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

TEACHING AND EVALUATION PLAN

Name of the teacher	**Dr. Veer Shivaji Shamrao**	**Year: 2020-21**	**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	1&2	10	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	
		3&4	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	
		5	5	2	. 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.	2	. 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	
2	July	1&2	10	5	**OPERTAIONAL AMPLIFIERS** Introduction Ideal and practical Characteristics Operational amplifier: IC 741- Block diagram and Pin diagram Concept of virtual groundInverting and non-inverting operational amplifiers with concept of gain	5	**OPERTAIONAL AMPLIFIERS** Introduction Ideal and practical Characteristics Operational amplifier: IC 741- Block diagram and Pin diagram Concept of virtual groundInverting and non-inverting operational amplifiers with concept of gain	Nil	

		3&4	12	6	Operational amplifier as an adder and substracter.Problems	6	Operational amplifier as an adder and substracter.Problems	Nil	
		5	5	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	
3	**Aug**	1&2	10	6	**POWER SUPPLY** Concept and working of rectifier half wave, full wave and bridge rectifierRipple voltageRC filter circuit	6	**POWER SUPPLY** Concept and working of rectifier half wave, full wave and bridge rectifierRipple voltageRC filter circuit	Nil	
		3&4	8	4	Unregulated and regulated power supplyConcept of load and line regulation Zener as regulator Problems.	4	Unregulated and regulated power supplyConcept of load and line regulation Zener as regulator Problems.	Nil	
		5	5	3	**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.	3	**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.		
4	**Sep.**	1&2	7	3	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	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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2 One copy of the plan should be submitted at the beginning of the term after filling up columns 1 to 6.
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Signature of Teacher

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

TEACHING AND EVALUATION PLAN

Name of the teacher	**Prof.(Dr.) Veer Shivaji Shamrao**	**Year: 2020-21**	**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**	1&2	10	6	**Semiconductor Devices and its Applications** 1.1 SCR: Construction, working, Characteristics and applications as half wave and full wave rectifier1.2 DIAC and TRIAC: Construction, working, characteristics and applications as fan regulator	6	**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	
		3&4	12	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 (Half wave and Full wave), 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 (Half wave and Full wave), Instrumentation amplifier **2.2 Timer IC 555:** Applications as PAM, PWM, FM and FSK generator	Nil	
		5	5	2	**2.3 Voltage Controlled Oscillator (IC566):** Block diagram and working	2	**2.3 Voltage Controlled Oscillator (IC566):** Block diagram and working	Nil	
2	**July**	1&2	10	5	**2.4 Phase Locked Loop (IC565):** Block diagram and working and applications as FM detector, FSK detector, Frequency multiplier and Frequency Translator	3	**2.4 Phase Locked Loop (IC565):** Block diagram and working and applications as FM detector, FSK detector, Frequency multiplier and Frequency Translator	Nil	
		3&4	12	6	**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	6	**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	Nil	

					to 7-segment decoder, Binary-to-Gray and Gray-to-Binary code converter.		to 7-segment decoder, Binary-to-Gray and Gray-to-Binary code converter.	
		5	5	3	**Digital Logic Circuits II: Sequential Logic** 4-bit serial, parallel and combinational counter.Study of IC 7490 with applications as 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	**Digital Logic Circuits II: Sequential Logic** 4-bit serial, parallel and combinational counter.Study of IC 7490 with applications as 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.	Nil
3	Aug	1&2	7	3	**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)	3	**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
		3&4	10	6	Control gates and Buffer amplifier)	6	Control gates and Buffer amplifier)	Nil
		5	6	3	**4.2 Analog to Digital converters:** Single slope, Dual slope, Flash (Simultaneous) type, Counter ramp type, Continuous type and Successive approximation type	3	**4.2 Analog to Digital converters:** Single slope, Dual slope, Flash (Simultaneous) type, Counter ramp type, Continuous type and Successive approximation type	Nil

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TEACHING AND EVALUATION PLAN

Name of the teacher Holkunde Viresh Chandrakant **Year:** 2020-21 **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	Jun	1&2	10	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	
		3&4	12	5	**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	5	**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	
		5	5	2	**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.**	2	**Magnetostatics** a. Concepts of magnetic induction, magnetic flux and magnetic field. Magnetic induction due to straight current carrying conductor, magnetization of matter, relationship between **B, H** and **M.**	Nil	
2	July	1&2	10	5	Boundary conditions at the interface of two magnetic media (Normal and tangential components).	3	Boundary conditions at the interface of two magnetic media (Normal and tangential components).	Nil	

		3&4	12	6	Day to day applications of Electrodynamics. Concept of electromagnetic induction, Faradays law of induction, Lenz's law, displacement current, generalization of Amperes' law.	6	Day to day applications of Electrodynamics. Concept of electromagnetic induction, Faradays law of induction, Lenz's law, displacement current, generalization of Amperes' law.		
3	Aug.	5 1&2	5 7	2 3	Maxwell's equations (Differential and Integral form) and their physical significance Polarization, reflection and refraction of electromagnetic waves through media.	2 2	Maxwell's equations (Differential and Integral form) and their physical significance Polarization, reflection and refraction of electromagnetic waves through media.	 Nil	
		3&4	10	6	Wave equation and plane waves in free space.	6	Wave equation and plane waves in free space.	Nil	
		5	6	3	Poynting theorem and Poynting vector.	3	Poynting theorem and Poynting vector.	Nil	

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TEACHING AND EVALUATION PLAN

Name of the teacher Mrs. Raut Swati Amol **Year:** 2020-21 **Semester:** 5

Subject: Physics **Paper:** PHY-351: Mathematical Methods in Physics-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	Jun.	1&2	10	6	**Curvilinear Co-ordinates** Review of Cartesian, spherical and cylindrical co-ordinate, transformation equation, General Curvilinear co-ordinate system: Co-ordinate surface, co-ordinate lines, length, surfaces and volume elements in curvilinear co-ordinate system.	6	**Curvilinear Co-ordinates** Review of Cartesian, spherical and cylindrical co-ordinate, transformation equation, General Curvilinear co-ordinate system: Co-ordinate surface, co-ordinate lines, length, surfaces and volume elements in curvilinear co-ordinate system.	Nil	
		3&4	12	4	Orthogonal curvilinear co-ordinate system, expressions for gradient, divergence, Laplacian, and curl, special case for gradient, divergence and curl in Cartesian, spherical polar and cylindrical co-ordinate system, Problems.	4	Orthogonal curvilinear co-ordinate system, expressions for gradient, divergence, Laplacian, and curl, special case for gradient, divergence and curl in Cartesian, spherical polar and cylindrical co-ordinate system, Problems.	Nil	
		5	5	3	**The Special Theory of Relativity** Introduction and applications, Newtonian relativity	3	**The Special Theory of Relativity** Introduction and applications, Newtonian relativity	Nil	
2	July.	1&2	10	5	Galilean transformation equation, Michelson-Morley experiment, Postulates of special theory of relativity	5	Galilean transformation equation, Michelson-Morley experiment, Postulates of special theory of relativity	Nil	
		3&4	12	6	Lorentz transformations, Kinematic effects of Lorentz transformation, Length contraction, Proper time, Problems	6	Lorentz transformations, Kinematic effects of Lorentz transformation, Length contraction, Proper time, Problems	Nil	
		5	5	3	**Partial Differential Equations** Introduction and applications of Partial differential equations (PDE), General methods for solving second order PDE, Method of separation of variables in Cartesian,	3	**Partial Differential Equations** Introduction and applications of Partial differential equations (PDE), General methods for solving second order PDE, Method of separation of variables in Cartesian,		

3	**Aug.**	1&2	7	3	Spherical polar and cylindrical co-ordinate system (two dimensional Laplace's equation, one dimensional Wave equation), Singular points (x = x0), Solution of differential equation-Statement of Fuch's theorem, Frobenius method of series solution.	3	Spherical polar and cylindrical co-ordinate system (two dimensional Laplace's equation, one dimensional Wave equation), Singular points (x = x0), Solution of differential equation-Statement of Fuch's theorem, Frobenius method of series solution.	Nil
		3&4	10	4	**Special Functions** Introduction, generating function for Legendre Polynomials: Pn(x), Properties of Legendre.	4	**Special Functions** Introduction, generating function for Legendre Polynomials: Pn(x), Properties of Legendre.	Nil
		5	6	3	Polynomials, Generating function for Hermite Polynomials: Hn(x), Properties of Hermite Polynomials, Bessel function of first kind: Jn (x), Properties of Bessel function of first kind, Applications of Special Functions in Physics, Problems	3	Polynomials, Generating function for Hermite Polynomials: Hn(x), Properties of Hermite Polynomials, Bessel function of first kind: Jn (x), Properties of Bessel function of first kind, Applications of Special Functions in Physics, Problems	Nil

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TEACHING AND EVALUATION PLAN

Name of the teacher Prof.(Dr.) Veer Shivaji Shamrao **Year:** 2020-21 **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	Jan.	1&2	07	4	**1: Semiconductor Devices:** a. LED and Photodiode, Optocoupler. (Working Principles) Problems. Ref. 1. b. BJT: Transistor amplifier classifications - Class A, B, C and AB (working only), Differential amplifier (transistorized), Problems.	4	**1: Semiconductor Devices:** a. LED and Photodiode, Optocoupler. (Working Principles) Problems. Ref. 1. b. BJT: Transistor amplifier classifications - Class A, B, C and AB (working only), Differential amplifier (transistorized), Problems.	Nil	
		3&4	12	6	c. 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:** a. Three Pin Regulators: Block diagram of 3-pin IC regulator, study of IC-78XX, 79XX. Dual Power Supply using IC-78XX, 79XX. Ref. 1 b. Switching Regulators (SMPS): Introduction, Block diagram, Advantages and Disadvantages. Ref. 4	6	c. 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:** a. Three Pin Regulators: Block diagram of 3-pin IC regulator, study of IC-78XX, 79XX. Dual Power Supply using IC-78XX, 79XX. Ref. 1 b. Switching Regulators (SMPS): Introduction, Block diagram, Advantages and Disadvantages.	Nil	
		5	6	3	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,	3	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,	Nil	

		3&4	10	6	c. Timer IC-555: Block diagram, Astable, monostable multivibrator (working and design). Problems	6	c. Timer IC-555: Block diagram, Astable, monostable multivibrator (working and design). Problems	Nil	
3	**March**	1&2	10	5	**Combinational and Sequential Circuits:** a. Combinational Circuits: Introduction to SOP and POS equation. Concept of Standard SOP and POS equation. Concept of K-map and their use in reduction of Boolean expressions, design of half adder	5	**Combinational and Sequential Circuits:** a. Combinational Circuits: Introduction to SOP and POS equation. 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	5	3	Full adder, half subtract, Study of binary to gray and gray to binary code conversion. Problems. Ref. 2 b. 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.	3	Full adder, half subtract, Study of binary to gray and gray to binary code conversion. Problems. Ref. 2 b. 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	
		4&5	10	6	Asynchronous and Synchronous Counters. (3-bit Counter), Shift Registers and their types of operation -SISO, SIPO, PISO, PIPO (Concepts only). Ref. 2	6	Asynchronous and Synchronous Counters. (3-bit Counter), Shift Registers and their types of operation -SISO, SIPO, PISO, PIPO (Concepts only). Ref. 2	Nil	

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TEACHING AND EVALUATION PLAN

Name of the teacher	**Mr. Kamble Akin Vasant**	**Year: 2020-21**	**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	Jan.	1&2	07	4	**Transport phenomenon and Maxwell's relations:** Mean free path, Transport phenomenon, Viscosity, Thermal conductivity and diffusion.	4	**Transport phenomenon and Maxwell's relations:** Mean free path, Transport phenomenon, Viscosity, Thermal conductivity and diffusion.	Nil	
		3&4	12	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	5	3	Binomial distribution, Simple random walk problem, Calculation of mean values, Probability distribution for large-scale N,	3	Binomial distribution, Simple random walk problem, Calculation of mean values, Probability distribution for large-scale N,	Nil	
2	Feb.	1&2	11	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	11	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	

3	**March**	1&2	10	5	Micro canonical Ensemble (Isolated System), Canonical ensembles, simple application of canonical ensemble, Molecules in Ideal gas, Calculation of mean values in canonical ensemble. Problems.	5	Micro canonical Ensemble (Isolated System), Canonical ensembles, simple application of canonical ensemble, Molecules in Ideal gas, Calculation of mean values in canonical ensemble. Problems.	Nil	
		3	5	3	**Introduction to Quantum Statistics**: Quantum distribution function, Maxwell-Boltzmann's statistics, Bose-Einstein Statistics, Fermi-Dirac Statistics	3	**Introduction to Quantum Statistics**: Quantum distribution function, Maxwell-Boltzmann's statistics, Bose-Einstein Statistics, Fermi-Dirac Statistics	Nil	
		4&5	10	6	Comparison of the distributions. Applications of Quantum Statistics, Problems	6	Comparison of the distributions. Applications of Quantum Statistics, Problems	Nil	

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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	Jan	1&2	07	4	**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	12	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	5	3	**Laser Action:** Population inversion, Condition for light amplification, Gain coefficient, Active medium, metastable states. Pumping schemes: three level and four level	3	**Laser Action:** Population inversion, Condition for light amplification, Gain coefficient, Active medium, metastable states. Pumping schemes: three level and four level	Nil	
2	Feb	1&2	11	6	**Laser Oscillator:** Optical feedback, round trip gain, critical population inversion,Optical	6	**Laser Oscillator:** Optical feedback, round trip gain, critical population inversion,Optical resonator, condition	Nil	

					resonator, condition for steady state oscillations, cavity resonance frequencies.		for steady state oscillations, cavity resonance frequencies.		
		3&4	11	6	**Laser Output:** Line-shape broadening: Lifetime broadening, Collision broadening	6	**Laser Output:** Line-shape broadening: Lifetime broadening, Collision broadening	Nil	
3	**March**	1&2	10	5	**Types of Lasers:**Solid State Lasers Ruby Laser, Diode Laser, Gas Lasers – HeNe Laser, CO_2 Laser	5	**Types of Lasers:**Solid State Lasers Ruby Laser, Diode Laser, Gas Lasers – HeNe Laser, CO_2 Laser	Nil	
		3	5	3	**Applications of Lasers:** Industrial: welding, cutting, drilling	3	**Applications of Lasers:** Industrial: welding, cutting, drilling	Nil	
		4&5	10	6	Nuclear Science: laser isotope separation, laser fusion, Medical: eye surgery	6	Nuclear Science: laser isotope separation, laser fusion, Medical: eye surgery	Nil	

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