitution, Schottky and Frenkel defects with proofs c) Line defects - Edge and screw dislocations, properties of dislocations – force on dislocation,	8	**Properties of Materials and Defects in Solids** a) Mechanical, electrical, magnetic, thermal and optical properties (in brief – 2L only) b) Point defects - Vacancies, interstitials, non-stoichiometry, substitution, Schottky and Frenkel defects with proofs c) Line defects - Edge and screw dislocations, properties of dislocations – force on dislocation,	Nil	
		4&5	12	8	d) Surface defects – grain boundaries with explanation of high angle, low angle, tilt and twist boundaries, stacking fault e) Volume defect- twin boundary	8	d) Surface defects – grain boundaries with explanation of high angle, low angle, tilt and twist boundaries, stacking fault e) Volume defect- twin boundary	Nil	
2	July	1&2	12	8	**Expt-1** Humidity measurement	8	**Expt-1** Humidity measurement	NIl	
		3&4	12	8	**Solid Solutions and Diffusion in Solids** a) Solid solubility with few examples, b) Types of solid solutions Substitutional	8	**Solid Solutions and Diffusion in Solids** a) Solid solubility with few examples, b) Types of solid solutions Substitutional	Nil	
		5	3	3	Interstitial, Factors governing solid solubility (Hume - Rothery rule), Atomic size and size factor in solid solutions, Vegard's law, Explanation of strain in solid solutions b) Mechanism of Diffusion, Fick's first and second laws of diffusion, solution to Fick's second law (without proof, introduction of error function), Factors governing diffusion,	3	Interstitial, Factors governing solid solubility (Hume - Rothery rule), Atomic size and size factor in solid solutions, Vegard's law, Explanation of strain in solid solutions b) Mechanism of Diffusion, Fick's first and second laws of diffusion, solution to Fick's second law (without proof, introduction of error function), Factors governing diffusion,	Nil	

					Experimental determination of D, Applications of diffusion: Corrosion resistance of duralumin, Carburization of steel, Decarburization of steel, Doping of semiconductors		Experimental determination of D, Applications of diffusion: Corrosion resistance of duralumin, Carburization of steel, Decarburization of steel, Doping of semiconductors		
3	Aug.	1&2	9	4	**Expt-2** To determine specific heat of graphite	4	**Expt-2** To determine specific heat of graphite	Nil	
		3&4	9	8	**Expt-3** Temperature dependent resistivity measurement of a material **Expt-4** To determine the dipole moment of a given liquid	8	**Expt-3** Temperature dependent resistivity measurement of a material **Expt-4** To determine the dipole moment of a given liquid	Nil	
		5	6	4	**Expt-5** To determine the magnetic susceptibility of FeCl3	4	**Expt-5** To determine the magnetic susceptibility of FeCl3	Nil	
		5	2	4	**Expt-6** Plotting of crystal structures using Software	4	**Expt-6** Plotting of crystal structures using Software	Nil	
4	Sep.	1&2	10	4	**Expt-7** Density of ceramic material using XRD	4	**Expt-7** Density of ceramic material using XRD		

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TEACHING AND EVALUATION PLAN

Name of the teacher Prof.(Dr.) Veer Shivaji Shamrao **Year:** 2019-20 **Semester:** 6

Subject: Physics **Paper:** PHY-365 (A): Electronics-II **Class:** T.Y. B.Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Dec.	1&2	12	6	**Semiconductor Devices:** LED and Photodiode, Optocoupler. (Working Principles) Problems. BJT: Transistor amplifier classifications - Class A, B, C and AB (working only), Differential amplifier transistorized), Problem	6	**Semiconductor Devices:** a. LED and Photodiode, Optocoupler. (Working Principles) Problems BJT: Transistor amplifier classifications - Class A, B, C and AB (working only), Differential amplifier (transistorized), Problem	Nil	
		3&4	11	6	Field Effect Transistor: JFET (Introduction, classification, principle, working and IVcharacteristics) MOSFETs (DE-MOSFET and E only MOSFET) **Applications of Semiconductor Devices:** Three Pin Regulators: Block diagram of 3-pin ICregulator, study of IC-78XX, 79XX. Dual Power Supply using IC-78XX, 79XX. Ref. Switching Regulators (SMPS): Introduction, Block diagram, Advantages and Disadvantages.	6	Field Effect Transistor: JFET (Introduction, classification, principle, working and IV characteristics) MOSFETs (DE-MOSFET and E only MOSFET). Problems. Ref. 1 **Applications of Semiconductor Devices:** Three Pin Regulators: Block diagram of 3-pin IC regulator, study of IC-78XX, 79XX. Dual Power Supply using IC-78XX, 79XX. Switching Regulators (SMPS): Introduction, Block diagram, Advantages and Disadvantages.	Nil	
		5	2	2	Modulation and Demodulation : Concept of Carrier Wave, Need of Modulation and Demodulation, Methods of Modulation like AM, FM, PM (Concepts Only), d. Concept of Modulation Index, Upper and Lower Side Band Frequencies in AM. Problems,	2	c. Modulation and Demodulation : Concept of Carrier Wave, Need of Modulation and Demodulation, Methods of Modulation like AM, FM, PM (Concepts Only), d. Concept of Modulation Index, Upper and Lower Side Band Frequencies in AM. Problems, Ref.3	Nil	
2	Jan.	1&2	10	6	**Integrated Circuits:** a. Integrated Circuits: Introduction, Scale of Integration, Advantages and drawbacks of IC Ref.4 OP-AMP Applications as Integrator, Differentiator, Comparator.	6	**Integrated Circuits:** a. Integrated Circuits: Introduction, Scale of Integration, Advantages and drawbacks of IC OP-AMP Applications as Integrator, Differentiator, Comparator.	Nil	

		3&4	12	6	Timer IC-555: Block diagram, Astable, monostable multivibrator (working and design). Problems	6	Timer IC-555: Block diagram, Astable, monPostable multivibrator (working and design). Problems	Nil
		5	5	3	**Combinational and Sequential Circuits:** Combinational Circuits: Introduction to SOP and POS equation	3	**Combinational and Sequential Circuits:** Combinational Circuits: Introduction to SOP and POS equation	
3	**Feb.**	1&2	7	3	. Concept of Standard SOP and POS equation. Concept of K-map and their use in reduction of Boolean expressions, design of half adder	3	. Concept of Standard SOP and POS equation. Concept of K-map and their use in reduction of Boolean expressions, design of half adder	Nil
		3&4	10	6	Full adder, half subtract, Study of binary to gray and gray to binary code conversion. Problems. Sequential Circuits: RS flip flop using NAND/NOR, clocked RS, D, JK and T-flip flops. Application of flip flops in Sequential Circuits as Counters and Registers	6	Full adder, half subtract, Study of binary to gray and gray to binary code conversion. Problems. Sequential Circuits: RS flip flop using NAND/NOR, clocked RS, D, JK and T-flip flops. Application of flip flops in Sequential Circuits as Counters and Registers	Nil
		5	06	3	Asynchronous and Synchronous Counters. (3-bit Counter), Shift Registers and their types of operation - SISO, SIPO, PISO, PIPO (Concepts only).	3	Asynchronous and Synchronous Counters. (3-bit Counter), Shift Registers and their types of operation -SISO, SIPO, PISO, PIPO (Concepts only).	Nil

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Signature of Teacher

Signature of Head of Department

Head
Department of Physics
Arts Science & Commerce
College

Signature of Faculty In-charge

Incharge
Science Faculty
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College,Indapur, Dist.Pune

Signature of the Principal

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INDAPUR-413106 DIST-PUNE

Arts, Science and Commerce College, Indapur, Dist. Pune

TEACHING AND EVALUATION PLAN

Name of the teacher Mr. Kamble Akin Vasant **Year:** 2019-20 **Semester:** 6

Subject: Physics **Paper** PHY-363: Thermodynamics and Statistical Physics **Class:** T.Y.B.Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Dec.	1&2	12	6	**Transport phenomenon and Maxwell's relations:** Mean free path, Transport phenomenon, Viscosity, Thermal conductivity and diffusion.	6	**Transport phenomenon and Maxwell's relations:** Mean free path, Transport phenomenon, Viscosity, Thermal conductivity and diffusion.	Nil	
		3&4	11	6	Thermodynamic functions: Internal Energy, Enthalpy, Helmholtz function, Gibb's function, Derivation of Maxwell Relations, Specific heat and latent heat equations, Joule Thomson effect (Throttling Process), Problems **Elementary Concepts of Statistics:** Probability, distribution functions, Random Walk	6	Thermodynamic functions: Internal Energy, Enthalpy, Helmholtz function, Gibb's function, Derivation of Maxwell Relations, Specific heat and latent heat equations, Joule Thomson effect (Throttling Process), Problems **Elementary Concepts of Statistics:** Probability, distribution functions, Random Walk	Nil	
		5	2	2	Binomial distribution, Simple random walk problem, Calculation of mean values, Probability distribution for large-scale N,	2	Binomial distribution, Simple random walk problem, Calculation of mean values, Probability distribution for large-scale N,	Nil	
2	Jan.	1&2	10	6	Gaussian probability distributions, Problems Statistical Distribution of System of Particles and Ensembles: Specification of state of system, Statistical ensembles	6	Gaussian probability distributions, Problems Statistical Distribution of System of Particles and Ensembles: Specification of state of system, Statistical ensembles	Nil	
		3&4	12	6	Basic Postulates, Probability calculations, Behaviors of density of states, Thermal, Mechanical and general interactions	6	Basic Postulates, Probability calculations, Behaviors of density of states, Thermal, Mechanical and general interactions	Nil	
		5	5	2	Micro canonical Ensemble (Isolated System), Canonical ensembles	2	Micro canonical Ensemble (Isolated System), Canonical ensembles		
3	Feb	1&2	7	3	Simple application of canonical ensemble, Molecules in Ideal gas, Calculation of mean values in canonical ensemble. Problems.	3	Simple application of canonical ensemble, Molecules in Ideal gas, Calculation of mean values in canonical ensemble. Problems.	Nil	

		3&4	10	6	**Introduction to Quantum Statistics:** Quantum distribution function, Maxwell-Boltzmann's statistics, Bose-Einstein Statistics, Fermi-Dirac Statistics	6	**Introduction to Quantum Statistics:** Quantum distribution function, Maxwell-Boltzmann's statistics, Bose-Einstein Statistics, Fermi-Dirac Statistics	Nil	
		5	06	3	Comparison of the distributions. Applications of Quantum Statistics, Problems	3	Comparison of the distributions. Applications of Quantum Statistics, Problems	Nil	

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TEACHING AND EVALUATION PLAN

Name of the teacher Mr. Holkunde Viresh Chandrakant

Subject: Physics **Year:** 2019-20 **Semester:** 6

Paper PHY-366 Elective-II (R): Lasers **Class:** T.Y.B.Sc.

Part I : Teaching Plan						Part II : Evaluation of Plan			
1	2	3	4	5	6	7	8	9	10
Sr. No.	Month	Week	No. of working days	No. of periods available	Topics to be taught	No. of periods engaged	Topics taught	Deviation in periods	Remarks
1	Dec	1&2	12	6	**Introduction to Lasers:** Brief history of Lasers, Interaction of radiation with matter, Energy levels, Population density,	4	**Introduction to Lasers:** Brief history of Lasers, Interaction of radiation with matter, Energy levels, Population density,	Nil	
		3&4	11	6	Boltzmann distribution, Stimulated Absorption, Spontaneous Emission and Stimulated Emission, Einstein's Coefficients, Einstein's relations. Characteristics of Laser: Directionality, Mono-chromaticity, Coherence	6	Boltzmann distribution, Stimulated Absorption, Spontaneous Emission and Stimulated Emission, Einstein's Coefficients, Einstein's relations. Characteristics of Laser: Directionality, Mono-chromaticity, Coherence	Nil	
		5	2	2	**Laser Action:** Population inversion, Condition for light amplification, Gain coefficient, Active medium, metastable states. Pumping schemes: three level and four level	2	**Laser Action:** Population inversion, Condition for light amplification, Gain coefficient, Active medium, metastable states. Pumping schemes: three level and four level	Nil	
2	Jan	1&2	10	6	**Laser Oscillator:** Optical feedback, round trip gain, critical population inversion,Optical resonator, condition for steady state oscillations, cavity resonance frequencies.	6	**Laser Oscillator:** Optical feedback, round trip gain, critical population inversion,Optical resonator, condition for steady state oscillations, cavity resonance frequencies.	Nil	
		3&4	12	6	**Laser Output:** Line-shape broadening: Lifetime broadening, Collision broadening	6	**Laser Output:** Line-shape broadening: Lifetime broadening, Collision broadening	Nil	

3	**Feb**	1&2	7	3	**Types of Lasers:** Solid State Lasers Ruby Laser, Diode Laser, Gas Lasers – HeNe Laser, CO2 Laser	3	**Types of Lasers:** Solid State Lasers Ruby Laser, Diode Laser, Gas Lasers – HeNe Laser, CO2 Laser	Nil	
		3&4	10	6	**Applications of Lasers:** Industrial: welding, cutting, drilling	5	**Applications of Lasers:** Industrial: welding, cutting, drilling	Nil	
		5	06	3	Nuclear Science: laser isotope separation, laser fusion, Medical: eye surgery	3	Nuclear Science: laser isotope separation, laser fusion, Medical: eye surgery	Nil	

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