Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR kalesh Semester:sem2

Class: F.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December	15	12	1.alternating current theoery 2.AC bridges	1.concept of L,R and C :review ac circuit containing pure R,pure L and pure C representation of sinusoids by complex numbers ,se series LCR and LR and LC circuit,reson resonance in LCR circuit (both series and parallel),p power in ac circuit Q factor .2. AC Bridge and general AC bridge Maxwell,de sauty,wein and Hay bridges.
January	15	12	1.electronics	1.ohm's law

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (E), Mumbai-400 060.

			circuit theorem 2.DC power supply	kirchhoff's law review ,superp superposition theorem,Thevenine's theorem ,ideal current theorem,Norton's theorem ,reciproc reciprocity theorem,maximum transfer theorem,nume numerical related to circuit analysis using above theorem 2.halve wave rectifier,f full wave rectifier,bridge rectifier,PIV,rip ripple factor
February	15	6	digital electronics	logic gates (review),NAND and NOR gates as basic building blocks,EXOR gate logic expression and logic symbol ,truth table,implementation using basic logic gates and it's application,boolean algebra boolean theorem,De morgan theorem, half adder and full adder
March				
April				

Head of Physics Department
[illegible] Maharashtra's
[illegible] College of
Arts, Science [illegible] Commerce,
Jogeshwari (E[illegible]) [illegible]400 060.

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.R.R Kalesh Semester: 2

Class: F.Y.BSc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				

October				
November				
December	15	12	1.superposition of collinear harmonic oscillation 2.superposition of two perpendicular harmonic oscillation	1.Linearity and superposition principle,superp superposition of two collinear oscillations having 1.equal frequencies 2.different frequencies(beats) 2. graphical and analytical methods,lissajous figures with equal and unequal frequencies and their uses,
January	15	6	3.wave motion	3.transverse wave on string ,and standing waves on string ,normal modes of a string,gr group velocity,ph phase velocity,plane waves ,spherical waves,wave intensity.
February				
March				
April				

Tachan Book

Academic Year: 2018-19

Head of Physics Department
Government of Maharashtra's
Yusuf College of
Science & Commerce,
Mumbai-400

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:2

Class: F.Y.BSc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December	15	10	1.superposition of collinear harmonic oscillation 2.superposition of two perpendicular	1.Linearity and superposition principle,superp superposition of two collinear oscillations

			harmonic oscillation	having 1.equal frequencies 2.different frequencies(beats) 2. graphical and analytical methods,lissajous figures with equal and unequal frequencies and their uses,
January	15	7	3.wave motion	3.transverse wave on string ,and standing waves on string ,normal modes of a string,gr group velocity,ph phase velocity,plane waves ,spherical waves,wave intensity.
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai-400 060

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:2

Class: F.Y.BSc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December	15	11	electrostatics and magnetostatics electric field work and energy in electrostatics	introduction,coulom coulombs law, the electric field,cont continuous charge distribution,el electric potential,intr introduction to potential,comm comments on potential the work done to move a charge ,the

Head of Physics Department
Government of Maharashtra's
Rizvi Yusuf College of
Science & Commerce,

				energy of point,dist distribution
January	15	5	magnetostatics the biot savart law	magnetic fields steady current, the magnetic field of a steady current,Helmholtz coil and solenoid.
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Semester:

Class: subject:

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:3

Class:S.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	8	15	Paper 3.Unit.1. 1.Differential Equations:	Unit I 15 Lectures Differential Equations: Introduction, Ordinary differential equations: first order homogeneous and non-homogeneous differential equations with variable coefficients,
August	7	15	Paper 3.Unit.1.	Variable separable method, exact differentials equation General first order Linear Differential equation and Second-order homogeneous differential equations with constant coefficients. Problems

				depicting physical situations like LC and RL circuits.
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:3

Class: S.Y.B.Sc

subject: Physics

Semester planning for teacher

Month	No. of Lectures	No. of Lectures	Title of Topic to	Key points of

	as per time table	as per syllabus	be covered	topic
June				
July	8	15	Paper 1.Unit.2	Concept of Entropy, Change in Entropy, Change in Entropy in Adiabatic Process, Change in Entropy in Reversible cycle, Principle of increase of Entropy, Change in Entropy in Irreversible Process, T – S diagram, Physical Significance of Entropy, Entropy of a perfect gas,
August	7	15	Paper 1.Unit.2	Kelvin's thermodynamic Scale of temperature, (Omit alternative method using Carnot cycle), The size of a Degree, Zero of Absolute scale, Identity of perfect Gas Scale and Absolute scale.Third Law of thermodynamics, Zero-point energy, Negative temperatures (Not possible), Heat Death of the Universe.
September				
October				
November				
December				
January				
February				

March				
April				

Tachan Book

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:3

Class: : S.Y.B.Sc

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	8	15	Paper 1.unit 1	Reversible and irreversible process, Heat Engines, Carnot's cycle, Effective way to increase Efficiency, Carnot's Engines and refrigerator,

				Coefficient of performance, Second Law of Thermodynamics - Statements, Carnot Theorem, Steam Engine, Otto Engine, Diesel Engine. Maxwell's thermodynamics relations (No derivation required),
August	7	15	Paper 1.unit 1	Applications of Maxwell's thermodynamic relations: Specific Heat Equation, Joule Thomson Cooling, Temperature Change in Adiabatic Process, Clausius – Clapeyron equation
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black

				Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:3

Class: S.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	5	15	Paper 2 unit 1	Analog Electronics 1.Faithful amplification, Transistor Biasing, Inherent Variations of Transistor Parameters, Essentials of a Transistor Biasing Circuit,
August	8	15	Paper 2 unit 1	Methods of Transistor Biasing, Base Resistor Method, Emitter Bias Circuit, Circuit analysis of Emitter Bias, Voltage Divider Bias Method.

September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Head of Physics Department
Government of Maharashtra's
College of
Science & Commerce,
Mumbai-400 050.

Semester Wise Plan

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:3

Class: S.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	8	15	Paper 1.unit 1	Reversible and irreversible process, Heat

				Engines, Carnot's cycle, Effective way to increase Efficiency, Carnot's Engines and refrigerator, Coefficient of performance, Second Law of Thermodynamics - Statements, Carnot Theorem, Steam Engine, Otto Engine, Diesel Engine. Maxwell's thermodynamics relations (No derivation required),
August	7	15	Paper 1.unit 1	Applications of Maxwell's thermodynamic relations: Specific Heat Equation, Joule Thomson Cooling, Temperature Change in Adiabatic Process, Clausius – Clapeyron equation
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:3

Class: S.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	8	15	Paper 1.unit 1	Reversible and irreversible process, Heat Engines, Carnot's cycle, Effective way to increase Efficiency, Carnot's Engines and refrigerator, Coefficient of performance, Second Law of Thermodynamics - Statements, Carnot Theorem, Steam Engine, Otto Engine,

				Diesel Engine. Maxwell's thermodynamics relations (No derivation required),
August	7	15	Paper 1.unit 1	Applications of Maxwell's thermodynamic relations: Specific Heat Equation, Joule Thomson Cooling, Temperature Change in Adiabatic Process, Clausius – Clapeyron equation
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2022-23

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (E), Mumbai-400 060.

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:4

Class: S.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	11	15	Paper 3 unit 1The Schrodinger wave equation	1.concept of wave function,Born interpretation of wave function.2.concept of operator in quantum mechanics examples position,moment momentum and energy operators.3.Eigenvalue equation,expect expectation values of operators.4.Schrodinger equation.5.Postulates of Quantum mechanics.6.Analogy between wave equation and Schrodinger equation.7.time dependent and time independent steady state Schrodinger equation
August	5	15		stationary state.8.Superposition principle.9.probability current density,e equation of continuity

				and itit's physical significance.
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:4

Class: S.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	10	15	Paper 1 unit 2 Michelson's interferometer	principle,con construction working,circul circular fringes,localiz localised fringes,wh white light fringes,visi visibility of fringes Applications of Micholson interferometer a.meaurement of wavelength.b.determination of the difference in the wavelength of two waves.c.Thickness of athin transparent sheet.d.determination of the refractive index of gases.
August	06	15	Resolving power	Rayleigh's criterion,resolv resolving power of optical instruments,crite criterion for resolution according to Rayleigh,resol resolving power of a telescope,resol resolving power of a prism,res resolving power of a plane transmission grating
September				
October				

November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR kalesh Semester:4

Class: S.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures	No. of Lectures	Title of Topic to	Key points of topic

	as per time table	as per syllabus	be covered	
June				
July	10	15	Paper 3 unit1 Diffraction and polarization fresnel diffraction	Huygen's-Fresnel theory.distinction between interference and diffraction,fresneFresnel and fraunhoffer 5yptypes of diffraction,positi position of maximum and minimum intensity,Diff Diffraction pattern due to straight edge
August	07	15	Fraunhoffer diffrDiffraction	fraunhoffer Diffraction at asing single slit,inten intensity distribution in difDiffraction pattern due to a single slit,frau fraunhoffer Diffraction at double slit.distinction between single slit and double slit diffraction pattern.
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:4

Class: S.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	11	15	electrodynamics and vector calculus	line surface volume intedrals,fund fundamental theorem of gradient,curvilinear co ordinates ,divergence and curl.

August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR kalesh

Semester:4

Class:S.Y.B.Sc

subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	14	15	Paper 1U-1 Diffraction and Polarization 1 2.Fraunhoffer diffraction: 3. Polarization	UI Diffraction and Polarization 1. Fresnel diffraction: Introduction, Huygens-Fresnel's theory, Fresnel's assumptions, Distinction between interference and diffraction, Fresnel and Fraunhoffer types of diffraction, Diffraction pattern due to straight edge: positions of maximum and minimum intensity Fraunhoffer diffraction: Introduction, Fraunhoffer diffraction at a single slit, intensity distribution in diffraction pattern due to a single slit, Fraunhoffer diffraction at double slit, Distinction between single slit and double slit diffraction pattern 3. Polarization: Introduction, Malus' Law, Production of Polarized light: The wire grid polarizer and a Polaroid, Polarization by

				Reflection, Polarization by Double Refraction Interference of Polarized light: Quarter wave plates and half wave plates (Qualitative) Ordinary and Extra Ordinary Rays, Positive and Negative crystals
August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Head of Physics Department
Government of Maharashtra's
Yeshwant College of
Arts & Commerce

Semester Wise Plan

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR kalesh

Semester:4

Class:S.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July			Paper 1U-1 Diffraction and Polarization 1 2.Fraunhoffer diffraction: 3. Polarization	UI Diffraction and Polarization 1. Fresnel diffraction: Introduction, Huygens-Fresnel's theory, Fresnel's assumptions, Distinction between interference and diffraction, Fresnel and Fraunhoffer types of diffraction, Diffraction pattern due to straight edge: positions of maximum and minimum intensity Fraunhoffer diffraction: Introduction, Fraunhoffer diffraction at a single slit, intensity

				distribution in diffraction pattern due to a single slit, Fraunhoffer diffraction at double slit, Distinction between single slit and double slit diffraction pattern 3. Polarization: Introduction, Malus' Law, Production of Polarized light: The wire grid polarizer and a Polaroid, Polarization by Reflection, Polarization by Double Refraction Interference of Polarized light: Quarter wave plates and half wave plates (Qualitative) Ordinary and Extra Ordinary Rays, Positive and Negative crystals
August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, WorkinModels)

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai-400 060.

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:5

Class: T.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	12	15	Paper 2 unit 1.electrical properties of metals	classical free electrons theorery of metals,drawb drawbacks of classical theory,relaxa relaxation time,colli collision time, and mean free path, quantum theory of free electrons,fermi dirac statistics and electronic distribution in solids,den density of energy states and fermi energy
September	15	4	Paper 2 unit 1 electrical properties of metals	the fermi distribution function,he heat capacity of electron gas,me mean energy of electron gas at 0 k,electr electrical conductivity from quantum

				mechanical consideration, thermionic emission
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:5

Class: T.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	11	15	Paper 2 unit 1electrical properties of metals	classical free electrons theorery of metals,drawb drawbacks of classical theory,relaxa relaxation time,colli collision time, and mean free path, quantum theory of free electrons,fermi dirac statistics and electronic distribution in solids,den density of energy states and fermi energy
September	5	15	Paper 2 unit 1.electrical properties of metals	the fermi distribution function,he heat capacity of electron gas,me mean energy of electron gas at 0 k,electr electrical conductivity from quantum mechanical consideration, thermionic emission
October				

November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR.Kalesh Semester:5

Class: T.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as	No. of Lectures as	Title of Topic to	Key points of

	per time table	per syllabus	be covered	topic
June				
July				
August	15	10	Paper 2 unit 3.magnetic properties of matter	diamagnetis magnetism and paramagnetism, the origin of permanent magnetic dipoles,diamagn dia magnetism and larmor precession,t the static paramagnetic susceptibility,Ferr Ferromagnetic the weiss molecular field.
September	15	5	Paper 2 unit 3.magnetic properties of matter	comprisioarision of the wiess theory with experiment,qualit qualitative remarks about domains,qual qualitative idea about antiferromagnetism and ferrites
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RRKaleh

Semester:5

Class: T.Y.B.Sc

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	10	15	Paper 4 unit 4.electrodynamics	1.the continuity equation,poyn poyntings theorem,newt Newton's third law in electrodynamics 2.the wave equation

				for E and B,monoc monochromatic plane waves
September	5	15	Paper 4 unit 4.electrodynamics	energy and momentum in electromagnetic waves,propag propagation in linear media,refl reflection and transmission of EM waves at normal incidence.
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR.Kalesh

Semester:5

Class:T.Y.B.Sc

subject:physics

Head of Physics Department
Government of Maharashtra's
Late Shri Venkatrao Naik College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai - 400 060.

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2022-23

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai-400 060.

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR.Kalesh

Semester:5

Class: T.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	10	15	Paper 4 unit 4.electrodynamics	1.the continuity equation,poyn poyntings theorem,newt Newton's third law in electrodynamics 2.the wave equation for E and B,monoc monochromatic plane waves
September	05	15	Paper 4 unit 4.electrodynamics	energy and momentum in

				electromagnetic waves,propag propagation in linear media,refl reflection and transmission of EM waves at normal incidence.
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh Semester:6

Class: T.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December	11	15	Paper 2 Unit.1.electronics	1.field effect transistors,jfet,basic ideas,drs drain curve,t the transconductance currvcurve,biasing in ohmic region and active region,jfet common source amplifier,jfet analog switch multplexer VCR and current sourcing 2.MOSFET: DEpleepletion and enhancement mode,MOSFET operation and characteristics,digit digital switching
January	6	15	Paper 2 Unit.1.electronics	3.thyristor::SCR WORKING equivalent circuit important terms I-V characteristics SCR

				AS a switch,half wave rectifier and full wave rectifier,TRIAC::CONstr Construction operation,I-V characteristics application DIAC::Construction operation,I-V characteristics application,4.optoelectronic devices::pho photo diode,phototransist phototransistor,optocoupler.
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai-400 060.

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: DR.RR Kalesh Semester:6

Class: T.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December	15	11	Paper 2 Unit.1.electronics	1.field effect transistors,jfet,basic ideas,drs drain curve,t the transconductance currvcurve,biasing in ohmic region and active region,jfet common source amplifier,jfet analog switch multplexer VCR and current sourcing 2.MOSFET: DEpleepletion and enhancement mode,MOSFET operation and characteristics,digit digital switching
January	15	5	Paper 2 Unit.1.electronics	thyristor::SCR WORKING equivalent circuit important terms I-V characteristics SCR AS a switch,half wave rectifier and full wave

				rectifier,TRIAC::CONstr Construction operation,I-V characteristics application DIAC::Construction operation,I-V characteristics application,4.optoelectronic devices::pho photo diode,phototransist phototransistor,optocoupler.
February				
March				
April				

Tachan Book

Academic Year: 2018-19

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai - 400 060.

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:6

Class: T.Y.B.Sc subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December	15	11	Paper 2 Unit.3.electronics	1.op amp application::log amplifier,instrument instrumentation amplifier voltage controlled current sources,fi first order active filters,qstabl astable using op amp ,squ square wave and triangular wave generator using op amp
January	15	4	Paper 2 Unit.3.electronics	wien-bridge oscillator using op amp 2.555timer:block diagram,momostable and astable operation with (VCO) triggered linear ramp generator.
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai -400 060.

Name of the Teacher: Dr.RR Kalesh

Semester:6

Class: T.Y.B.SC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				

November				
December	15	12	Paper 4 Unit.4.special theory of relaelativity	1.The geometric representation of time-space:space-time diagrams,leng length contraction and time dilation,the time order and space separation of events,the twin paradooX,the principle of equilence and general relativity, gravitational red shift
January	15	5	Paper 4 Unit.4.special theory of trelativity	2.introduction to cosmology: the large scale structure of the universe:typ types of galaxies radio resources,quasars dopplDoppler shift and expansion of the universe hubble's law ,ra radiation background. 3.astronomy in different bands of radiation - Optical,rad radio and xray astronomy.
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
(East), Mumbai -400 060.

Name of the Teacher: Dr.RR Kalesh

Semester: physics

Class:

subject:

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December				

January				
February				
March				
April				

Tachan Book

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Dr.RR Kalesh

Semester:6

Class: T.Y.B.Sc

subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				

July				
August				
September				
October				
November				
December	12	15	Paper 4 Unit.4.special theory of relaelativity	1.The geometric representation of time-space:space-time diagrams,leng length contraction and time dilation,the time order and space separation of events,the twin paradooX,the principle of equilence and general relativity, gravitational red shift
January	05	15	Paper 4 Unit.4.special theory of trelativity	2.introduction to cosmology: the large scale structure of the universe:typ types of galaxies radio resources,quasars dopplDoppler shift and expansion of the universe hubble's law ,ra radiation background. 3.astronomy in different bands of radiation - Optical,rad radio and xray astronomy.

February				
March				
April				

Tachan Book

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Head of Physics Department
Government of Maharashtra's
Ismail Yusuf College of
Arts, Science & Commerce,
Jogeshwari (East), Mumbai -400 060.

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri PP Rathod Semester:2

Class:F.Y.B.Sc subject:physics P.1 and P. 2

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	14	15	PAPER 1.Unit I: 1.vector algebra 2. Gradient, divergence and curl	Vectors, Scalars, Vector algebra, Laws of Vector algebra, Unit vector, Rectangular unit vectors, Components of a vector, Scalar fields, Vector fields, Problems based on Vector algebra. Dot or Scalar product, Cross or Vector product, Commutative and Distributive Laws, Scalar Triple product, Vector Triple product (Omit proofs). Problems and applications based on Dot, Cross and Triple

				products. 2. Gradient, divergence and curl: The ∇ operator, Definitions and physical significance of Gradient, Divergence and Curl; Distributive Laws for Gradient, Divergence and Curl (Omit proofs); Problems based on Gradient, Divergence and Curl.
December	14	15	PAPER 1 Unit III : 1. Superposition of Collinear Harmonic oscillations: 2. Superposition of two perpendicular Harmonic Oscillations 3. Wave Motion: Transverse waves on string,	1. Superposition of Collinear Harmonic oscillations: Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats). 10 2. Superposition of two perpendicular Harmonic Oscillations: Graphical and Analytical Methods. Lissajous Figures with equal an unequal frequency and their uses 3. Wave Motion: Transverse waves

March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher:shri PP Rathod Semester:2

Class:F.Y.B.Sc subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	15	15	PAPER 2.Unit II: Electronics	Unit II: Electronics 15 lectures

			1.Circuit theorems: 2.DC power supply 3.Digital electronics	1.Circuit theorems: (Review: ohm's law, Kirchhoff's laws) Superposition Theorem, Thevenin's Theorem, Ideal Current Sources, Norton's Theorem, Reciprocity Theorem, Maximum Power Transfer Theorem. Numericals related to circuit analysis using the above theorems. 2.DC power supply:Half wave rectifier , Full wave rectifier, Bridge rectifier, PIV and Ripple factor of full wave rectifier, Clipper and Clampers(Basic circuits only), Capacitor Filter. Zener diode as voltage stabilizer. 3.Digital electronics : Logic gates(Review), NAND and NOR as universal building blocks. EXOR gate: logic expression, logic symbol, truth table, Implementation using basic gates and its applications,

				Boolean algebra, Boolean theorems. De-Morgan theorems, Half adder and Full adder
December	15	15	PAPER 2.Unit III : Electrostatics and Magnetostatics 1.The Electric Field 2.Work and Energy in Electrostatics 3.Magnetostatics: 4.TheBiotSavart Law:	Unit III : Electrostatics and Magnetostatics 15 lectures 1.The Electric Field : Introduction, Coulomb's Law, The Electric Field, Continuous charge Distribution, Electric Potential, Introduction to Potential, Comments on Potential, The Potential of a Localized Charge Distribution 2.Work and Energy in Electrostatics: The Work Done to Move a charge, The Energy of a Point Charge Distribution 3.Magnetostatics: Magnetic Fields 4.TheBiotSavart Law: Steady Currents,The Magnetic Field of a Steady Current 12 Helmholtz coil and solenoid.
January				
February				
March				
April				

Tachan Book

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher:SHRI PP RATHOD Semester:2

Class:F.Y.B.Sc subject:PHYSICS

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	15	15	Paper 2.Unit I : 1. Alternating current theory 2. AC bridges	Unit I : 15 lectures 1. Alternating current theory:(Concept of L, R, and C: Review) AC circuit containing pure R,

				pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits. Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor. 2. AC bridges: AC-bridges: General AC bridge, Maxwell,de-Sauty, Wien Bridge , Hay Bridge.
December	15	15	Paper 2.Unit II: Electronics 1.Circuit theorems: 2.DC power supply 3.Digital electronics	Unit II: Electronics 15 lectures 1.Circuit theorems: (Review: ohm's law, Kirchhoff's laws) Superposition Theorem, Thevenin's Theorem, Ideal Current Sources, Norton's Theorem, Reciprocity Theorem, Maximum Power Transfer Theorem. Numericals related to circuit analysis using the above theorems. 2.DC power supply:Half wave rectifier , Full wave rectifier, Bridge rectifier, PIV and Ripple

				factor of full wave rectifier, Clipper and Clampers(Basic circuits only), Capacitor Filter. Zener diode as voltage stabilizer. 3.Digital electronics : Logic gates(Review), NAND and NOR as universal building blocks. EXOR gate: logic expression, logic symbol, truth table, Implementation using basic gates and its applications, Boolean algebra, Boolean theorems. De-Morgan theorems, Half adder and Full adder
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri pp Rathod

Semester:2

Class:F.Y.B.Sc

subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	15	15	Paper 2.Unit I : 1. Alternating current theory 2. AC bridges	1. Alternating current theory:(Concept of L, R, and C: Review) AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits. Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor. 2. AC bridges: AC-

				bridges: General AC bridge, Maxwell,de-Sauty, Wien Bridge , Hay Bridge.
December	15	15	Paper 2.Unit II: Electronics 1.Circuit theorems: 2.DC power supply 3.Digital electronics	Electronics 1.Circuit theorems: (Review: ohm's law, Kirchhoff's laws) Superposition Theorem, Thevenin's Theorem, Ideal Current Sources, Norton's Theorem, Reciprocity Theorem, Maximum Power Transfer Theorem. Numericals related to circuit analysis using the above theorems. 2.DC power supply:Half wave rectifier , Full wave rectifier, Bridge rectifier, PIV and Ripple factor of full wave rectifier, Clipper and Clampers(Basic circuits only), Capacitor Filter. Zener diode as voltage stabilizer. 3.Digital electronics : Logic gates(Review), NAND and NOR as universal building blocks. EXOR gate: logic expression,

				logic symbol, truth table, Implementation using basic gates and its applications, Boolean algebra, Boolean theorems. De-Morgan theorems, Half adder and Full adder
January				
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Semester:

Class: subject:

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2021-22

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Semester:

Class: subject:

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2022-23

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri pp rathod

Semester:3

Class:S.Y.B.Sc

subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	10	15	Paper 2.Unit I Analog Electronics 1.Faithful amplification	Analog Electronics 1.Faithful amplification, Transistor Biasing, Inherent Variations of Transistor Parameters, Essentials of a Transistor Biasing Circuit, Methods of Transistor Biasing, Base Resistor Method, Emitter Bias Circuit, Circuit analysis of Emitter Bias, Voltage Divider Bias Method.
July				
August				
September				
October				
November				
December				
January				
February				
March				

April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri pp rathod Semester:3

Class: S.Y.B.Sc subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	14	15	Paper 1.UIII Temperature Transducers	UIII Temperature Transducers Introduction to Temperature Transducers, Resistance Temperature Detector (RTD), Platinum Thin Film

				Sensors, Resistance Thermometer: its types, working principles and applications, Thermistors, Thermocouple, Semiconductor Diode Temperature Sensor, IC Type Sensor, Pyrometers, Total Radiation Pyrometer (TRP), Optical Pyrometer, Ultrasonic Temperature Transducer
July				
August				
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

				Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Shri p Rathod

Semester:4

Class:S.Y.B.Sc

subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	10	15	Paper 2 Unit I Electrodynamics and Vector calculus:	Unit I Electrodynamics and Vector calculus: Line, surface, volume integrals, Fundamental thermos of Gradient, Curvilinear co-ordinates,Divergence and Curl.
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher:SHRI PP RATHOD Semester:4

Class:S.Y.B.Sc subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	10	15	PAPER 1Unit: III - Microprocessors 1) Building Concept of Microprocessor	Microprocessors 1) Building Concept of Microprocessor:Introduction, Study of Memory, Input Device, Output Device, Input/output Device, Central Processing Unit.
December				

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Shri P Rathod

Semester:V

Class:T.Y.B.Sc

subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	15	11	superconductivity	1.A survey ,mechanism of superconductors,effects of magnetic fields,The meissner effect,the penetration depth,type1 and type superconductors 2.Band theory of solids, The Kronig- Penney model (Omit eq. 6.184 to 6.188), Brillouin zones, Number of wave functions in a band, Motion of electrons in a one-dimensional periodic potential, Distinction between metals, insulators and intrinsic semiconductors.
August	15	11	Magnetic properties of matter	Diamagnetism and Paramagnetism, The origin of permanent magnetic dipoles, Diamagnetism and Larmor precession, The static paramagnetic susceptibility.

				Ferromagnetism- the Weiss molecular field, Comparison of the Weiss theory with experiment, Qualitative remarks about domains, Qualitative idea about antiferromagnetism and ferrites.
September	15	10	1.conduction in semi conductors 2. semi conductor diode characteristics	1. Conduction in Semiconductors. Electrons and Holes in an Intrinsic Semiconductor, Conductivity, Carrier concentrations, Donor and Acceptor impurities, Charge densities in a Semiconductor, Fermi level in extrinsic semiconductors, Diffusion,Carrier lifetime, The continuity equation, The Hall effect. 2. Semiconductor-diode Characteristics : Qualitative theory of the p-n junction, The p-n junction as a diode, Band structure of an open-circuit p-n junction, The current components in a p-n junction diode, Quantitative theory of p-n diode currents, The Volt-Ampere characteristics, The temperature dependence of p-n characteristics, Diode resistance.
October				
November				
December				

January				
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher:Shri P Rathod

Semester:V

Class:T.Y.B.SC

subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	8	15	Semiconductor	A survey, Mechanism of

				Superconductors, Effects of magnetic field, The Meissner effect, The penetration depth, Type I and Type II Superconductors. Page 6 of 18 2. Band theory of solids, The Kronig-Penney model (Omit eq. 6.184 to 6.188), Brillouin zone .
September	7	15		Number of wave functions in a band, Motion of electrons in a one-dimensional periodic potential, Distinction between metals, insulators and intrinsic semiconductors.
October	10	15	1. Schrödinger's equation 2.Hydrogen atom:	1. Schrödinger's equation for Harmonic oscillator, its solution by operator method. Graphical representation of its energy level and wave functions. 2. Hydrogen atom: Schrödinger's equation for Hydrogen atom, Separation of variables, Quantum Numbers: Total quantum number, Orbital quantum

				number, Magnetic quantum number. Angular momentum, Electron probability density (Radial part).
November	15	12	1. Electron Spin 2. Spin orbit coupling	1. Electron Spin: The Stern-Gerlach experiment, Pauli's Exclusion Principle Symmetric and Antisymmetric wave functions. 2. Spin orbit coupling, Hund's Rule, Total angular momentum, Vector atom model, L-S and j-j coupling. Origin of spectral lines, Selection rules
December	13	15	1. Effect of Magnetic field on atoms. 2. Paschen-Back effect, Paschen-Back effect	1. Effect of Magnetic field on atoms, The normal Zeeman effect and its explanation (Classical and Quantum), The Lande g factor, Anomalous Zeeman effect. 2. Paschen-Back effect, Paschen-Back effect of principal series doublet, Selection rules for Paschen-Back effect
January	12	15	1. Molecular Spectra (Diatomic Molecules)	1. Molecular Spectra (Diatomic Molecules):

			2. Raman Effect	Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra. Electronic Spectra of Diatomic molecules: The Born-Oppenheimer approximation, Intensity of vibrational-electronic spectra : The Franck-Condon principle. 2. Raman Effect: Quantum Theory of Raman effect, Classical theory of Raman effect, Pure Rotational Raman spectra : Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra : Raman activity of vibrations.
February				
March				
April				

Academic Year: 2018-19
Tachan Book

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan
Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Shri p Rathod
Semester:V

Class:T.Y.B.Sc

subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	15	9		Effect of Magnetic field on atoms, The normal Zeeman effect and its explanation (Classical and Quantum), The

				Lande g factor, Anomalous Zeeman effect. 2. Paschen-Back effect, Paschen-Back effect of principal series doublet, Selection rules for Paschen-Back effect
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri P Rathod

Semester:V

Class:

subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	8	15	Paper 3.unit 1.1.Scrodinger equation 2.hydrogen atom	1. Schrödinger's equation for Harmonic oscillator, its solution by operator method. Graphical representation of its energy level and wave functions. I 2. Hydrogen atom: Schrödinger's equation for Hydrogen atom, Separation of variables, Quantum Numbers: Total quantum number, Orbital quantum number, Magnetic quantum number. Angular momentum, Electron probability density (Radial part).
July	13	15	Paper 3.unit 2.1Electron spin	1. Electron Spin: The Stern-Gerlach experiment, Pauli's Exclusion Principle Symmetric and Antisymmetric

				wave functions. 2. Spin orbit coupling, Hund's Rule, Total angular momentum, Vector atom model, L-S and j-j coupling. Origin of spectral lines, Selection rules.
August	14	15	Paper 3.unit 3.1.Effect of magnetic field on atoms	1. Effect of Magnetic field on atoms, The normal Zeeman effect and its explanation (Classical and Quantum), The Lande g factor, Anomalous Zeeman effect. 2. Paschen-Back effect, Paschen-Back effect of principal series doublet, Selection rules for Paschen-Back effect.
September	13	15	Paper 3.unit 4.1.Molecular spectra 2.Raman effect	1. Molecular Spectra (Diatomic Molecules): Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra. Electronic Spectra of Diatomic molecules: The Born-Oppenheimer approximation, Intensity of

				vibrational-electronic spectra : The Franck-Condon principle. 2. Raman Effect: Quantum Theory of Raman effect, Classical theory of Raman effect, Pure Rotational Raman spectra : Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra : Raman activity of vibrations.
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher:P P Rathod

Semester 1

Class: F.Y.B.Sc

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	15	7	modern physics	Interaction between particles and matter,ionizati ionisation chamber,prop proportional counter and GM counter ,pro problems,nucle nuclear reatiction Q value equation and solution of theQ value education
September	15	8	modern physics	problems,fus fusion and fission definition and qualitative discussion with examples.origin of quantum theory,Black body,black body spectrum,wien'wein's displacement law,matt matter waves wave paricticle duality
October	15	13	modern physics x-ray production and properties	Heisenberg ' s uncertainty principle,davissoDavisson Germar esperxperiment,G.P.Thomson experiment, continuous and characteristic X ray

				spectrum,xray diffraction bragg'Bragg's law,Ap Application of xray compton effect,pair production,photo photons and gravity, gravitational red shift
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri pravin P Rathod Semester:1

Class: F.Y.B.Sc subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	15	7	modern physics	Interaction between particles and matter,ionizati ionisation chamber,prop proportional counter and GM counter ,pro problems,nucle nuclear reatiction Q value equation and solution of theQ value education
September	15	12	modern physics	problems,fus fusion and fission definition and qualitative discussion with examples.origin of quantum theory,Black body,black body spectrum,wien'wein's displacement law,matt matter waves wave paricticle duality
October	15	9	modern physics x-ray production and properties	Heisenberg ' s uncertainty principle,davissoDavisson Germar esperxperiment,G.P.Thomson experiment, continuous and characteristic X ray spectrum,xray diffraction bragg'Bragg's law,Ap Application of xray compton effect,pair production,photo photons and gravity,

				gravitational red shift
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri PP Rathod Semester1:

Class: F.Y B.Sx subject:Phy

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	15	6	modern physics ,St Structure of nuclei	properties of nuclei,comp composition,cha charge,size,Rutherf Rutherford experiment for estimation of nuclear size,den density of nucleus,mass defect and binding energy,pa packing fraction,be/a versus a plot,stab stability of nucleiN vs Z plot and problems
September	15	9	Radioactivity and carbon dating	Radio active diaisintegration,conc concept of natural and artificial radioactivity,pro properties of Alpha,beta,gamma rays,laws of radio active decay,half life,me mean life,units of radio activity, successive disintegration and equilibrium ,carb carbon dating and other applications of radio active isotopes (agricultural,med medical ,Indu Industrial,aeceol archeological etc)

October	15	8	modern physics	Interaction between particles and matter,ionizati ionisation chamber,prop proportional counter and GM counter ,pro problems,nucle nuclear reatiction Q value equation and solution of theQ value education
November		7	modern physics	problems,fus fusion and fission definition and qualitative discussion with examples.
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2019-20

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2020-21

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri P p Rathod Semester:1

Class: F.Y.B.Sc subject: physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	15	6	odern physics ,Structure of nuclei	properties of nuclei,comp composition,cha charge,size,Rutherf Rutherford experiment for estimation of nuclear size,den density of nucleus,mass defect and binding energy,pa packing fraction,be/a versus a plot,stab stability of nucleiN vs Z plot and problems
September	15	9	Radioactivity and carbon dating	Radio active diaisintegration,conc concept of natural and artificial

				radioactivity,pro properties of Alpha,beta,gamma rays,laws of radio active decay,half life,me mean life,units of radio activity, successive disintegration and equilibrium ,carb carbon dating and other applications of radio active isotopes (agricultural,med medical ,Indu
October	15	8	modern physics	Interaction between particles and matter,ionizati ionisation chamber,prop proportional counter and GM counter ,pro problems,nucle nuclear reatiction Q value equation and solution of theQ value education
November	15	7	modern physics	problems,fus fusion and fission definition and qualitative discussion with examples.
December				
January				
February				
March				
April				

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri pp Rathod

Semester:6

Class:T.Y.B.Sc

subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	14	15	Paper 1.unit 2 Lagrange's equations	Lagrange's equations: D'Alembert's principle, Generalized coordinates, Lagrange's equations using D'Alembert's principle, Examples, Systems subject to constraints, Examples of systems subject to constraints, Constants of motion and ignorable coordinates.
December	14	15	Paper 1.unit 3 Kinematics of moving fluids	1. Kinematics of moving fluids, Equation of motion for an ideal fluid, Conservation laws

				for fluid motion, Steady flow. 2. The rotation of a Rigid body : Motion of a rigid body in space, Euler's equations of motion for a rigid body, Euler's angles, Heavy symmetrical top (without nutation).
January	13	15	Paper 1.unit 4. Non linear mechanics	Non linear mechanics : Qualitative approach to chaos, The anharmonic oscillator, Numerical solution of Duffing's equation, Transition to chaos: Bifurcations and strange attractors, Aspects of chaotic behavior.
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board,

				Working Models)

Semester Wise Plan

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: shri pp Rathod

Semester:6

Class:T.Y.B.Sc

subject:physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	15	15	Paper 2.unit2 Electronics 1. Regulated DC power supply 2. Differential Amplifier using transistor 3. Transistor Multivibrators	1. Regulated DC power supply: Supply characteristics, series voltage regulator, short circuit protection (current limit and fold back) Monolithic linear IC voltage regulators. (LM 78XX, LM 79XX, LM 317). 2. Differential Amplifier using transistor: The Differential

				Amplifier, DC and AC analysis of a differential amplifier, Input characteristic-effect of input bias, Offset current and input offset voltage on output, common mode gain, CMRR. 3. Transistor Multivibrators: Astable, Monostable and Bistable Multivibrators, Schmitt trigger.
December			Paper 3.unit1 1. Types of Nuclear Reactions, 2. Alpha decay:	1. Types of Nuclear Reactions, Balance of mass and energy in Nuclear Reaction, the Q-equation and Solution of Q-equation. 2. Alpha decay: Range of alpha particles, Disintegration energy, Alpha decay paradox: Barrier penetration (Gamow's theory of alpha decay and Geiger-Nuttal law), Velocity and energy, Absorption of alpha particles: Range, Ionization and stopping power, Nuclear energy levels.
January			Paper 3.unit2 1. Beta decay: . 2. Gamma	1. Beta decay: Introduction, Continuous beta

			decay:	ray spectrum- Difficulties encountered to understand it, Pauli's neutrino hypothesis, Detection of neutrino, Velocity and energy of beta particles, Energy levels and decay schemes, Energetics of beta decay. 2. Gamma decay: Introduction, Internal conversion, Nuclear isomerism, Mossbauer effect.
February	7 8	15 15	Paper 3.unit3. 1. Nuclear radiation detectors 2. Liquid drop model Paper 3.unit4 , 1. Nuclear energy 2. Elementary particles	1. Nuclear radiation detectors: Proportional counter, Scintillation counter, Cloud and Bubble chamber, Ionization chamber, Proportional and GM counter. 2. Liquid drop model, Weizsacher's semi-empirical mass formula, 1. Nuclear energy: Introduction, Asymmetric fission - Mass yield, Emission of delayed neutrons, Nuclear release in fission, Nature of fission fragments,

				Energy released in the fission of U235, Fission of lighter nuclei, Fission chain reaction, Neutron cycle in a thermal nuclear reactor (Four Factor Formula), Nuclear reactors, Natural fusion, Possibility of controlled fusion. 2. Elementary particles: Introduction, Classification of elementary particles, Electrons and positrons, Protons and anti-protons, Neutrons and anti- neutrons, Neutrinos and anti-neutrinos, Photons, Mesons
March				
April				

Tachan Book

Academic Year: 2018-19

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black Board, Smart Board, Working Models)

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : III Class : S. Y. B.Sc.

Subject : Paper I UNIT-III Mechanics, Acoustics And Properties of Matter

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June				
June	02	02	Mechanics	Acoustics of Buildings, Reverberation, Definition and explanation Measurement and implications,
July	04	04	Acoustics	Sabine's Formula, Explanation of the formula,
August	04	04	Application Acoustics	Importance and application Absorption Coefficient,
September	02	02	Properties of Matter	Definition and factors affecting it, Acoustics of Buildings, Factors affecting acoustics, Sound distribution in an auditorium

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : IV Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Acoustics, LASER and fibre optics**

Unit II: Crystal Physics

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points ofTopic
June	-			
November	04	04	Acoustics	Acoustics of Buildings, Reverberation, Definition and explanation Measurement and Implications, Sabine's Formula,
December	04	04	LASER	Laser, Overview and history, Transition Between Atomic Energy States, Explanation of transitions, Principle of Laser, Basic principles and functioning, Properties of Laser
January	08	08	fibre optics	Fibre Optics, Light Propagation Through Fibres, Principles of propagation Fibre Geometry, Types of fibre geometries, Internal Reflection, Mechanism and significance, Numerical Aperture
February	06	06	Crystal Physics	Metallic Crystal Structures, Relation Between Density and Lattice Constant, Derivation and examples

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : V Class : T. Y. B.Sc.

Subject : Paper I **Unit -III Statistical Thermodynamics**

Unit -IV Classical and Quantum Statistics

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesss per syllabus	Title of Topic tobe covered	Key points oftopic
June	04	04	**Statistical Thermodynamics**	Introduction to Potential, Comments on Potential, The Potential of a Localized Charge Distribution, Poisson's Equation and Laplace's Equation,
July	08	08	**Electrostatics in Matter and Magnetostatics**	Point Charge and Grounded Infinite Conducting Plane and Conducting Sphere, Dielectrics, Induced Dipoles, Alignment of Polar Molecules, Polarization
August	08	08	**Classical Statistics**	Bound Charges and Their Physical Interpretation, Gauss' Law in Presence of Magnetic Vector Potential
September	04	04	**Quantum Statistics**	Magnetization, Bound Currents and Their Magnetic Susceptibility and Permeability, Matter, Boundary Conditions

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I **Unit -III Fluid Motion and Rigid body rotation**

Unit -IV Non Linear Mechanics

Semester planning

Moath	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	04	04	**Fluid Motion and Rigid body rotation**	Inertial and Non-Inertial Frames of Reference, Galilean Transformations, Newtonian Relativity, Electromagnetism and Newtonian Relativity, Attempts to Locate Absolute Frame: Michelson-Morley Experiment
December	04	0	**Fluid Motion and Rigid body rotation**	Derivation of Lorentz Transformation Equations, Consequences of the Lorentz Transformation Equations: Length Contraction, Time Dilation, and Meson Experiment
January	08	08	**Non Linear Mechanics**	Space-Time Diagrams, Simultaneity, Length Contraction, and Time Dilation, The Time Order and Space Separation of Events, The Twin Paradox,
February	06	06	**Non Linear Mechanics**	The Relativistic Force Law and the Dynamics of a Single Particle, The Equivalence of Mass and Energy, The Transformation Properties of Momentum, Energy, and Mass

Semester Wise

Academic Year: 2019-20

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : III Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Introduction to Geology and Geophysics**

Unit: II - Microprocessors

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
June	04	04	**Introduction to Geology and Geophysics**	Introduction to Geology, Branches of geology, Relationship with other sciences, Earth and solar system, Meteorites, and other extra-terrestrial materialstechniques, Field procedures in geophysical studies
July	08	08	**Introduction to Geology and Geophysics**	Age of Earth and various methods of determination, Determination methods, Planetary evolution of the Earth, Internal structure of the Earth
August	08	08	**Microprocessors**	Overview of instruction sets, Flowchart, Flowchart for instruction execution, Classification of Instruction Set
September	04	04	**Microprocessors**	Data Transfer Group, Arithmetic Group, Logical Group, Branching Group, Stack and Machine Control Group, Notations Used in Instructions and Opcode, Explanation of notations and opcode, Data Transfer Group, Instructions and program examples

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : IV Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Acoustics, LASER and fibre optics**

Unit II: Crystal Physics

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	04	04	Acoustics	Acoustics of Buildings, Reverberation, Definition and explanation Measurement and implications, Sabine's Formula,
December	04	04	LASER	Laser, Overview and history, Transition Between Atomic Energy States, Explanation of transitions, Principle of Laser, Basic principles and functioning, Properties of Laser
January	08	08	fibre optics	Fibre Optics, Light Propagation Through Fibres, Principles of propagation Fibre Geometry, Types of fibre geometries, Internal Reflection, Me nd significance, Nu rture
February	06	06	sics	M l Structures, Re en Density and stant, Der xamples

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : IV Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Acoustics, LASER and fibre optics**

Unit II: Crystal Physics

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	04	04	Acoustics	Acoustics of Buildings, Reverberation, Definition and explanation Measurement and implications, Sabine's Formula,
December	04	04	LASER	Laser, Overview and history, Transition Between Atomic Energy States, Explanation of transitions, Principle of Laser, Basic principles and functioning, Properties of Laser
January	08	08	fibre optics	Fibre Optics, Light Propagation Through Fibres, Principles of propagation Fibre Geometry, Types of fibre geometries, Internal Reflection, Mechanism and significance, Numerical Aperture
February	06	06	Crystal Physics	Metallic Crystal Structures, Relation Between Density and Lattice Constant, Derivation and examples

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : V Class : T. Y. B.Sc.

Subject : Paper I **Unit -III Statistical Thermodynamics**

Unit -IV Classical and Quantum Statistics

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	04	04	**Statistical Thermodynamics**	Introduction to Potential, Comments on Potential, The Potential of a Localized Charge Distribution, Poisson's Equation and Laplace's Equation,
July	08	08	**Electrostatics in Matter and Magnetostatics**	Point Charge and Grounded Infinite Conducting Plane and Conducting Sphere, Dielectrics, Induced Dipoles, Alignment of Polar Molecules, Polarization
August	08	08	**Classical Statistics**	Bound Charges and Their Physical Interpretation, Gauss' Law in Presence of Magnetic Vector Potential
September	04	04	**Quantum Statistics**	Magnetization, Bound Currents and Their Magnetic Susceptibility and Permeability, Matter, Boundary Conditions

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I **Unit -III Fluid Motion and Rigid body rotation**

Unit -IV Non Linear Mechanics

Semester planning

Month	No. of Lecturcsas per time	No. of Leeturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	04	04	Fluid Motion and Rigid body rotation	Inertial and Non-inertial Frames of Reference, Galilean Transformations, Newtonian Relativity, Electromagnetism and Newtonian Relativity, Attempts to Locate Absolute Frame: Michelson-Morley Experiment
December	04	0	Fluid Motion and Rigid body rotation	Derivation of Lorentz Transformation Equations, Consequences of the Lorentz Transformation Equations: Length Contraction, Time Dilation, and Meson Experiment
January	08	08	Non Linear Mechanics	Space-Time Diagrams, Simultaneity, Length Contraction, and Time Dilation, The Time Order and Space Seperation of Events, The Twin Paradox,
February	06	06	Non Linear Mechanics	The Relativistic Force Law and the Dynamics of a Single Particle, The Equivalence of Mass and Energy, The Transformation Properties of Momentum, Energy, and Mass

Semester Wise

Academic Year: 2020-21

Name of the Teacher: Mr. Ashish Hanumant Bhalna

Semester : III Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Introduction to Geology and Geophysics**

Unit: II - Microprocessors

Unit: III-Radio communication

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
June	06	06	Introduction to Geology and Geophysics	Introduction to Geology, Branches of geology, Relationship with other sciences techniques, Field procedures in geophysical studies
July	12	12	Microprocessors	Overview of microprocessors, Importance and applications,
August	12	12	Microprocessors, Radio communication	Overview of instruction sets, Flowchart, Flowchart for instruction execution, Classification of Instruction Set
September	06	06	Radio communication	Amplitude Modulation, Need for Modulation, Purpose and advantages, Concept of Modulation, Basic principles, AM Waveform, Waveform representation,

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : IV Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Acoustics, LASER, and fibre optics**

Unit II: Crystal Physics

Unit III: Properties of Material

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	06	06	**Acoustics, LASER and fibre optics**	Acoustics of Buildings, , Definition and factors affecting it, Acoustics of Buildings, Factors affecting acoustics, Sound distribution in an auditorium, Laser, Overview and history, Transition Between Atomic Energy States
December	06	06	**Acoustics, LASER and fibre optics**	Fibre Optics, Light Propagation Through Fibres, Principles of propagation Fibre Geometry
January	12	12	**Crystal Physics**	Crystal Symmetry, Symmetry operations and their implications, Bravais Space Lattices, Overview of Bravais lattices, Metallic Crystal
February	09	09	**Properties of Material**	Electrical Properties, Energy Band Diagram (dielectrics), Effect of Optical Properties, Reflection, Refraction, Absorption, and Transmission, Magnetic Properties, Origin of Magnetism, Basic ideas and mechanisms

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : V Class : T. Y. B.Sc.

Subject : Paper IV Unit I : **Electrostatics**

Unit II :**Electrostatics in Matter and Magnetostatics**

Unit III:**Magnetostatics in Matter and Electrodynamics**

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points ofopic
June	06	06	**Electrostatics**	Review of Coulomb & Gauss Law, The Divergence of E, Applications of Gauss' Law, The Curl of E,
July	12	12	**Electrostatics in Matter and Magnetostatics**	Solution and Properties of 1D Laplace Equation, Properties of 2D and 3D Laplace Equation (without proof)
August	12	12	**Electrostatics in Matter and Magnetostatics, Magnetostatics in Matter and Electrodynamics**	Bound Charges and Their Physical Interpretation, Gauss' Law in Presence of Dielectrics, Susceptibility, Permittivity
September	06	06	**Magnetostatics in Matter and Electrodynamics**	Magnetization, Bound Currents and Their Physical Interpretation, Ampere's Law in Magnetized Materials

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : VI Class : T. Y. B.Sc.

Subject : Paper IV Unit I : **Introduction to Special theory of relativity,Relativistic Kinematics – I**

Unit II :**Relativistic Kinematics – II, The Geometric Representation of Space-Time**

Unit III:**Relativistic Dynamics**

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	06	06	Introduction to Special theory of relativity,Relativistic Kinematics - I	Inertial and Non-inertial Frames of Reference, Galilean Transformations, Newtonian Relativity
December	05	06	Relativistic Kinematics – I	Attempt to Modify Electrodynamics, Relativistic Kinematics - I: Postulates of the Special Theory of Relativity
January	12	12	Relativistic Kinematics – II, The Geometric Representation of Space-Time,	Relativistic Kinematics - II: The Relativistic Addition of Velocities of Events, The Twin Paradox,
February	09	09	Relativistic Dynamics	Relativistic Dynamics: Mechanics and Relativity, The Need to Redefine Momentum

Semester Wise

Academic Year: 2021-22

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : III Class : S. Y. B.Sc.

Subject : Paper III Unit 1: Introduction to Geology and Geophysics

Unit: II - Microprocessors

Unit: III-Radio communication

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
June	06	06	Introduction to Geology and Geophysics	Introduction to Geology, Branches of geology, Relationship with other sciences techniques, Field procedures in geophysical studies
July	12	12	Microprocessors	Overview of microprocessors, Importance and applications,
August	12	12	Microprocessors, Radio communication	Overview of instruction sets, Flowchart, Flowchart for instruction execution, Classification of Instruction Set
September	06	06	Radio communication	Amplitude Modulation, Need for Modulation, Purpose and advantages, Concept of Modulation, Basic principles, AM Waveform, Waveform representation,

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : IV Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Acoustics, LASER, and fibre optics**

Unit II: Crystal Physics

Unit III: Properties of Material

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	06	06	Acoustics, LASER and fibre optics	Acoustics of Buildings, , Definition and factors affecting it, Acoustics of Buildings, Factors affecting acoustics, Sound distribution in an auditorium, Laser, Overview and history, Transition Between Atomic Energy States
December	06	06	Acoustics, LASER and fibre optics	Fibre Optics, Light Propagation Through Fibres, Principles of propagation Fibre Geometry
January	12	12	Crystal Physics	Crystal Symmetry, Symmetry operations and their implications, Bravais Space Lattices, Overview of Bravais lattices, Metallic Crystal
February	09	09	Properties of Material	Electrical Properties, Energy Band Diagram (dielectrics), Effect of Optical Properties, Reflection, Refraction, Absorption, and Transmission, Magnetic Properties, Origin of Magnetism, Basic ideas and mechanisms

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : V Class : T. Y. B.Sc.

Subject : Paper IV Unit I : **Electrostatics**

Unit II :**Electrostatics in Matter and Magnetostatics**

Unit III:**Magnetostatics in Matter and Electrodynamics**

Unit -IV Electromagnetic Waves

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	06	06	**Electrostatics**	Review of Coulomb & Gauss Law, The Divergence of E, Applications of Gauss' Law, The Curl of E,
July	12	12	**Electrostatics in Matter and Magnetostatics**	Solution and Properties of 1D Laplace Equation, Properties of 2D and 3D Laplace Equation (without proof)
August	12	12	**Electrostatics in Matter and Magnetostatics, Magnetostatics in Matter and Electrodynamics**	Bound Charges and Their Physical Interpretation, Gauss' Law in Presence of Dielectrics, Susceptibility, Permittivity
September	06	06	**Magnetostatics in Matter and Electrodynamics, Electromagnetic Waves**	Magnetization, Bound Currents and Their Physical Interpretation, Ampere's Law in Magnetized Materials

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : VI Class : T. Y. B.Sc.

Subject : Paper IV Unit I : **Introduction to Special theory of relativity,Relativistic Kinematics – I**

Unit II :Relativistic Kinematics – II, The Geometric Representation of Space-Time

Unit III:Relativistic Dynamics

Unit IVRelativistic Dynamics

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	05	06	Introduction to Special theory of relativity,Relativistic Kinematics - I	Inertial and Non-inertial Frames of Reference, Galilean Transformations, Newtonian Relativity
December	05	06	Relativistic Kinematics – I	Attempt to Modify Electrodynamics, Relativistic Kinematics - I: Postulates of the Special Theory of Relativity
January	12	12	Relativistic Kinematics – II, The Geometric Representation of Space-Time,	Relativistic Kinematics - II: The Relativistic Addition of Velocities of Events, The Twin Paradox,
February	09	09	Relativistic Dynamics, Relativity and Electromagnetism	Relativistic Dynamics: Mechanics and Relativity, The Need to Redefine Momentum

Semester Wise

Academic Year: 2022-23

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : III Class : S. Y. B.Sc.

Subject : Paper III Unit 1: Introduction to Geology and Geophysics

Unit: II - Microprocessors

Unit: III-Radio communication

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
June	06	06	Introduction to Geology and Geophysics	Introduction to Geology, Branches of geology, Relationship with other sciences techniques, Field procedures in geophysical studies
July	12	12	Microprocessors	Overview of microprocessors, Importance and applications,
August	12	12	Microprocessors, Radio communication	Overview of instruction sets, Flowchart, Flowchart for instruction execution, Classification of Instruction Set
September	06	06	Radio communication	Amplitude Modulation, Need for Modulation, Purpose and advantages, Concept of Modulation, Basic principles, AM Waveform, Waveform representation,

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : IV Class : S. Y. B.Sc.

Subject : Paper III **Unit 1: Acoustics, LASER, and fibre optics**

Unit II: Crystal Physics

Unit III: Properties of Material

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	06	06	Acoustics, LASER and fibre optics	Acoustics of Buildings, , Definition and factors affecting it, Acoustics of Buildings, Factors affecting acoustics, Sound distribution in an auditorium, Laser, Overview and history, Transition Between Atomic Energy States
December	06	06	Acoustics, LASER and fibre optics	Fibre Optics, Light Propagation Through Fibres, Principles of propagation Fibre Geometry
January	12	12	Crystal Physics	Crystal Symmetry, Symmetry operations and their implications, Bravais Space Lattices, Overview of Bravais lattices, Metallic Crystal
February	09	09	Properties of Material	Electrical Properties, Energy Band Diagram (dielectrics), Effect of Optical Properties, Reflection, Refraction, Absorption, and Transmission, Magnetic Properties, Origin of Magnetism, Basic ideas and mechanisms

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : V Class : T. Y. B.Sc.

Subject : Paper IV Unit I : **Electrostatics**

Unit II :**Electrostatics in Matter and Magnetostatics**

Unit III:**Magnetostatics in Matter and Electrodynamics**

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	06	06	**Electrostatics**	Review of Coulomb & Gauss Law, The Divergence of E, Applications of Gauss' Law, The Curl of E,
July	12	12	**Electrostatics in Matter and Magnetostatics**	Solution and Properties of 1D Laplace Equation, Properties of 2D and 3D Laplace Equation (without proof)
August	12	12	**Electrostatics in Matter and Magnetostatics, Magnetostatics in Matter and Electrodynamics**	Bound Charges and Their Physical Interpretation, Gauss' Law in Presence of Dielectrics, Susceptibility, Permittivity
September	06	06	**Magnetostatics in Matter and Electrodynamics**	Magnetization, Bound Currents and Their Physical Interpretation, Ampere's Law in Magnetized Materials

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Mr. Ashish Hanumant Bhaina

Semester : VI Class : T. Y. B.Sc.

Subject : Paper IV Unit I : **Introduction to Special theory of relativity,Relativistic Kinematics – I**

Unit II :Relativistic Kinematics – II, The Geometric Representation of Space-Time

Unit III:**Relativistic Dynamics**

Semester planning

Month	No. of Lecturesas per time	No. of Lecturesas per syllabus	Title of Topic tobe covered	Key points oftopic
June	-			
November	06	06	**Introduction to Special theory of relativity,Relativistic Kinematics - I**	Inertial and Non-inertial Frames of Reference, Galilean Transformations, Newtonian Relativity
December	06	06	**Relativistic Kinematics – I**	Attempt to Modify Electrodynamics, Relativistic Kinematics - I: Postulates of the Special Theory of Relativity
January	12	12	**Relativistic Kinematics – II, The Geometric Representation of Space-Time,**	Relativistic Kinematics - II: The Relativistic Addition of Velocities of Events, The Twin Paradox,
February	09	09	**Relativistic Dynamics**	Relativistic Dynamics: Mechanics and Relativity, The Need to Redefine Momentum

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher: Mrs Ruksar Khan

Semester:6

Class:T.Y.B.Sc

subject:Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November	12	15	Paper 3 unit 3 1. Nuclear radiation detectors: 2. Liquid drop model	1. Nuclear radiation detectors: Proportional counter, Scintillation counter, Cloud and Bubble chamber, Ionization chamber, Proportional and GM counter. 2. Liquid drop model, Weizsacher's semi-empirical mass formula, Mass parabolas - Prediction of stability against beta decay for members of an isobaric family, Stability limits against

				spontaneous fission.
December	14	15	Paper 3 unit 4 1. Nuclear energy: 2.Elementary particles:	1. Nuclear energy: Introduction, Asymmetric fission - Mass yield, Emission of delayed neutrons, Nuclear release in fission, Nature of fission fragments, Energy released in the fission of U235, Fission of lighter nuclei, Fission chain reaction, Neutron cycle in a thermal nuclear reactor (Four Factor Formula), Nuclear reactors, Natural fusion, Possibility of controlled fusion. 2. Elementary particles: Introduction, Classification of elementary particles, Electrons and positrons, Protons and anti-protons, Neutrons and anti- neutrons, Neutrinos and anti-neutrinos, Photons, Mesons
January				
February				
March				
April				

Tachan Book

Semester Wise Plan

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Name of the Teacher:Mrs Ruksar Khan

Semester:5

Class:T.Y.B.Sc

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	8	15	Paper 3 unit 3 1. Effect of Magnetic field on atoms 2.Paschen-Back effect	1. Effect of Magnetic field on atoms, The normal Zeeman effect and its explanation (Classical and Quantum), The Lande g factor, Anomalous Zeeman effect. 2. Paschen-Back effect, Paschen-Back effect of principal series doublet, Selection rules for Paschen-Back effect.
August			Paper 3 unit 4 1. Molecular Spectra (Diatomic Molecules): 2. Raman Effect:	1. Molecular Spectra (Diatomic Molecules): Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra. Electronic Spectra of

				Diatomic molecules: The Born-Oppenheimer approximation, Intensity of vibrational-electronic spectra : The Franck-Condon principle. 2. Raman Effect: Quantum Theory of Raman effect, Classical theory of Raman effect, Pure Rotational Raman spectra : Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra : Raman activity of vibrations.
September				
October				
November				
December				
January				
February				
March				
April				

Tachan Book

Academic Year: 2017-18

Note: Please follow timetable

Prepare separate for UG and PG

Date	Class	Time	Key Point, Diagram, equations, examples, case studies	Tools Used for teaching (White Board, Black

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Shardendu K Tripathi

Semester : I Class : F. Y. B.Sc. Subject : Paper I Unit I (Classical Mechanics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
July	04	04	Newton's law and its Application	Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference Worked out examples (with friction present).
August	05	05	Elasticity	Review of Elastic constants Y, K, η and σ; Equivalence of shear strain to compression and extension strains. Relations between elastic constants, Couple for twist in cylinder
September	04	04	Fluid Dynamics	Equation of continuity, Bernoulli's equation, applications of Bernoulli's equation, streamline and turbulent flow, lines of flow in airfoil, Poiseuille's equation.

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Shardendu K Tripathi

Semester : I Class : F. Y. B.Sc. Subject : Paper I Unit I (Classical Mechanics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
July	04	04	Newton's law and Its Application	Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference Worked out examples (with friction present).
August	05	05	Elasticity	Review of Elastic constants Y, K, η and σ; Equivalence of shear strain to compression and extension strains. Relations between elastic constants, Couple for twist in cylinder
September	04	04	Fluid Dynamics	Equation of continuity, Bernoulli's equation, applications of Bernoulli's equation, streamline and turbulent flow, lines of flow in airfoil, Poiseuille's equation.

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Shardendu K Tripathi

Semester : I Class : F. Y. B.Sc. Subject : Paper I Unit I (Classical Mechanics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
July	04	04	Newton's law and its Application	Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference Worked out examples (with friction present).
August	05	05	Elasticity	Review of Elastic constants Y, K, η and σ; Equivalence of shear strain to compression and extension strains. Relations between elastic constants, Couple for twist in cylinder
September	04	04	Fluid Dynamics	Equation of continuity, Bernoulli's equation, applications of Bernoulli's equation, streamline and turbulent flow, lines of flow in airfoil, Poiseuille's equation.

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Shardendu K Tripathi

Semester : I Class : F. Y. B.Sc. Subject : Paper I Unit I (Classical Mechanics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
July	04	04	Newton's law and Its Application	Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference Worked out examples (with friction present).
August	05	05	Friction	Advantages & disadvantages of friction in daily life, Friction as the component of Contact force, Kinetic Friction, Static friction, laws of friction, Understanding friction at atomic level
September	04	04	Work and Energy	Kinetic Energy, Work and Work-energy theorem, Potential Energy, Conservative and Non-Conservative Forces, Different forms of Energy: Mass Energy Equivalence Worked out Examples

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Shardendu K Tripathi

Semester : I Class : F. Y. B.Sc. Subject : Paper I Unit I (Classical Mechanics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
July	04	04	Newton's law and its Application	Newton's first, second and third laws of motion, interpretation and applications, pseudo forces, inertial and non-inertial frames of reference Worked out examples (with friction present).
August	05	05	Friction	Advantages & disadvantages of friction in daily life, Friction as the component of Contact force, Kinetic Friction, Static friction, laws of friction, Understanding friction at atomic level
September	04	04	**Work and Energy**	Kinetic Energy, Work and Work-energy theorem, Potential Energy, Conservative and Non-Conservative Forces, Different forms of Energy: Mass Energy Equivalence Worked out Examples

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Shardendu K Tripathi

Semester : II Class : F. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Circuit Theorem	Alternating current theory:(Concept of L, R, and C: Review)
December	02	02	Circuit Theorem	AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits
January	02	02	Circuit Theorem	Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor).
January	02	02	AC bridges	AC-bridges: General AC bridge,
February	03	03	AC bridges	Maxwell Inductance, Maxwell L-C bridges , de-Sauty, Wien Bridge , Hay Bridge

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Shardendu K Tripathi

Semester : II Class : F. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Circuit Theorem	Alternating current theory:(Concept of L, R, and C: Review)
December	02	02	Circuit Theorem	AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits
January	02	02	Circuit Theorem	Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor).
January	02	02	AC bridges	AC-bridges: General AC bridge,
February	03	03	AC bridges	Maxwell Inductance, Maxwell L-C bridges , de-Sauty, Wien Bridge , Hay Bridge

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Shardendu K Tripathi

Semester : II Class : F. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Circuit Theorem	Alternating current theory:(Concept of L, R, and C: Review)
December	02	02	Circuit Theorem	AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits
January	02	02	Circuit Theorem	Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor).
January	02	02	AC bridges	AC-bridges: General AC bridge,
February	03	03	AC bridges	Maxwell Inductance, Maxwell L-C bridges , de-Sauty, Wien Bridge , Hay Bridge

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Shardendu K Tripathi

Semester : II Class : F. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Circuit Theorem	Alternating current theory:(Concept of L, R, and C: Review)
December	02	02	Circuit Theorem	AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits
January	02	02	Circuit Theorem	Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor).
January	02	02	AC bridges	AC-bridges: General AC bridge,
February	03	03	AC bridges	Maxwell Inductance, Maxwell L-C bridges , de-Sauty, Wien Bridge , Hay Bridge

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Shardendu K Tripathi

Semester : II Class : F. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Circuit Theorem	Alternating current theory:(Concept of L, R, and C: Review)
December	02	02	Circuit Theorem	AC circuit containing pure R, pure L and pure C, representation of sinusoids by complex numbers, Series L-R, C-R and LCR circuits
January	02	02	Circuit Theorem	Resonance in LCR circuit (both series and parallel), Power in ac circuit. Q-factor).
January	02	02	AC bridges	AC-bridges: General AC bridge,
February	03	03	AC bridges	Maxwell Inductance, Maxwell L-C bridges , de-Sauty, Wien Bridge , Hay Bridge

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Shardendu K Tripathi

Semester : III Class : S. Y. B.Sc.

Subject : Paper II Unit I (ELECTRICITY AND MAGNETISM)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Mathematical Background	Review of vector algebra and calculus. Product rules, Second derivative,)
July	04	04	Integral Calculus	Line, Surface and Volume Integrals, The Fundamental Theorem for Gradients (statement of theorem without proof; do problems), The
August	04	04	Integral Calculus	Fundamental Theorem for Curls (statement of theorem without proof; do problems)
September	02	02	AC bridges	The Fundamental Theorem for Divergences (statement of theorem without proof; do problems)

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Shardendu K Tripathi

Semester : III Class : S. Y. B.Sc.

Subject : Paper II Unit I (ELECTRICITY AND MAGNETISM)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Mathematical Background	Review of vector algebra and calculus. Product rules, Second derivative,)
July	04	04	Integral Calculus	Line, Surface and Volume Integrals, The Fundamental Theorem for Gradients (statement of theorem without proof; do problems), The
August	04	04	Integral Calculus	Fundamental Theorem for Curls (statement of theorem without proof; do problems)
September	02	02	AC bridges	The Fundamental Theorem for Divergences (statement of theorem without proof; do problems)

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Shardendu K Tripathi

Semester : III Class : S. Y. B.Sc.

Subject : Paper II Unit I (ELECTRICITY AND MAGNETISM)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Mathematical Background	Review of vector algebra and calculus. Product rules, Second derivative,)
July	04	04	Integral Calculus	Line, Surface and Volume Integrals, The Fundamental Theorem for Gradients (statement of theorem without proof; do problems), The
August	04	04	Integral Calculus	Fundamental Theorem for Curls (statement of theorem without proof; do problems)
September	02	02	AC bridges	The Fundamental Theorem for Divergences (statement of theorem without proof; do problems)

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Shardendu K Tripathi

Semester : III Class : S. Y. B.Sc.

Subject : Paper II Unit I (ELECTRICITY AND MAGNETISM)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Mathematical Background	Review of vector algebra and calculus. Product rules, Second derivative,)
July	04	04	Integral Calculus	Line, Surface and Volume Integrals, The Fundamental Theorem for Gradients (statement of theorem without proof; do problems), The
August	04	04	Integral Calculus	Fundamental Theorem for Curls (statement of theorem without proof; do problems)
September	02	02	AC bridges	The Fundamental Theorem for Divergences (statement of theorem without proof; do problems)

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Shardendu K Tripathi

Semester : III Class : S. Y. B.Sc.

Subject : Paper II Unit I (ELECTRICITY AND MAGNETISM)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Mathematical Background	Review of vector algebra and calculus. Product rules, Second derivative,)
July	04	04	Integral Calculus	Line, Surface and Volume Integrals, The Fundamental Theorem for Gradients (statement of theorem without proof; do problems), The
August	04	04	Integral Calculus	Fundamental Theorem for Curls (statement of theorem without proof; do problems)
September	02	02	AC bridges	The Fundamental Theorem for Divergences (statement of theorem without proof; do problems)

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Shardendu K Tripathi

Semester : IV Class : S. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Number system	Decimal, binary, hexadecimal number system and their mutual conversions.)
December	02	02	Number system	Binary addition, binary subtraction, unsigned Binary numbers, Sign-magnitude Numbers, 2's compliment representation and 2's compliment arithmetic: addition and subtraction.
January	04	04	Flip-flops and counters:	R-S flip flops, Clocked R-S , D Flip flop, edge triggered J K flip flop, Master slave flip flop,
February	03	03	Flip-flops and counters:	Asynchronous counters: 3 bit ripple up counter and 3 bit ripple down counter

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Shardendu K Tripathi

Semester : IV Class : S. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Number system	Decimal, binary, hexadecimal number system and their mutual conversions.)
December	02	02	Number system	Binary addition, binary subtraction, unsigned Binary numbers, Sign-magnitude Numbers, 2's compliment representation and 2's compliment arithmetic: addition and subtraction.
January	04	04	Flip-flops and counters:	R-S flip flops, Clocked R-S , D Flip flop, edge triggered J K flip flop, Master slave flip flop,
February	03	03	Flip-flops and counters:	Asynchronous counters: 3 bit ripple up counter and 3 bit ripple down counter

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Shardendu K Tripathi

Semester : IV Class : S. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Number system	Decimal, binary, hexadecimal number system and their mutual conversions.)
December	02	02	Number system	Binary addition, binary subtraction, unsigned Binary numbers, Sign-magnitude Numbers, 2's compliment representation and 2's compliment arithmetic: addition and subtraction.
January	04	04	Flip-flops and counters:	R-S flip flops, Clocked R-S , D Flip flop, edge triggered J K flip flop, Master slave flip flop,
February	03	03	Flip-flops and counters:	Asynchronous counters: 3 bit ripple up counter and 3 bit ripple down counter

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Shardendu K Tripathi

Semester : IV Class : S. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Number system	Decimal, binary, hexadecimal number system and their mutual conversions.)
December	02	02	Number system	Binary addition, binary subtraction, unsigned Binary numbers, Sign-magnitude Numbers, 2's compliment representation and 2's compliment arithmetic: addition and subtraction.
January	04	04	Flip-flops and counters:	R-S flip flops, Clocked R-S , D Flip flop, edge triggered J K flip flop, Master slave flip flop,
February	03	03	Flip-flops and counters:	Asynchronous counters: 3 bit ripple up counter and 3 bit ripple down counter

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Shardendu K Tripathi

Semester : IV Class : S. Y. B.Sc. Subject : Paper II Unit I (Electronics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Number system	Decimal, binary, hexadecimal number system and their mutual conversions.)
December	02	02	Number system	Binary addition, binary subtraction, unsigned Binary numbers, Sign-magnitude Numbers, 2's compliment representation and 2's compliment arithmetic: addition and subtraction.
January	04	04	Flip-flops and counters:	R-S flip flops, Clocked R-S , D Flip flop, edge triggered J K flip flop, Master slave flip flop,
February	03	03	Flip-flops and counters:	Asynchronous counters: 3 bit ripple up counter and 3 bit ripple down counter

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Shardendu K Tripathi

Semester : V Class : T. Y. B.Sc.

Subject : Paper I Unit I (Mathematical, Thermal and Statistical Physics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Differential equations	Introduction, Ordinary differential equations, First order homogeneous and nonhomogeneous equations with variable coefficients,
July	04	04	Differential equations	Second-order homogeneous equations with constant coefficients, Second order non-homogeneous equations with constant coefficients
August	04	04	Partial differential equations	Introduction, Some important partial differential equations in Physics,
September	02	02	Partial differential equations	An illustration of the method of direct integration, Method of separation of variables

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Shardendu K Tripathi

Semester : V Class : T. Y. B.Sc.

Subject : Paper I Unit I (Mathematical, Thermal and Statistical Physics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Differential equations	Introduction, Ordinary differential equations, First order homogeneous and nonhomogeneous equations with variable coefficients,
July	04	04	Differential equations	Second-order homogeneous equations with constant coefficients, Second order non-homogeneous equations with constant coefficients
August	04	04	Partial differential equations	Introduction, Some important partial differential equations in Physics,
September	02	02	Partial differential equations	An illustration of the method of direct integration, Method of separation of variables

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Shardendu K Tripathi

Semester : V Class : T. Y. B.Sc.

Subject : Paper I Unit I (Mathematical, Thermal and Statistical Physics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Differential equations	Introduction, Ordinary differential equations, First order homogeneous and nonhomogeneous equations with variable coefficients,
July	04	04	Differential equations	Second-order homogeneous equations with constant coefficients, Second order non-homogeneous equations with constant coefficients
August	04	04	Partial differential equations	Introduction, Some important partial differential equations in Physics,
September	02	02	Partial differential equations	An illustration of the method of direct integration, Method of separation of variables

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Shardendu K Tripathi

Semester : V Class : T. Y. B.Sc.

Subject : Paper I Unit I (Mathematical, Thermal and Statistical Physics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Differential equations	Introduction, Ordinary differential equations, First order homogeneous and nonhomogeneous equations with variable coefficients,
July	04	04	Differential equations	Second-order homogeneous equations with constant coefficients, Second order non-homogeneous equations with constant coefficients
August	04	04	Partial differential equations	Introduction, Some important partial differential equations in Physics,
September	02	02	Partial differential equations	An illustration of the method of direct integration, Method of separation of variables

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Shardendu K Tripathi

Semester : V Class : T. Y. B.Sc.

Subject : Paper I Unit I (Mathematical, Thermal and Statistical Physics)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
June	02	02	Differential equations	Introduction, Ordinary differential equations, First order homogeneous and nonhomogeneous equations with variable coefficients,
July	04	04	Differential equations	Second-order homogeneous equations with constant coefficients, Second order non-homogeneous equations with constant coefficients
August	04	04	Partial differential equations	Introduction, Some important partial differential equations in Physics,
September	02	02	Partial differential equations	An illustration of the method of direct integration, Method of separation of variables

Semester Wise Plan

Academic Year: 2018-19

Name of the Teacher: Shardendu K Tripathi

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I Unit I (Special Theory of Relativity and Introduction to Cosmology)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Relativistic Kinematics	The postulates of the special theory of relativity, Simultaneity,
December	02	02	Relativistic Kinematics	Derivation of Lorentz transformation equations, Some consequences of the
January	04	04	Relativistic Kinematics:	Lorentz transformation equations : length contraction, time dilation and meson experiment, The observer in relativity, The relativistic addition of velocities and acceleration transformation equations,
February	03	03	Relativistic Kinematics	Aberration and Doppler effect in relativity, The common sense of special relativity.

Semester Wise Plan

Academic Year: 2019-20

Name of the Teacher: Shardendu K Tripathi

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I Unit I (Special Theory of Relativity and Introduction to Cosmology)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Relativistic Kinematics	The postulates of the special theory of relativity, Simultaneity,
December	02	02	Relativistic Kinematics	Derivation of Lorentz transformation equations, Some consequences of the
January	04	04	Relativistic Kinematics:	Lorentz transformation equations : length contraction, time dilation and meson experiment, The observer in relativity, The relativistic addition of velocities and acceleration transformation equations,
February	03	03	Relativistic Kinematics	Aberration and Doppler effect in relativity, The common sense of special relativity.

Semester Wise Plan

Academic Year: 2020-21

Name of the Teacher: Shardendu K Tripathi

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I Unit I (Special Theory of Relativity and Introduction to Cosmology)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Relativistic Kinematics	The postulates of the special theory of relativity, Simultaneity,
December	02	02	Relativistic Kinematics	Derivation of Lorentz transformation equations, Some consequences of the
January	04	04	Relativistic Kinematics:	Lorentz transformation equations : length contraction, time dilation and meson experiment, The observer in relativity, The relativistic addition of velocities and acceleration transformation equations,
February	03	03	Relativistic Kinematics	Aberration and Doppler effect in relativity, The common sense of special relativity.

Semester Wise Plan

Academic Year: 2021-22

Name of the Teacher: Shardendu K Tripathi

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I Unit I (Special Theory of Relativity and Introduction to Cosmology)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Relativistic Kinematics	The postulates of the special theory of relativity, Simultaneity,
December	02	02	Relativistic Kinematics	Derivation of Lorentz transformation equations, Some consequences of the
January	04	04	Relativistic Kinematics:	Lorentz transformation equations : length contraction, time dilation and meson experiment, The observer in relativity, The relativistic addition of velocities and acceleration transformation equations,
February	03	03	Relativistic Kinematics	Aberration and Doppler effect in relativity, The common sense of special relativity.

Semester Wise Plan

Academic Year: 2022-23

Name of the Teacher: Shardendu K Tripathi

Semester : VI Class : T. Y. B.Sc.

Subject : Paper I Unit I (Special Theory of Relativity and Introduction to Cosmology)

Semester planning

Month	No. of Lectures as per time	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	-			
November	02	02	Relativistic Kinematics	The postulates of the special theory of relativity, Simultaneity,
December	02	02	Relativistic Kinematics	Derivation of Lorentz transformation equations, Some consequences of the
January	04	04	Relativistic Kinematics:	Lorentz transformation equations : length contraction, time dilation and meson experiment, The observer in relativity, The relativistic addition of velocities and acceleration transformation equations,
February	03	03	Relativistic Kinematics	Aberration and Doppler effect in relativity, The common sense of special relativity.

Semester Wise Plan
Academic Year: 2017-18

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: III

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Compound pendulum	Expression for period maximum and minimum time period, centres of suspension and oscillations , reversible compound pendulum Kater's reversible pendulum , compound pendulum and simple pendulum- a relative study.
July	08	08	Center of Mass	Motion of the Center of Mass , Linear momentum of a Particle Linear momentum of a System of Particles , Linear momentum wrt CM coordinate (i.e shift of origin from Lab to CM), Conservation of Linear Momentum , Some Applications of the Momentum Principle , System of Variable Mass
August	09	09	Torque Acting on a Particle	Angular Momentum of a Particle , Angular Momentum of System of Particles , Total angular momentum wrt CM coordinate. Conservation of Angular Momentum
September	07	07	Oscillations	The Simple Harmonic Oscillator , Relation between Simple Harmonic Motion and Uniform Circular Motion , Two Body Oscillations, Damped Harmonic Motion , Forced Oscillations and Resonance.

Semester Wise Plan
Academic Year: 2017-18

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani _ Semester: V

Class: TYBSC subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Electrodynamics	Field lines, Flux and Gauss' law, The divergence of E, Applications of Gauss' law, The curl of E. Introduction to potential, Comments on potential
July	12	12	Electrodynamics	Laplace's equation, The potential of a localized charge distribution. First Uniqueness theorem (Without proof), The classic image problem- Infinite conducting plane Dielectrics, Induced Dipoles, Alignment of polar molecules, Polarization, Bound charges and their physical interpretation, Gauss' law in presence of dielectrics,
August	14	14	Electrodynamics	A deceptive parallel, Susceptibility, Permittivity, Dielectric constant, Energy in dielectric systems. Straight-line currents, The Divergence and Curl of B, Applications of Ampere's Law in the case of a long straight wire and a long solenoid, Comparison of Magneto-statics and Electrostatics. Dia-magnets Paramagnets Ferro magnets, Magnetization, Bound currents and their physical interpretation, Ampere's law in magnetized materials, A deceptive parallel, Magnetic susceptibility and permeability.
September	12	12	Electrodynamics	Energy in magnetic fields, Electrodynamics before Maxwell, Maxwell's correction to

				Ampere's law, Maxwell's equations, Magnetic charge, Maxwell's equations in matter, Boundary conditions. The continuity equation, Poynting's theorem, Newton's third law in electrodynamics. The wave equation for E and B, Monochromatic Plane waves, Energy and momentum in electromagnetic waves, Propagation in linear media, Reflection and transmission of EM waves at normal incidence.

Semester Wise Plan
Academic Year: 2017-18

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: IV

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November	07	07	Polarization	Types of polarization, Plane polarized light, Circularly polarized light, Elliptically polarized light, Partially polarized light, Production of Plane polarized light, Polarization by reflection from dielectric surface, Polarization by refraction –pile of plates, Polarization by scattering, Polarization by selective Absorption, Polarization by double refraction, Polarizer and Analyzer
December	08	08	Polarization	Malus' Law, Anisotropic crystal, Calcite crystal, Optic Axis, Double refraction in calcite crystal, Huygens' explanation of double refraction, Ordinary and Extra ordinary rays, Positive and Negative crystals, Superposition of waves linearly polarized at right angles,Superposition of e-Ray and o-Ray, Retarders, Quarter wave plate, Half wave plate, Production of linearly polarized light,Production of elliptically polarized light, Production of circularly polarized light, Analysis of polarized light, Applications of polarized light.
January	08	08	Digital Electronics	Binary number system , Arithmetic building blocks , Types of registers Digital IC signal levels, Binary to Decimal ,Decimal to binary , Hexadecimal number, Hexadecimal to decimal Conversion, Decimal to hexadecimal conversion, Hexadecimal to binary conversion, Binary to hexadecimal conversion, Binary addition, Unsigned binary numbers, Sign magnitude numbers , 1's complement , 2's complement , Converting to and from 2's complement representation , 2's complement arithmetic, The adder-subtractor (ignore IC specific diagrams) RS Flip-Flops (only NOR gate latch, NAND gate latch) , Gated Flip-Flops, EdgeTriggered RS Flip-Flop, Edge- Triggered D Flip-Flop, Edge-

				Triggered J-K [redacted]-Flop, JK Master- Slave Flip-Flops, Bounce elimination switch
February	07	07	Digital Electronics	Types of registers : SISO , SIPO, PISO , PIPO [in this chapter the teacher should make all IC specific diagrams into general diagrams ie. Ignore pin numbers and IC numbers] Asynchronous counter -3 bit (ignore IC specific diagrams), Synchronous counter only mod 8, Decade Counters Mod5 and Mod10

Semester Wise Plan
Academic Year: 2017-18

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	Relativistic Dynamics	Mechanics and Relativity, The need to redefine momentum, Relativistic momentum, Alternative views of mass in relativity, The relativistic force law and the dynamics of a single particle,
January	12	12	Relativistic Dynamics Relativity and Electromagnetism	The equivalence of mass and energy, The transformation properties of momentum, energy and mass. Relativity and Electromagnetism: Introduction, The interdependence of Electric and Magnetic fields, The Transformation for E and B, The field of a uniformly moving point charge, Force and fields near a current-carrying wire, Force between moving charges, The invariance of Maxwell's equations.
February	14	14	Geometric Representation of Space-Time:	Space-Time Diagrams, Simultaneity, Length contraction and Time dilation, The time order and space separation of events, The twin paradox, The principle of equivalence and general relativity, Gravitational red shift.
March	12	12	Introduction to Cosmology:	The large scale structure of the Universe: Types of galaxies, radio sources, Quasars, Doppler shift and expansion of the Universe, Hubble's law, Radiation background. Astronomy in different bands of radiation-Optical, Radio and x-ray astronomy. The continuity equation,

				Poynting's theorem, Newton's third law in electrodynamics. The wave equation for E and B, Monochromatic Plane waves, Energy and momentum in electromagnetic waves, Propagation in linear media, Reflection and transmission of EM waves at normal incidence.

Semester Wise Plan
Academic Year: 2018-19

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class:SYBSC

Semester:III
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	10	10	Analog Electronics	Transistor Biasing, Inherent Variations of Transistor Parameters, Stabilisation, Essentials of a Transistor Biasing Circuit, Stability Factor, Methods of Transistor Biasing, Base Resistor Method, Emitter Bias Circuit, Circuit analysis of Emitter Bias, Biasing with Collector Feedback Resistor, Voltage Divider Bias Method, Stability factor for Potential Divider Bias. General amplifier characteristics: Concept of amplification, amplifier notations, current gain, Voltage gain, power gain, input resistance, output resistance, general theory of feedback, reasons for negative feedback, loop gain.
July	12	12	Analog Electronics	Practical circuit of transistor amplifier, phase reversal, frequency response, Decibel gain and Band width. Oscillators: Introduction, effect of positive feedback. Requirements for oscillations, phase shift oscillator,Wien Bridge Oscillator, Colpitt's oscillator, Hartley oscillator. Operational Amplifiers: Introduction, Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback, Inverting Amplifier, Non-Inverting Amplifier,
August	13	13	Analog Electronics Acoustics of Buildings:	Voltage Follower, Summing Amplifier, Applications of Summing amplifier, OPAMP Integrator and Differentiator, Critical frequency of Integrator, Comparator Reverberation, Sabine's formula (without derivation) Absorption coefficient, Acoustics of Buildings, factors affecting Acoustics of Buildings, Sound distribution in an auditorium.
September	10	10	Laser FibreOptics	Introduction, transition between Atomic energy states (without derivation), Principle of Laser, Properties of Laser, Helium–Neon Laser, Application of Laser, Holography

Semester Wise Plan
Academic Year: 2018-19

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	12	12	Polarization and Magnetostatics	Dielectrics, Induced Dipoles, Alignment of polar molecules, Polarization, Bound charges and their physical interpretation, Gauss' law in presence of dielectrics, A deceptive parallel, Susceptibility, Permittivity, Dielectric constant, Energy in dielectric systems. 2. Straight-line currents, The Divergence and Curl of B, Applications of Ampere's Law in the case of a long straight wire and a long solenoid, Comparison of Magneto-statics and Electrostatics.
July	21	21	Magnetism and Varying Fields Electromagnetic waves	1. Dia-magnets Paramagnets Ferro magnets, Magnetization, Bound currents and their physical interpretation, Ampere's law in magnetized materials, A deceptive parallel, Magnetic susceptibility and permeability. 2. Energy in magnetic fields, Electrodynamics before Maxwell, Maxwell's correction to Ampere's law, Maxwell's equations, Magnetic charge, Maxwell's equations in matter, Boundary conditions 1. The continuity equation, Poynting's theorem, Newton's third law in electrodynamics.
August	21	21	Electromagnetic waves Transducers, Sensors	The wave equation for E and B, Monochromatic Plane waves, Energy and

				momentum in electromagnetic waves, Propagation in linear media, Reflection and transmission of EM waves at normal incidence. References Transducers: Definition, Classification, Selection of transducer. 2. Electrical transducers: Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor), Displacement transducer: LVDT, Peizo-electric Transducer. PH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). Electronic Weighing Systems: Operating principle, Block diagram, features
September	21	21	Optoelectronic Devices Signal Conditioning, SMPS and Measuring Instruments	LDR, LED (Construction, Working & Applications), Multicolour LED, Seven Segment Display, Liquid Crystal Display (LCD), Photodiode (construction, Characteristics & applications), Phototransistor. Half wave precision rectifier, Active Peak detector, Active Positive Clamper [M & B]. 2. Active Positive and Negative Clippers [G] 3. Microphones: characteristics, types (list only), carbon microphone and dynamic type microphone (principle, construction and working) [R4]. 4. Loud speakers: Characteristics, Dynamic (Moving coil type) speaker, Multi-way speaker system (woofer and tweeter) [R4] 5. Switching Regulators: Basic and Monolithic Switching regulators (buck, boost and buck – boost) (Only basic Configurations) Ref M: 24.7 Cathode Ray Oscilloscope: Single trace CRO (Block diagram), Front Panel Controls (Intensity, Focus, Astigmatism, X & Y position, Level knob, Time base (Time/Division) and attenuation (Volts/Division) knobs, X-Y mode), Dual Trace CRO (Block diagram), Probes: 1:1&10:1. Digital Storage Oscilloscope [R3 &10]. 7. DMM: 3 ½ Digit, resolution and sensitivity, general specification. [R3]

Semester Wise Plan

Academic Year: 2018-19

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: IV

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November	10	10	Applications of Schrodinger steady state equation	1. Free particle. 2. Particle in infinitely deep potential well (one - dimension). 3. Particle in finitely deep potential well (one - dimension).
December	12	12	Applications of Schrodinger steady state equation Applications of Schrodinger steady state equation	4. Step potential. 5. Particle in three dimension rigid box, degeneracy of energy state. 1. Potential barrier (Finite height and width) penetration and tunneling effect (derivation of approximate transmission probability) 2. Theory of alpha particle decay from radioactive nucleus.
January	13	13	Applications of Schrodinger steady state equation Microprocessors	Harmonic oscillator (one-dimension), correspondence principle. Introduction, Historical Perspective, Organization of a Microprocessor Based system, how does the Microprocessor works, Machine Language, Assembly Language, High Level Languages, Writing and executing an Assembly Language Program. 8085 Bus Organization, 8085 Programming Model, The 8085 Microprocessor, Pin connection
February	10	10	Microprocessors	diagram and function of each pin, A detailed look at 8085 Microprocessor. Basic definitions: Instruction, Opcode, operand. Instruction word Size, instruction Format, dataformat ,Addressing Modes,The 8085 Instruction Set(Classification) Data transfer Operations,Arithmetic Operations, Logical Operations Branch Operations , Introduction to Advancedinstructions Flowchart

Semester Wise Plan
Academic Year: 2018-19

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	12	12	Relativistic Kinematics	Relativistic Kinematics (continued): The relativistic addition of velocities and acceleration transformation equations, Aberration and Doppler effect in relativity, The common sense of special relativity. The Geometric Representation of Space-Time: Space-Time Diagrams, Simultaneity, Length contraction and Time dilation, The time order and space separation of events, The twin paradox
January	21	21	Relativistic Dynamics Relativity and Electromagnetism	Relativistic Dynamics: Mechanics and Relativity, The need to redefine momentum, Relativistic momentum, Alternative views of mass in relativity, The relativistic force law and the dynamics of a single particle, The equivalence of mass and energy, The transformation properties of momentum, energy and mass. Relativity and Electromagnetism: Introduction, The interdependence of Electric and Magnetic fields, The Transformation for E and B, The field of a uniformly moving point charge, Force and fields near a current-carrying wire, Force between moving charges, The invariance of Maxwell's equations. The principle of equivalence and general relativity,

				Gravitational red shift.
February	21	21	Advanced 8085 Programming and 8255(PPI)	Introduction to advanced instructions and applications Ref. RG: 10.7, 10.8, 10.9 2. Stack and Subroutines: Stack, Subroutine Ref. RG: 9.1, 9.1.1, 9.2&9.2.1 3. The 8255 Programmable Peripheral Interface: Block Diagram of the 8255, Mode 0 – Simple Input / Output mode, BSR (Bit Set/Reset Mode)
March	21	21	Introduction to Microcontrollers	Introduction, Microcontrollers and Microprocessors, History of Microcontrollers and Microprocessors, Block diagram of 8051 Microcontroller*, Embedded Versus External Memory Devices, 8-bit & 16-bit Microcontrollers, CISC and RISC Processors, Harvard and Von Neumann Architectures, Commercial Microcontrollers. Ref. AVD-Ch: 1 Ref. MMM - For * Refer 1.2 The 8051 Microcontroller & Embedded Systems by M.A. Mazidi, J.G. Mazidiand R. D. Mckinlay, Second Edition, Pearson. 2. 8051 Microcontrollers: Introduction, MCS-Architecture, Registers in MCS-51, 8051 Pin Description, 8051 Connections, 8051 Parallel I/O Ports, Memory Organization. AVD-Ch: 2, 3. 3. 8051 Instruction Set and Programming: MCS-51 Addressing Modes and Instructions: 8051 Addressing modes, MCS-51 Instruction Set, 8051 Instructions and Simple Programs, Using Stack Pointer AVD-Ch: 4 Ref. AVD: Microcontrollers (Theory and Applications) by Ajay V Deshmukh, The Tata-McGraw-Hill Companies

Semester Wise Plan
Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: FYBSC

Semester: I
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	04	04	Lens Maker's	Lens Maker's Formula (Review), Newton's lens equation,magnification-lateral, longitudinal and angular.
July	04	04	Equivalent focal length	Equivalent focal length of two thin lenses, thick lens, cardinal points of thick lens, Ramsdenand Huygens eyepiece.
August	04	04	Aberration	Aberration: Spherical Aberration, Reduction of Spherical Aberration, Chromatic aberration and condition for achromatic aberration.
September	03	03	Interference	Interference: Interference in thin films, Fringes in Wedge shaped films, Newton's Rings (Reflective).

Semester Wise Plan

Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: III

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Thermodynamics	Conversion of heat into work, heat engine, Carnot's cycle: its efficiency Second law of thermodynamics, Statements, Equivalence of Kelvin and Plank statement, Carnot's theorem, Reversible and irreversible process, Absolute scale of temperature.
July	10	10	Thermodynamics	Clausius theorem, Entropy, Entropy of a cyclic process, Reversible process,Entropy change, Reversible heat transfer, Principle of increase in entropy, generalized form of first and second law, entropy change of an ideal gas, entropy of steam, entropy and unavailable energy, entropy and disorder, absolute entropy.
August	10	10	Analog Electronics	Oscillators: Introduction, effect of positive feedback. Requirements for oscillations, phase shift oscillator,Wien Bridge Oscillator, Colpitt's oscillator, Hartley oscillator Operational Amplifiers: Introduction, Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback,
September	04	04	Analog Electronics	Inverting Amplifier, Non-Inverting Amplifier, Voltage Follower, Summing Amplifier, Applications of Summing amplifier, OPAMP Integrator and Differentiator, Critical frequency

Semester Wise Plan

Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	10	10	Raman effect Electron spin resonance	Quantum Theory of Raman effect, Pure Rotational Raman spectra: Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra: Raman activity of vibrations, Experimental set up of Raman Effect. Introduction, Principle of ESR, ESR spectrometer
July	14	14	Nuclear magnetic resonance Electrostatics in Matter	Introduction, principle and NMR instrumentation. Dielectrics, Induced Dipoles, Alignment of polar molecules, Polarization, Bound charges and their physical interpretation, Gauss' law in presence of dielectrics, A deceptive parallel, Susceptibility, Permittivity, Dielectric constant and relation between them, Energy in dielectric systems.
August	14	14	Magnetostatics Magnetostatics in Matter	Review of Biot-Savart's law and Ampere's law, Straight-line currents, The Divergence and Curl of B, Applications of Ampere's Law in the case of a long straight wire and a long solenoid, Comparison of Magnetostatics and Electrostatics, Magnetic Vector Potential. Magnetization, Bound currents and their physical interpretation, Ampere's law in magnetized materials, A deceptive parallel, Magnetic susceptibility and permeability.
September	07	07	Electrodynamics	Energy in magnetic fields, Electrodynamics before Maxwell, Maxwell's correction to Ampere's law, Maxwell's equations, Magnetic charge, Maxwell's equations in matter, Boundary conditions.

Semester Wise Plan
Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: II

Class: FYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November	04	04	GM Counter	Interaction between particles and matter, Ionization chamber, Proportional counter and GM counter, problems
December	04	04	Nuclear Reactions:	Types of Reactions and Conservation Laws. Concept of Compound
January	04	04	Nuclear Reactions:	Direct Reaction, Q value equation and solution of the Q equation, problems
February	03	03	Nuclear Reactions:	Fusion and fission definitions and qualitative discussion with examples.

Semester Wise Plan
Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: IV

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November	06	06	Digital Electronics	Binary number system , Arithmetic building blocks , Types of registers Digital IC signal levels, Binary to Decimal ,Decimal to binary , Hexadecimal number, Hexadecimal to decimal Conversion, Decimal to hexadecimal conversion, Hexadecimal to binary conversion, Binary to hexadecimal conversion, Binary addition, Unsigned binary numbers, Sign magnitude numbers , 1's complement , 2's complement , Converting to and from 2's complement representation , 2's complement arithmetic, The adder-subtractor (ignore IC specific diagrams)
December	10	10	Digital Electronics	RS Flip-Flops (only NOR gate latch, NAND gate latch) , Gated Flip-Flops, Edge Triggered RS Flip-Flop, Edge- Triggered D Flip-Flop, Edge-Triggered J-K Flip-Flop, JK Master- Slave Flip-Flops, Bounce elimination switch Types of registers : SISO , SIPO, PISO , PIPO [in this chapter the teacher should make all IC specific diagrams into general diagrams ie. Ignore pin numbers and IC numbers] Asynchronous counter -3 bit (ignore IC specific diagrams), Synchronous counter only mod 8, Decade Counters Mod5 and Mod10
January	10	10	Applications of Schrodinger steady state	Potential barrier (Finite height and width)

			equation	penetration and tunneling effect (derivation of approximate transmission probability)
February	04	04	Applications of Schrodinger steady state equation	Theory of alpha particle decay from radioactive nucleus. Harmonic oscillator (one-dimension), correspondence principle.

Semester Wise Plan
Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	10	10	Nuclear force Elementary particles	Introduction, Deuteron problem, Meson theory of Nuclear Force- A qualitative discussion. Introduction, Classification of elementary particles, Particle interactions, Conservation laws (linear &angular momentum, energy, charge, baryon number & lepton number)
January	14	14	Elementary particles Relativistic Kinematics - II	particles and antiparticles (Electrons and positrons, Protons and anti-protons, Neutrons and antineutrons, Neutrinos and anti-neutrinos), Photons, Mesons, Quark model (Qualitative). The relativistic addition of velocities, acceleration transformation equations, Aberration and Doppler effect in relativity, The common sense of special relativity.
February	14	14	The Geometric Representation of Space-Time Relativistic Dynamics	Space-Time Diagrams, Simultaneity, Length contraction and Time dilation, The time order and space separation of events, The twin paradox. Mechanics and Relativity, The need to redefine momentum, Relativistic momentum, Alternative views of mass in relativity
March	07	07	Relativistic Dynamics	The relativistic force law and the dynamics of a single particle, The equivalence of mass and energy, The transformation properties of momentum, energy and mass.

Semester Wise Plan

Academic Year: 2020-21

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	Relativistic Kinematics – II	The relativistic addition of velocities, acceleration transformation equations, Aberration and Doppler effect in relativity, The common sense of special relativity.
January	10	10	The Geometric Representation of Space-Time	Space-Time Diagrams, Simultaneity, Length contraction and Time dilation, The time order and space separation of events, The twin paradox.
February	10	10	Relativistic Dynamics	Mechanics and Relativity, The need to redefine momentum, Relativistic momentum, Alternative views of mass in relativity
March	04	04	Relativistic Dynamics	The relativistic force law and the dynamics of a single particle, The equivalence of mass and energy, The transformation properties of momentum, energy and mass.

Semester Wise Plan
Academic Year: 2020-21

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: IV

Class: MSc Part-II

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	VHDL-I	Introduction to VHDL: VHDL Terms, Describing Hardware in VHDL, Entity, Architectures , Concurrent Signal Assignment , Event Scheduling, Statement concurrency, Structural Designs, Sequential Behavior, Process Statements, Process Declarative Region, Process Statement Part, Process Execution, Sequential Statements, Architecture Selection, Configuration Statements, Power of Configurations.
January	10	10	VHDL-I	Behavioral Modeling: Introduction to Behavioral Modeling, Transport Versus Inertial Delay, Inertial Delay, Transport Delay, Inertial Delay Model, Transport Delay Model, Simulation Deltas, Drivers, Driver Creation, Bad Multiple Driver Model, Generics, Block Statements, Guarded Blocks. Sequential Processing: Process Statement, Sensitivity List, Process Example, Signal Assignment Versus Variable Assignment, Incorrect Mux Example, Correct Mux Example, Sequential Statements, IF Statements, CASE Statements, LOOP statements, NEXT Statement, EXIT Statement, ASSERT Statement, Assertion BNF, WAIT Statements, WAIT ON Signal, WAIT UNTIL Expression, WAIT FOR time expression, Multiple WAIT Conditions, WAIT Time-Out, Sensitivity List Versus WAIT Statement, Concurrent Assignment Problem, Passive Processes.
February	10	10	VHDL-II	Data Types: Object Types, Signal, Variables, Constants, Data Types, Scalar Types, Composite Types, Incomplete Types, File Types, File Type Caveats, Subtypes. Subprograms and Packages: Subprograms Function, Conversion Functions, Resolution Functions, Procedures, Packages, Package Declaration, Deferred

				Constants, Sub[redacted]gram Declaration, Package Body.
March	04	04	VHDL-II	Predefined Attributes: Value Kind Attributes, Value Type Attributes, Value Array Attributes, Value Block Attributes, Function Kind Attributes, Function Type Attributes, Function Array Attributes, Function Signal Attributes, Attributes 'EVENT and ,LAST-VALUE Attribute 'LAST-EVENT Attribute, 'ACTIVE and 'LAST-ACTIVE Signal Kind Attributes, Attribute 'DELAYED, Attribute 'STABLE, Attribute 'QUIET, Attribute TRANSACTION, Type Kind Attributes, Range Kind Attributes. DLP - Ch 6 Configurations: Default Configurations, Component Configurations, Lower-Level Configurations, Entity-Architecture Pair Configuration, Port Maps, Mapping Library Entities, Generics in Configurations, Generic Value Specification in Architecture, Generic Specifications in Configurations, Board-Socket-Chip Analogy, Block Configurations, Architecture configurations.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: FYBSC

Semester: I
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Lens Maker's Equivalent focal length	Lens Maker's Formula (Review), Newton's lens equation, magnification-lateral, longitudinal and angular. Equivalent focal length of two thin lenses, thick lens, cardinal points of thick lens, Ramsdenand Huygens eyepiece.
July	10	10	Aberration Interference	Aberration: Spherical Aberration, Reduction of Spherical Aberration, Chromatic aberration and condition for achromatic aberration. Interference: Interference in thin films, Fringes in Wedge shaped films, Newton's Rings (Reflective).
August	10	10	Thermodynamics	Behavior of real gases and real gas equation, Van der Waal equation Thermodynamic Systems, Zeroth law of thermodynamics, Concept of Heat, The first law, Non Adiabatic process and Heat as a path function, Internal energy, , Heat Capacity and specific heat,
September	04	04	Thermodynamics	Applications of first law to simple processes, general relations from the first law, Indicator diagrams, Work done during isothermal and adiabatic processes, Worked examples, Problems.

Semester Wise Plan

Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: III

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Analog Electronics	Transistor Biasing, Inherent Variations of Transistor Parameters, Stabilisation, Essentials of a Transistor Biasing Circuit, Stability Factor, Methods of Transistor Biasing, Base Resistor Method, Emitter Bias Circuit, Circuit analysis of Emitter Bias, Biasing with Collector Feedback Resistor, Voltage Divider Bias Method, Stability factor for Potential Divider Bias
July	10	10	Analog Electronics	General amplifier characteristics: Concept of amplification, amplifier notations, current gain, Voltage gain, power gain, input resistance, output resistance, general theory of feedback, reasons for negative feedback, loop gain. Practical circuit of transistor amplifier, phase reversal, frequency response, Decibel gain and Band width.
August	10	10	Analog Electronics	Oscillators: Introduction, effect of positive feedback. Requirements for oscillations, phase shift oscillator,Wien Bridge Oscillator, Colpitt's oscillator, Hartley oscillator Operational Amplifiers: Introduction, Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback
September	04	04	Analog Electronics	Operational Amplifiers: Introduction,

				Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Crystal Physics	The crystalline state, Basic definitions of crystal lattice, basis vectors, unit cell, primitive and non-primitive cells, The fourteen Bravais lattices and the seven crystal systems, elements of symmetry, nomenclature of crystal directions and crystal planes, Miller Indices, spacing between the planes of the same Miller indices, examples of simple crystal structures, The reciprocal lattice and X-ray diffraction.
July	30	30	Electrical properties of metals Band Theory of Solids and Conduction in Semiconductors	Classical free electron theory of metals, Drawbacks of classical theory, Relaxation time, Collision time and mean free path Quantum theory of free electrons, Fermi Dirac statistics and electronic distribution in solids, Density of energy states and Fermi energy, The Fermi distribution function, Heat capacity of the Electron gas, Mean energy of electron gas at 0 K, Electrical conductivity from quantum mechanical considerations, Failure of Sommerfeld's free electron Theory Band theory of solids, The Kronig- Penney model (Omit eq. 6.184 to 6.188), Brillouin zones, Number of wave functions in a band, Motion of electrons in a one-dimensional periodic potential, Distinction between metals, insulators and intrinsic semiconductors. Electrons and Holes in an Intrinsic Semiconductor, Conductivity of a Semiconductor, Carrier concentrations in an intrinsic semiconductor, Donor and Acceptor impurities, Charge densities in a semiconductor, Fermi level in extrinsic semiconductors, Diffusion, Carrier lifetime, The continuity equation, Hall Effect.
August	30	30	Diode Theory and	Semiconductor-diode Characteristics: Qualitative theory of the

			superconductivity Magnetostatics in Matter Hydrogen atom	p-n junction [redacted] p-n junction as a diode, Band structure of an open-circuit p-n junction, The current components in a p-n junction diode, Quantitative theory of p-n diode currents, The Volt-Ampere characteristics, The temperature dependence of p-n characteristics, Diode resistance. Superconductivity: Experimental Survey, Occurrence of Superconductivity, destruction of superconductivity by magnetic field, The Meissner effect, London equation, BCS theory of superconductivity, Type I and Type II Superconductors, Vortex state. Schrödinger's equation for Hydrogen atom, Separation of variables, Quantum Numbers: Total quantum number, Orbital quantum number, Magnetic quantum number. Angular momentum, Electron probability density (Radial part). Electron spin: The Stern-Gerlach experiment, Pauli's Exclusion Principle Symmetric and Anti-symmetric wave functions.
September	15	15	Spin orbit coupling	Spin orbit coupling, Total angular momentum, Vector atom model, L-S and j-j coupling. Origin of spectral lines, Selection rules. Effect of Magnetic field on atoms, the normal Zeeman effect and its explanation (Classical and Quantum), The Lande g - factor, Anomalous Zeeman effect

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: II

Class: FYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	GM Counter	Interaction between particles and matter, Ionization chamber, Proportional counter and GM counter, problems Types of Reactions and Conservation Laws. Concept of Compound
January	10	10	Nuclear Reactions	Direct Reaction, Q value equation and solution of the Q equation, problems Fusion and fission definitions and qualitative discussion with examples.
February	10	10	Origin of Quantum theory	Origin of Quantum theory, Black body (definition), Black Body spectrum, Wien's displacement law, Matter waves, wave particle duality, Heisenberg's uncertainty Principle. Davisson-Germer experiment, G. P. Thompson experiment.
March	04	04	X-Rays production and properties	X-Rays production and properties. Continuous and characteristic X-Ray spectra, X-Ray Diffraction, Bragg's Law, Applications of X-Rays. Compton Effect, Pair production, Photons and Gravity, Gravitational Red Shift.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: IV

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	Applications of Schrodinger steady state equation	Free particle. Particle in infinitely deep potential well (one - dimension).
January	10	10	Applications of Schrodinger steady state equation	Particle in finitely deep potential well (one - dimension). Step potential. Particle in three dimension rigid box, degeneracy of energy state.
February	10	10	Applications of Schrodinger steady state equation	Potential barrier (Finite height and width) penetration and tunneling effect (derivation of approximate transmission probability)
March	04	04	Applications of Schrodinger steady state equation	Theory of alpha particle decay from radioactive nucleus. Harmonic oscillator (one-dimension), correspondence principle.

Semester Wise Plan

Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	15	15	Field effect transistors: JFET MOSFET	Basic ideas, Drain curve, The transconductance curve, Biasing in the ohmic region and the active region, Transconductance, JFET common source amplifier, JFET analog switch, multiplexer, voltage controlled resistor, Current sourcing Depletion and enhancement mode, MOSFET operation and characteristics, digital switching. SCR – construction, static characteristics, Analysis of the operation of SCR, Gate Triggering Characteristics, Variable half wave rectifier and Variable full wave rectifier, Current ratings of SCR. UJT: Construction, Operation, characteristics and application as a relaxation oscillator.
January	30	30	Differential Amplifier using transistor Op Amp Applications: Transistor Multivibrators 555 Timer Regulated DC power supply	The Differential Amplifier, DC and AC analysis of a differential amplifier, Input characteristic-effect of input bias, offset current and input offset voltage on output, common mode gain, CMRR. Log amplifier, Instrumentation amplifiers, Voltage controlled current sources (grounded load), First order Active filters, Astable using OP AMP, square wave and triangular wave generator using OP AMP, Wein-bridge oscillator using OP AMP, Comparators with Hysteresis, Window Comparator. Transistor Multivibrators: Astable, Monostable and Bistable Multivibrators, Schmitt trigger. Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillator, Pulse Width modulator, Pulse Position Modulator, Triggered linear ramp generator. Supply characteristics, series voltage regulator, Short circuit protection (current limit and fold back)

				Monolithic linear IC voltage Regulators.
February	30	30	Logic families Digital Communication Techniques Alpha & Beta Decay	Standard TTL NAND, TTL NOR, Open collector gates, Three state TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics. Digital Transmission of Data, Benefits of Digital Communication, Disadvantages of Digital Communication, Parallel and Serial Transmission, Pulse Modulation, Comparing Pulse-Modulation Methods (PAM, PWM, PPM), Pulse-Code Modulation. Velocity, energy, and Absorption of alpha particles: Range, Ionization and stopping power, Nuclear energy levels. Range of alpha particles, alpha particle spectrum, Fine structure, long range alpha particles, Alpha decay paradox: Barrier penetration (Gamow's theory of alpha decay and Geiger Nuttal law). Introduction, Velocity and energy of beta particles, Energy levels and decay schemes, Continuous beta ray spectrum-Difficulties encountered to understand it, Pauli's neutrino hypothesis, Detection of neutrino, Energetics of beta decay.
March	15	15	Gamma Decay & Nuclear Models	Introduction, selection rules, Internal conversion, nuclear isomerism, Mossbauer effect. Liquid drop model, Weizsacker's semi-empirical mass formula, Mass parabolas - Prediction of stability against beta decay for members of an isobaric family, Stability limits against spontaneous fission. Shell model (Qualitative), Magic numbers in the nucleus.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: MSc -II

Semester: III
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	04	04	8051 microcontroller	Programming 8051 Timers, Counter Programming.
July	04	04	8051 microcontroller	Basics of Serial Communication, 8051 Connection to RS232, 8051 Serial Port Programming in assembly
August	04	04	8051 microcontroller	8051 Interrupts, Programming Timer Interrupts, Programming External hardware Interrupts,
September	03	03	8051 microcontroller	Programming the Serial Communication Interrupt, Interrupt Priority in 8051/52.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: MSc -II

Semester: IV
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	07	07	8051 microcontroller	Programming 8051 Timers, Counter Programming.
January	15	15	8051 microcontroller	Basics of Serial Communication, 8051 Connection to RS232, 8051 Serial Port Programming in assembly
February	15	15	8051 microcontroller	8051 Interrupts, Programming Timer Interrupts, Programming External hardware Interrupts,
March	08	08	8051 microcontroller	Programming the Serial Communication Interrupt, Interrupt Priority in 8051/52.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: MSc -II

Semester: IV
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	07	07	PIC 16F8XX Flash Microcontrollers	Introduction, Pin Diagram, STATUS Register, Power Control Register (PCON), OPTION_REG Register, Program memory, Data memory, I/O Ports
January	15	15	PIC 16F8XX Flash Microcontrollers Interfacing microcontroller/PIC microcontroller	Capture/Compare/PWM (CCP) Modules in PIC 16F877, Analog-to-Digital Converter Light Emitting Diodes (LEDs); Push Buttons, Relays and Latch Connections; Keyboard Interfacing; Interfacing 7-Segment Displays
February	15	15	Industrial Applications of microcontrollers ARM 7	LCD Interfacing; ADC and DAC Interfacing with 89C51 Microcontrollers. Introduction and Measurement Applications (For DC motor interfacing and PWM The ARM Architecture: The Acorn RISC Machine, Architectural inheritance, The ARM Programmer's model, ARM development tools
March	08	08	8051 microcontroller	Programming the Serial Communication Interrupt, Interrupt Priority in 8051/52.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: FYBSC

Semester: I
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Elasticity	An introduction to Elasticity, Stress, Strain, Hooke's Law and Moduli of Elasticity and relation between them
July	10	10	Viscosity Fluid Mechanics	An introduction to Viscosity, Flow through a Narrow Tube: Poiseuille's Equation, Stokes' Law, Terminal velocity, Measuring Coefficient of Viscosity by Stokes' method, Critical velocity and Reynolds number. Worked out Examples Streamline and Turbulent flow, Equation of Continuity, Bernoulli's equation, Applications of Bernoulli's equation. Worked out Examples
August	10	10	Behavior of real gases Laws of Thermodynamics	An introduction, Vander Waals equation of state Thermodynamic Systems, zeroth law of thermodynamics, Concept of heat, Thermodynamic Equilibrium, Work: A Path dependent function, Internal energy, First law of Thermodynamics, Internal Energy as a state function, Specific heat of gases, Application of First Law of thermodynamics, The indicator diagram, Work done during Isothermal and Adiabatic processes
September	04	04	Heat engine	Definition of Efficiency of heat engine, Carnot's Ideal heat engine, and Numerical examples

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: III

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	06	06	Analog Electronics	Oscillators: Introduction, effect of positive feedback. Requirements for oscillations, phase shift oscillator,Wien Bridge Oscillator, Colpitt's oscillator, Hartley oscillator
July	10	10	Analog Electronics	Operational Amplifiers: Introduction, Schematic symbol of OPAMP, Output voltage from OPAMP, AC analysis, Bandwidth of an OPAMP, Slew rate, Frequency Response of an OPAMP, OPAMP with Negative feedback
August	10	10	Digital Electronics	Flip Flops : RS Flip-Flops (only NOR gate latch, NAND gate latch) , Gated Flip Flops, Edge-Triggered RS Flip-Flop, Edge- Triggered D Flip-Flop, Edge Triggered J-K Flip-Flop, JK Master-Slave Flip-Flops.
September	04	04	Types of registers	SISO , SIPO, PISO , PIPO [in this chapter the teacher should make all IC specific diagrams into general diagrams ie. Ignore pin numbers and IC numbers] Asynchronous counter -3 bit (ignore IC specific diagrams), Synchronous counter only mod 8, Decade Counters Mod 5 and Mod 10

Semester Wise Plan

Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Crystal Physics	The crystalline state, Basic definitions of crystal lattice, basis vectors, unit cell, primitive and non-primitive cells, The fourteen Bravais lattices and the seven crystal systems, elements of symmetry, nomenclature of crystal directions and crystal planes, Miller Indices, spacing between the planes of the same Miller indices, examples of simple crystal structures, The reciprocal lattice and X-ray diffraction.
July	20	20	Electrical properties of metals Band Theory of Solids and Conduction in Semiconductors	Classical free electron theory of metals, Drawbacks of classical theory, Relaxation time, Collision time and mean free path Quantum theory of free electrons, Fermi Dirac statistics and electronic distribution in solids, Density of energy states and Fermi energy, The Fermi distribution function, Heat capacity of the Electron gas, Mean energy of electron gas at 0 K, Electrical conductivity from quantum mechanical considerations, Failure of Sommerfeld's free electron Theory Band theory of solids, The Kronig- Penney model (Omit eq. 6.184 to 6.188), Brillouin zones, Number of wave functions in a band, Motion of electrons in a one-dimensional periodic potential, Distinction between metals, insulators and intrinsic semiconductors. Electrons and Holes in an Intrinsic Semiconductor, Conductivity of a Semiconductor, Carrier concentrations in an intrinsic semiconductor, Donor and Acceptor impurities, Charge densities in a semiconductor, Fermi level in extrinsic semiconductors, Diffusion, Carrier lifetime, The continuity equation, Hall Effect.
August	20	20	Diode Theory and	Semiconductor-diode Characteristics: Qualitative theory of the

			superconductivity Hydrogen atom	p-n junction, The p-n junction as a diode, Band structure of an open-circuit p-n junction, The current components in a p-n junction diode, Quantitative theory of p-n diode currents, The Volt-Ampere characteristics, The temperature dependence of p-n characteristics, Diode resistance. Superconductivity: Experimental Survey, Occurrence of Superconductivity, destruction of superconductivity by magnetic field, The Meissner effect, London equation, BCS theory of superconductivity, Type I and Type II Superconductors, Vortex state. Schrödinger's equation for Hydrogen atom, Separation of variables, Quantum Numbers: Total quantum number, Orbital quantum number, Magnetic quantum number. Angular momentum, Electron probability density (Radial part). Electron spin: The Stern-Gerlach experiment, Pauli's Exclusion Principle Symmetric and Anti-symmetric wave functions.
September	15	15	Spin orbit coupling	Spin orbit coupling, Total angular momentum, Vector atom model, L-S and j-j coupling. Origin of spectral lines, Selection rules. Effect of Magnetic field on atoms, the normal Zeeman effect and its explanation (Classical and Quantum), The Lande g - factor, Anomalous Zeeman effect

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: II

Class: FYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	Radiation Detectors	Interaction between particles and matter, plot of variation of ionization current with applied voltage, Gas filled radiation detectors- Ionization chamber (qualitative), Proportional Counter and GM Counter
January	10	10	Nuclear Reactions	Introduction, types of nuclear reactions, conservation laws (mass, energy and charge), concept of compound and direct reaction, Q value equation and solution of the Q equation, threshold energy Problems
February	10	10	Origin of Quantum theory	Origin of Quantum theory, Black body (definition), Black Body spectrum, Wien's displacement law, Matter waves, wave particle duality, Heisenberg's uncertainty Principle. Davisson-Germer experiment, G. P. Thompson experiment.
March	04	04	X-Rays production and properties	X-Rays production and properties. Continuous and characteristic X-Ray spectra, X-Ray Diffraction, Bragg's Law, Applications of X-Rays. Compton Effect, Pair production, Photons and Gravity, Gravitational Red Shift.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: IV

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	08	08	Microprocessors	Building Concept of Microprocessor: Introduction, Study of Memory, Input Device, Output Device, Input/output Device, Central Processing Unit. 8085 Microprocessor: Introduction, Features of Inter 8085, Pin Diagram of 8085, 8085 CPU Architecture ,Arithmetic and Logical Group, Register Group, Interrupt Control , Serial I/O Control Group ,Instruction Register , Decoder and Control Group
January	15	15	Microprocessors Electromagnetism	8085 Instruction Set: Introduction, Flowchart, Classification of Instruction, Notations used in Instructions and Opcode , Data Transfer Group ,Program Examples for Data Transfer Group , Arithmetic Operation Group , Branch Group , Logical Group , Addressing Modes , 8085 Programmers Model. Coulomb's law, Comments on potential, Poisson's equation and Laplace's equation. Solution and properties of 1D Laplace equation. Properties of 2D and 3D Laplace equation (without proof). First & Second Uniqueness theorem Introduction to Electrodynamics David J Griffiths Fourth Edition Cambridge University Press
February	15	15	Magnetostatics equation	Magnetization, The Divergence and Curl of B,

				Ampere's law in magnetized materials, Comparison of Magnetostatics and Electrostatics , Bound currents
March	07	07	Magnetostatics equation	physical interpretation, Magnetic susceptibility and permeability. Introduction to Electrodynamics David J Griffiths Fourth Edition Cambridge University Press

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	15	15	Field effect transistors: JFET MOSFET	Basic ideas, Drain curve, The transconductance curve, Biasing in the ohmic region and the active region, Transconductance, JFET common source amplifier, JFET analog switch, multiplexer, voltage controlled resistor, Current sourcing Depletion and enhancement mode, MOSFET operation and characteristics, digital switching. SCR – construction, static characteristics, Analysis of the operation of SCR, Gate Triggering Characteristics, Variable half wave rectifier and Variable full wave rectifier, Current ratings of SCR. UJT: Construction, Operation, characteristics and application as a relaxation oscillator.
January	20	20	Differential Amplifier using transistor Op Amp Applications: Transistor Multivibrators 555 Timer Regulated DC power supply	The Differential Amplifier, DC and AC analysis of a differential amplifier, Input characteristic-effect of input bias, offset current and input offset voltage on output, common mode gain, CMRR. Log amplifier, Instrumentation amplifiers, Voltage controlled current sources (grounded load), First order Active filters, Astable using OP AMP, square wave and triangular wave generator using OP AMP, Wein-bridge oscillator using OP AMP, Comparators with Hysteresis, Window Comparator. Transistor Multivibrators: Astable, Monostable and Bistable Multivibrators, Schmitt trigger. Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillator, Pulse Width modulator, Pulse Position Modulator, Triggered linear ramp generator. Supply characteristics, series voltage regulator, Short circuit protection (current limit and fold back)

				Monolithic linear IC voltage Regulators.
February	20	20	Logic families Digital Communication Techniques	Standard TTL NAND, TTL NOR, Open collector gates, Three state TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics. Digital Transmission of Data, Benefits of Digital Communication, Disadvantages of Digital Communication, Parallel and Serial Transmission, Pulse Modulation, Comparing Pulse-Modulation Methods (PAM, PWM, PPM), Pulse-Code Modulation.
March	15	15	Alpha & Beta Decay	Velocity, energy, and Absorption of alpha particles: Range, Ionization and stopping power, Nuclear energy levels. Range of alpha particles, alpha particle spectrum, Fine structure, long range alpha particles, Alpha decay paradox: Barrier penetration (Gamow's theory of alpha decay and Geiger Nuttal law). Introduction, Velocity and energy of beta particles, Energy levels and decay schemes, Continuous beta ray spectrum-Difficulties encountered to understand it, Pauli's neutrino hypothesis, Detection of neutrino, Energetics of beta decay.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: MSc -I

Semester: II
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	07	07	Microprocessor and Microcontroller	Microprocessors: Counters and Time Delays, Stack and Sub-routines RSG: Microprocessor Architecture, Programming and Applications with the 8085 : R. S. Gaonkar , 5th Edition, Penram International 2. Introduction to Microcontrollers: Introduction, Microcontrollers and Microprocessors, History of Microcontrollers and Microprocessors, Embedded versus External Memory Devices, 8–bit and 16–bit Microcontrollers, CISC and RISC Processors, Harvard and Von Neumann Architectures, Commercial Microcontroller Devices.
July	15	15	8051 microcontroller Electrodynamics	8051 Microcontrollers: Introduction, MCS–51 Architecture, Registers in MCS-51, 8051 Pin Description, Connections,8051 Parallel I/O Ports and Memory Organization. AVD: Ch. 2, 3 4. 8051 Instruction set and Programming: MCS-51 Addressing Modes and Instruction set. 8051 Instructions and Simple programs using Stack Pointer. Maxwell's equations, The Pointing vector, The Maxwellian stress tensor, Lorentz Transformations, Four Vectors and Four Tensors, The field equations and the field tensor, Maxwell equations in covariant notation.
August	15	15	Electrodynamics	Electromagnetic waves in vacuum, Polarization of plane waves. Electromagnetic waves in matter, frequency dependence of conductivity, frequency dependence of polarizability, frequency dependence of refractive index.
September	08	08	Electrodynamics	Wave guides, boundary conditions, classification of fields in wave guides, phase velocity and group velocity, resonant cavities.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: MSc -II

Semester: III
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	04	04	8051 microcontroller	Programming 8051 Timers, Counter Programming.
July	04	04	8051 microcontroller	Basics of Serial Communication, 8051 Connection to RS232, 8051 Serial Port Programming in assembly
August	04	04	8051 microcontroller	8051 Interrupts, Programming Timer Interrupts, Programming External hardware Interrupts,
September	03	03	8051 microcontroller	Programming the Serial Communication Interrupt, Interrupt Priority in 8051/52.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Arpana Sandimani
Class: MSc -II

Semester: IV
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	07	07	PIC 16F8XX Flash Microcontrollers	Introduction, Pin Diagram, STATUS Register, Power Control Register (PCON), OPTION_REG Register, Program memory, Data memory, I/O Ports
January	15	15	PIC 16F8XX Flash Microcontrollers Interfacing microcontroller/PIC microcontroller	Capture/Compare/PWM (CCP) Modules in PIC 16F877, Analog-to-Digital Converter Light Emitting Diodes (LEDs); Push Buttons, Relays and Latch Connections; Keyboard Interfacing; Interfacing 7-Segment Displays
February	15	15	Industrial Applications of microcontrollers ARM 7	LCD Interfacing; ADC and DAC Interfacing with 89C51 Microcontrollers. Introduction and Measurement Applications (For DC motor interfacing and PWM The ARM Architecture: The Acorn RISC Machine, Architectural inheritance, The ARM Programmer's model, ARM development tools
March	08	08	ARM 7	ARM Organization and Implementation: 3 – stage Pipeline ARM organization, ARM instruction execution, ARM implementation. ARM Processor Cores: ARM7TDMI

Semester Wise Plan
Academic Year: 2018-19

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	07	07	Band Theory of Solids and Conduction in Semiconductors	Band theory of solids, The Kronig- Penney model (Omit eq. 6.184 to 6.188), Brillouin zones, Number of wave functions in a band, Motion of electrons in a one-dimensional periodic potential, Distinction between metals, insulators and intrinsic semiconductors. Electrons and Holes in an Intrinsic Semiconductor, Conductivity of a Semiconductor
July	15	15	Conduction in Semiconductors Diode Theory	Carrier concentrations in an intrinsic semiconductor, Donor and Acceptor impurities, Charge densities in a semiconductor, Fermi level in extrinsic semiconductors, Diffusion, Carrier lifetime, The continuity equation, Hall Effect.. Semiconductor-diode Characteristics: Qualitative theory of the p-n junction, The p-n junction as a diode, Band structure of an open-circuit p-n junction, The current components in a p-n junction diode, Quantitative theory of p-n diode currents, The Volt-Ampere characteristics, The temperature dependence of p-n characteristics, Diode resistance.
August	15	15	Superconductivity Modern Techniques and Appliances	Superconductivity: Experimental Survey, Occurrence of Superconductivity, destruction of superconductivity by magnetic field, The

				Meissner effect, London equation, BCS theory of superconductivity, Type I and Type II Superconductors, Vortex state. Printed Circuit Board: Idea of PCB, advantages, copper clad, Etching processes, Principle of Photolithography
September	07	07	Modern Techniques and Appliances	Microwave Oven: Operating principle, block diagram, features. Medical Instruments: Bio-Potential, Types of electrodes, ECG, EEG, EMG, CT Scan and MRI (principle, block diagram and features), Ultrasonography: working principle

Semester Wise Plan
Academic Year: 2018-19

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	08	08	Transistor Multivibrators 555 Timer	Astable, Monostable and Bistable Multivibrators, Schmitt trigger. Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillator, Pulse Width modulator, Pulse Position Modulator, Triggered linear ramp generator
January	15	15	Regulated DC power supply Logic families	Supply characteristics, series voltage regulator, Short circuit protection (current limit and fold back) Monolithic linear IC voltage Regulators. (LM 78XX, LM 79XX, LM 317, LM337). Standard TTL NAND, TTL NOR, Open collector gates, Three state TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics.
February	15	15	Digital Communication Techniques Basic Concepts of Object Oriented Programming and C++	Digital Transmission of Data, Benefits of Digital Communication, Disadvantages of Digital Communication, Parallel and Serial Transmission, Pulse Modulation, Comparing Pulse-Modulation Methods (PAM, PWM, PPM), Pulse-Code Modulation Basics of Object-Oriented Programming & Beginning with C++: Basic concepts of Object-Oriented Programming, Benefits of OOP, ObjectOriented Languages, Applications of

				OOP. What is C++?, Applications of C++, A simple C++ program, More C++ Statements, Example with Class, Structure of C++ Program, Creating the Source File, Compiling and Linking.
March	07	07	Basic Concepts of Object Oriented Programming and C++	okens and Expressions in C++: Introduction, Tokens, Keywords, Identifiers and Constants, Basic Data Types, User-Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator, Expressions and Their Types, Special Assignment Expressions, Implicit Conversions, Operator Overloading, Operator Precedence. Control Structures and Functions: Control Structures, Functions: The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Arguments, Constant Arguments, Function Overloading, Math Library Functions.

Semester Wise Plan
Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Transducers, Sensors and Optoelectronic Devices	Transducers: Definition, Classification, Selection of transducer Electrical transducers: Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor), Displacement transducer: LVDT, Peizo-electric Transducer. Chemical sensors: PH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). Electronic Weighing Systems: Operating principle, Block diagram, features Optoelectronic Devices: LDR, LED (Construction, Working & Applications), Multicolour LED, Seven Segment Display, Liquid Crystal Display (LCD), Photodiode (construction, Characteristics & applications), Phototransistor
July	15	15	Signal Conditioning, SMPS and Measuring Instruments	Half wave precision rectifier, Active Peak detector, Active Positive Clamper Active Positive and Negative Clippers Microphones: characteristics, types (list only), carbon microphone and dynamic type microphone (principle, construction and working) Loud speakers: Characteristics, Dynamic (Moving coil type) speaker, Multi-way speaker system (woofer and tweeter) Cathode Ray Oscilloscope: Single trace CRO (Block diagram), Front Panel Controls (Intensity, Focus, Astigmatism, X & Y position, Level knob, Time base (Time/Division) and attenuation (Volts/Division) knobs, X-Y mode), Dual Trace CRO (Block diagram), Probes: 1:1&10:1. Digital Storage Oscilloscope DMM: 3 ½ Digit, resolution and sensitivity, general specification.
August	15	15	Data Acquisition a Data	Data acquisition system: Objectives of DAS, Signal conditioning

			cquisition and Conversion	of inputs, Singl hannel Data Acquisition system, Multichannel Data Acquisition system. [Data Transmission systems IEEE-488 GPIB*] D to A Converters: Resistive divider network, Binary ladder network A to D Converters: Successive approximation type, Voltage to Time (Single slope, Dual slope).
September	15	15	Modern Techniques and Appliances	Printed Circuit Board: Idea of PCB, advantages, copper clad, Etching processes, Principle of Photolithography (For PCB). Microwave Oven: Operating principle, block diagram, features. Medical instruments: Bio-Potential, Types of electrodes, ECG, EEG, EMG, CT Scan and MRI (principle, block diagram and features), Ultrasonography: working principle

Semester Wise Plan
Academic Year: 2019-20

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	15	15	Digital Electronics	Combinational Logic Design: Introduction, Boolean identities, K – map Design and implementations of: Decoders, Encoders, Multiplexers, Demultiplexers, Use of MUX and DEMUX in Combinational Logic design. Code Converters (based on – binary, BCD, Gray and Excess – 3 codes). Tri-State logic, buffers, D latch.
January	15	15	Advanced 8085 Programming and 8255(PPI)	Introduction to advanced instructions and applications. Stack and Subroutines: Stack, Subroutine. The 8255 Programmable Peripheral Interface: Block Diagram of the 8255, Mode 0 – Simple Input / Output mode, BSR (Bit Set/Reset Mode)
February	15	15	Introduction to Microcontrollers	Basics of Object-Oriented Programming & Beginning with C++: Basic concepts of Object-Oriented Programming, Benefits of OOP, ObjectOriented Languages, Applications of OOP. What is C++?, Applications of C++, A simple C++ program, More C++ Statements, Example with Class, Structure of C++ Program, Creating the Source File, Compiling and Linking.
March	15	15	Basic Concepts of Object Oriented Programming and C++	Basics of Object-Oriented Programming & Beginning with C++: Basic concepts of Object-Oriented Programming, Benefits of OOP, ObjectOriented Languages, Applications of OOP. What is C++?, Applications of C++, A simple C++ program, More C++ Statements, Example with Class, Structure of C++ Program, Creating the Source File, Compiling and Linking. Tokens and Expressions in C++: Introduction, Tokens, Keywords, Identifiers and Constants, Basic Data Types, User-Defined Data Types, Derived Data Types, Symbolic Constants, Type Compatibility, Declaration of Variables, Dynamic Initialization of

				Variables, Reference Variables, Operators in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators, Type Cast Operator, Expressions and Their Types, Special Assignment Expressions, Implicit Conversions, Operator Overloading, Operator Precedence. Control Structures and Functions: Control Structures, Functions: The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Default Arguments, Constant Arguments, Function Overloading, Math Library Functions.

Semester Wise Plan
Academic Year: 2020-21

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	Digital Electronics	Combinational Logic Design: Introduction, Boolean identities, K – map Design and implementations of: Decoders, Encoders,
January	10	10	Digital Electronics	Multiplexers, Demultiplexers, Use of MUX and DEMUX in Combinational Logic design. Code Converters (based on – binary, BCD, Gray and Excess – 3 codes). Tri-State logic, buffers, D latch.
February	10	10	Advanced 8085 Programming and 8255(PPI)	Introduction to advanced instructions and applications. Stack and Subroutines: Stack, Subroutine.
March	04	04	Advanced 8085 Programming and 8255(PPI)	The 8255 Programmable Peripheral Interface: Block Diagram of the 8255, Mode 0 – Simple Input / Output mode, BSR (Bit Set/Reset Mode

Semester Wise Plan
Academic Year: 2020-21

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: IV

Class: MSc Part-II

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	06	06	Telephone Instruments and Signals:	Introduction, The subscriber Loop, Standard telephone set, Basic telephone call procedures, Call progress tones and signals, Cordless telephones, Caller ID, Electronic telephones.
January	10	10	Telephone Circuits	Introduction, Local subscriber loop, Transmission parameters and private line circuits (concepts only), Voice frequency circuit arrangement.
February	10	10	Study of PC Serial Port: Cellular Phone Concepts :	Options and choices, Formats and protocols, The PCs serial port from the connector in, PC programming. Introduction , Mobile phone service , evolution of cellular phone ,frequency reuse , interference , cell Splitting , sectoring , segmentation and dualization , cellular system topology , roaming and handoffs
March	04	04	Cellular Phone Systems:	Digital cellular phone, Interim standard 95, CDMA, GSM communication.

Semester Wise Plan

Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: III

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	04	04	Thermodynamics	Concept of Entropy, Change in Entropy, Change in Entropy in Adiabatic Process, Change in Entropy in Reversible cycle, Principle of increase of Entropy, Change in Entropy in Irreversible
July	04	04	Thermodynamics	Process, T – S diagram, Physical Significance of Entropy, Entropy of a perfect gas, Kelvin's thermodynamic Scale of temperature, (Omit alternative method using Carnot cycle), The size of a Degree, Zero of Absolute scale
August	04	04	Thermodynamics	Identity of perfect Gas Scale and Absolute scale.Third Law of thermodynamics, Zero-point energy, Negative temperatures (Not possible), Heat Death of the Universe.
September	03	03	Thermodynamics	Low temp physics: Different methods of liquefaction of gases, Method of freezing, Cooling by Evaporation under reduced Pressure, Cooling by Adiabatic Expansion, Principle of Regenerative Cooling, Liquefaction of Oxygen.

Semester Wise Plan

Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Transducers, Sensors and Optoelectronic Devices	Transducers: Definition, Classification, Selection of transducer Electrical transducers: Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor), Displacement transducer: LVDT, Peizo-electric Transducer. Chemical sensors: PH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). Electronic Weighing Systems: Operating principle, Block diagram, features Optoelectronic Devices: LDR, LED (Construction, Working & Applications), Multicolour LED, Seven Segment Display, Liquid Crystal Display (LCD), Photodiode (construction, Characteristics & applications), Phototransistor
July	15	15	Signal Conditioning, SMPS and Measuring Instruments	Half wave precision rectifier, Active Peak detector, Active Positive Clamper Active Positive and Negative Clippers Microphones: characteristics, types (list only), carbon microphone and dynamic type microphone (principle, construction and working) Loud speakers: Characteristics, Dynamic (Moving coil type) speaker, Multi-way speaker system (woofer and tweeter) Cathode Ray Oscilloscope: Single trace CRO (Block diagram), Front Panel Controls (Intensity, Focus, Astigmatism, X & Y position, Level knob, Time base (Time/Division) and attenuation (Volts/Division) knobs, X-Y mode), Dual Trace CRO (Block diagram), Probes: 1:1&10:1. Digital Storage Oscilloscope DMM: 3 ½ Digit, resolution and sensitivity, general specification.

August	15	15	ata Acquisition a Data Acquisition and Conversion	Data acquisition system: Objectives of DAS, Signal conditioning of inputs, Single channel Data Acquisition system, Multichannel Data Acquisition system. [Data Transmission systems IEEE-488 GPIB*] D to A Converters: Resistive divider network, Binary ladder network A to D Converters: Successive approximation type, Voltage to Time (Single slope, Dual slope).
September	15	15	Modern Techniques and Appliances	Printed Circuit Board: Idea of PCB, advantages, copper clad, Etching processes, Principle of Photolithography (For PCB). Microwave Oven: Operating principle, block diagram, features. Medical instruments: Bio-Potential, Types of electrodes, ECG, EEG, EMG, CT Scan and MRI (principle, block diagram and features), Ultrasonography: working principle

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: IV

Class: SYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	04	04	Interferometers and Resolving Power	Michelson's Interferometer: Principle, construction, working, circular fringes, localized fringes, White light fringes, Visibility of fringes. Applications of Michelson Interferometer: a) Measurement of wavelength
January	04	04	Interferometers and Resolving Power	b) Determination of the difference in the wavelength of two waves c)Thickness of a thin transparent sheet d) Determination of the refractive index of gases
February	04	04	Interferometers and Resolving Power	Resolving Power:Introduction, Rayleigh's criterion, Resolving power of optical instruments, Criterion for resolution according to Lord Rayleigh
March	04	04	Interferometers and Resolving Power	Resolving power of a telescope, Resolving power of a prism, Resolving power of a plane transmission grating

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	15	15	Field effect transistors: JFET MOSFET	Basic ideas, Drain curve, The transconductance curve, Biasing in the ohmic region and the active region, Transconductance, JFET common source amplifier, JFET analog switch, multiplexer, voltage controlled resistor, Current sourcing Depletion and enhancement mode, MOSFET operation and characteristics, digital switching. SCR – construction, static characteristics, Analysis of the operation of SCR, Gate Triggering Characteristics, Variable half wave rectifier and Variable full wave rectifier, Current ratings of SCR. UJT: Construction, Operation, characteristics and application as a relaxation oscillator.
January	30	30	Differential Amplifier using transistor Op Amp Applications: Transistor Multivibrators 555 Timer Regulated DC power supply	The Differential Amplifier, DC and AC analysis of a differential amplifier, Input characteristic-effect of input bias, offset current and input offset voltage on output, common mode gain, CMRR. Log amplifier, Instrumentation amplifiers, Voltage controlled current sources (grounded load), First order Active filters, Astable using OP AMP, square wave and triangular wave generator using OP AMP, Wein-bridge oscillator using OP AMP, Comparators with Hysteresis, Window Comparator. Transistor Multivibrators: Astable, Monostable and Bistable Multivibrators, Schmitt trigger. Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillator, Pulse Width modulator, Pulse Position Modulator, Triggered

				linear ramp generator. Supply characteristics, series voltage regulator, Short circuit protection (current limit and fold back) Monolithic linear IC voltage Regulators.
February	30	30	Logic families Digital Communication Techniques Alpha & Beta Decay	Standard TTL NAND, TTL NOR, Open collector gates, Three state TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics. Digital Transmission of Data, Benefits of Digital Communication, Disadvantages of Digital Communication, Parallel and Serial Transmission, Pulse Modulation, Comparing Pulse-Modulation Methods (PAM, PWM, PPM), Pulse-Code Modulation. Velocity, energy, and Absorption of alpha particles: Range, Ionization and stopping power, Nuclear energy levels. Range of alpha particles, alpha particle spectrum, Fine structure, long range alpha particles, Alpha decay paradox: Barrier penetration (Gamow's theory of alpha decay and Geiger Nuttal law). Introduction, Velocity and energy of beta particles, Energy levels and decay schemes, Continuous beta ray spectrum-Difficulties encountered to understand it, Pauli's neutrino hypothesis, Detection of neutrino, Energetics of beta decay.
March	15	15	Gamma Decay & Nuclear Models	Introduction, selection rules, Internal conversion, nuclear isomerism, Mossbauer effect. Liquid drop model, Weizsacker's semi-empirical mass formula, Mass parabolas - Prediction of stability against beta decay for members of an isobaric family, Stability limits against spontaneous fission. Shell model (Qualitative), Magic numbers in the nucleus.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde
Class: MSc -II

Semester: III
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Antennas	Basic considerations, Wire radiators in space, Terms and definitions, Effects of ground on antennas, Antenna Coupling at medium frequencies, Directional high frequency antennas, UHF and Microwave antennas, Wideband and special purpose antennas
July	15	15	Waveguides	Resonators and Components: Rectangular waveguides, Circular and other waveguides, Waveguide coupling, matching and attenuation, Cavity resonators, Auxiliary components.
August	15	15	Radar Systems	Basic principles; Fundamentals, Radar performance factors Pulsed systems;Basic pulsed radar system, Antennas and scanning, Display methods, Pulsed radar systems, Moving radar systems. Moving target indication, Radar beacons, CW Doppler radar, Frequency modulated CW radar, Phased array radars, Planar array radars.
September	15	15	Optical Fiber Communication Systems:	Introduction to optical fibers, signal degradation inoptical fibers, Fiber optical sources and coupling, Fiber optical receivers, System parameters, Analog optical fiber communication links, Design procedure, Multichannel analog systems, FM/FDM video signal transmission, Digital optical fiber systems.

Semester Wise Plan
Academic Year: 2021-22

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde
Class: MSc -II

Semester: IV
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	07	07	Overview of Data Communication and Networking	Introduction, Data communications, Networks, The internet, Protocols and standards; Network models, Layered tasks, Internet model, OSI model. Data Link layer: Error detection and correction, Types of errors, Detection, Error correction, Data link control and protocols, Flow and error control, Stop and wait ARQ, Go-back-N ARQ, Selective repeat ARQ, HDLC, Point to point access, Pont to point protocol, PPP stack, Multiple access, Random access, Controlled access, Channelization.
January	15	15	Local Area Networks	Ethernet: Traditional ethernet, Fast ethernet, Gigabit Ethernet, Wireless LANs, IEEE 802.11, Bluetooth. Connecting LANs, Connecting devices (Repeaters, Hubs, Bridges, Two layer switch, Router and three layer switches), Backbone networks, Virtual LANs, Virtual circuit switching, Frame relay, ATM, ATM LANs
February	15	15	Telephone Instruments and Signals	Introduction, The subscriber Loop, Standard telephoneset, Basic telephone call procedures, Call progress tones and signals, Cordless telephones, Caller ID, Electronic telephones. Telephone Circuits: Introduction, Local subscriber loop, Transmission parameters and private line circuits (concepts only), Voice frequency circuit arrangement
March	08	08	Study of PC Serial Port	Options and choices, Formats and protocols, The PCs serial port from the connector in, PC programming. Cellular Phone Concepts : Introduction , Mobile phone service , evolution of cellular phone ,frequency reuse , interference , cell Splitting , sectoring , segmentation and dualization , cellular system topology , roaming

				and handoffs Cellular Phone Systems: Digital cellular phone, Interim standard 95, CDMA, GSMcommunication.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: V

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Transducers, Sensors and Optoelectronic Devices	Transducers: Definition, Classification, Selection of transducer Electrical transducers: Thermistor, Thermocouple, Pressure Transducer: Strain gauges (wire, foil, & semiconductor). Displacement transducer: LVDT, Peizo-electric Transducer. Chemical sensors: PH sensor, Gas sensor (Fundamental aspects), Humidity sensor (Resistive). Electronic Weighing Systems: Operating principle, Block diagram, features Optoelectronic Devices: LDR, LED (Construction, Working & Applications), Multicolour LED, Seven Segment Display, Liquid Crystal Display (LCD), Photodiode (construction, Characteristics & applications), Phototransistor
July	15	15	Signal Conditioning, SMPS and Measuring Instruments	Half wave precision rectifier, Active Peak detector, Active Positive Clamper Active Positive and Negative Clippers Microphones: characteristics, types (list only), carbon microphone and dynamic type microphone (principle, construction and working) Loud speakers: Characteristics, Dynamic (Moving coil type) speaker, Multi-way speaker system (woofer and tweeter) Cathode Ray Oscilloscope: Single trace CRO (Block diagram), Front Panel Controls (Intensity, Focus, Astigmatism, X & Y position, Level knob, Time base (Time/Division) and attenuation (Volts/Division) knobs, X-Y mode), Dual Trace CRO (Block diagram), Probes: 1:1&10:1. Digital Storage Oscilloscope DMM: 3 ½ Digit, resolution and sensitivity, general specification.

August	15	15	ata Acquisition a Data Acquisition and Conversion	Data acquisition system: Objectives of DAS, Signal conditioning of inputs, Single channel Data Acquisition system, Multichannel Data Acquisition system. [Data Transmission systems IEEE-488 GPIB*] D to A Converters: Resistive divider network, Binary ladder network A to D Converters: Successive approximation type, Voltage to Time (Single slope, Dual slope).
September	15	15	Modern Techniques and Appliances	Printed Circuit Board: Idea of PCB, advantages, copper clad, Etching processes, Principle of Photolithography (For PCB). Microwave Oven: Operating principle, block diagram, features. Medical instruments: Bio-Potential, Types of electrodes, ECG, EEG, EMG, CT Scan and MRI (principle, block diagram and features), Ultrasonography: working principle

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde

Semester: VI

Class: TYBSC

subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	15	15	Field effect transistors: JFET MOSFET	Basic ideas, Drain curve, The transconductance curve, Biasing in the ohmic region and the active region, Transconductance, JFET common source amplifier, JFET analog switch, multiplexer, voltage controlled resistor, Current sourcing Depletion and enhancement mode, MOSFET operation and characteristics, digital switching. SCR – construction, static characteristics, Analysis of the operation of SCR, Gate Triggering Characteristics, Variable half wave rectifier and Variable full wave rectifier, Current ratings of SCR. UJT: Construction, Operation, characteristics and application as a relaxation oscillator.
January	30	30	Differential Amplifier using transistor Op Amp Applications: Transistor Multivibrators 555 Timer Regulated DC power supply	The Differential Amplifier, DC and AC analysis of a differential amplifier, Input characteristic-effect of input bias, offset current and input offset voltage on output, common mode gain, CMRR. Log amplifier, Instrumentation amplifiers, Voltage controlled current sources (grounded load), First order Active filters, Astable using OP AMP, square wave and triangular wave generator using OP AMP, Wein-bridge oscillator using OP AMP, Comparators with Hysteresis, Window Comparator. Transistor Multivibrators: Astable, Monostable and Bistable Multivibrators, Schmitt trigger. Review Block diagram, Monostable and Astable operation Voltage Controlled Oscillator, Pulse Width modulator, Pulse Position Modulator, Triggered linear ramp generator. Supply characteristics, series voltage regulator, Short circuit protection (current limit and fold back)

				Monolithic linear IC voltage Regulators.
February	30	30	Logic families Digital Communication Techniques Alpha & Beta Decay	Standard TTL NAND, TTL NOR, Open collector gates, Three state TTL devices, MOS inverters, CMOS NAND and NOR gates, CMOS characteristics. Digital Transmission of Data, Benefits of Digital Communication, Disadvantages of Digital Communication, Parallel and Serial Transmission, Pulse Modulation, Comparing Pulse-Modulation Methods (PAM, PWM, PPM), Pulse-Code Modulation. Velocity, energy, and Absorption of alpha particles: Range, Ionization and stopping power, Nuclear energy levels. Range of alpha particles, alpha particle spectrum, Fine structure, long range alpha particles, Alpha decay paradox: Barrier penetration (Gamow's theory of alpha decay and Geiger Nuttal law). Introduction, Velocity and energy of beta particles, Energy levels and decay schemes, Continuous beta ray spectrum-Difficulties encountered to understand it, Pauli's neutrino hypothesis, Detection of neutrino, Energetics of beta decay.
March	15	15	Gamma Decay & Nuclear Models	Introduction, selection rules, Internal conversion, nuclear isomerism, Mossbauer effect. Liquid drop model, Weizsacker's semi-empirical mass formula, Mass parabolas - Prediction of stability against beta decay for members of an isobaric family, Stability limits against spontaneous fission. Shell model (Qualitative), Magic numbers in the nucleus.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde
Class: MSc -II

Semester: III
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June	15	15	Antennas	Basic considerations, Wire radiators in space, Terms and definitions, Effects of ground on antennas, Antenna Coupling at medium frequencies, Directional high frequency antennas, UHF and Microwave antennas, Wideband and special purpose antennas
July	15	15	Waveguides	Resonators and Components: Rectangular waveguides, Circular and other waveguides, Waveguide coupling, matching and attenuation, Cavity resonators, Auxiliary components.
August	15	15	Radar Systems	Basic principles; Fundamentals, Radar performance factors Pulsed systems;Basic pulsed radar system, Antennas and scanning, Display methods, Pulsed radar systems, Moving radar systems. Moving target indication, Radar beacons, CW Doppler radar, Frequency modulated CW radar, Phased array radars, Planar array radars.
September	15	15	Optical Fiber Communication Systems:	Introduction to optical fibers, signal degradation inoptical fibers, Fiber optical sources and coupling, Fiber optical receivers, System parameters, Analog optical fiber communication links, Design procedure, Multichannel analog systems, FM/FDM video signal transmission, Digital optical fiber systems.

Semester Wise Plan
Academic Year: 2022-23

Prepare separate for UG and PG

Name of the Teacher: Sarvesh Shinde
Class: MSc -II

Semester: IV
subject: Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
December	07	07	Overview of Data Communication and Networking	Introduction, Data communications, Networks, The internet, Protocols and standards; Network models, Layered tasks, Internet model, OSI model. Data Link layer: Error detection and correction, Types of errors, Detection, Error correction, Data link control and protocols, Flow and error control, Stop and wait ARQ, Go-back-N ARQ, Selective repeat ARQ, HDLC, Point to point access, Pont to point protocol, PPP stack, Multiple access, Random access, Controlled access, Channelization.
January	15	15	Local Area Networks	Ethernet: Traditional ethernet, Fast ethernet, Gigabit Ethernet, Wireless LANs, IEEE 802.11, Bluetooth. Connecting LANs, Connecting devices (Repeaters, Hubs, Bridges, Two layer switch, Router and three layer switches), Backbone networks, Virtual LANs, Virtual circuit switching, Frame relay, ATM, ATM LANs
February	15	15	Telephone Instruments and Signals	Introduction, The subscriber Loop, Standard telephoneset, Basic telephone call procedures, Call progress tones and signals, Cordless telephones, Caller ID, Electronic telephones. Telephone Circuits: Introduction, Local subscriber loop, Transmission parameters and private line circuits (concepts only), Voice frequency circuit arrangement
March	08	08	Study of PC Serial Port	Options and choices, Formats and protocols, The PCs serial port from the connector in, PC programming. Cellular Phone Concepts : Introduction , Mobile phone service , evolution of cellular phone ,frequency reuse , interference , cell Splitting , sectoring , segmentation and dualization , cellular system topology , roaming

				and handoffs Cellular Phone Systems: Digital cellular phone, Interim standard 95, CDMA, GSMcommunication.

Semester wise Plan

Name of the Teacher: Archana R Gawde

Semester: first 2020-21

Class: TyBsc Subject: Statistical and thermodynamics_

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	17	15	Statistical thermodynamics	Microstate and configuration,dominance of boltzman distribution ,Physical meaning of Boltzman's distribution law, definition of , the canonical ensemble, relating Q to q for an ideal gas, translational partition

				function, equipartition theorem, energy,
August	17	15	Classical and Quantum Statistics	The probability of a distribution, The most probable distribution, MaxwellBoltzmann statistics, Molecular speeds. Bose-Einstein statistics, Black-body radiation, The Rayleigh-Jeans formula
September	15	15	Molecular spectra (Diatomic Molecules	): Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra. Electronic Spectra of Diatomic molecules: The Born-Oppenheimer approximation, Intensity of vibrational-electronic spectra: The Franck-Condon principle.
October	15	15	Raman effect	Raman effect: Quantum Theory of Raman effect, Pure Rotational Raman spectra: Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra:

				Raman activity of vibrations, Experimental set up of Raman Effect. 2. Electron spin resonance: Introduction, Principle of ESR, ESR spectrometer

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November				
December	12	15	Nuclear Energy and Particle Accelerator	Nuclear energy: Introduction, Asymmetric fission - Mass yield, Emission of delayed neutrons, Nuclear release in fission, Nature of fission fragments, Energy released in the fission of U235, Fission of lighter nuclei, Fission chain reaction, Neutron cycle in a thermal nuclear reactor (Four Factor Formula), Nuclear power and breeder reactors, Natural fusion Possibility of controlled fusion. 2. Particle Accelerators: Van de Graff Generator, Cyclotron, Synchrotron, Betatron and Idea of Large Hadron

				Collider.
January	12	15	Nuclear Force and Elementary Particle	. Nuclear force: Introduction, Deuteron problem, Meson theory of Nuclear Force- A qualitative discussion. 2.Elementary particles: Introduction, Classification of elementary particles, Particle interactions, Conservation laws (linear &angular momentum, energy, charge, baryon number & lepton number), particles and antiparticles (Electrons and positrons, Protons and anti-protons, Neutrons and antineutrons, Neutrinos and anti-neutrinos), Photons, Mesons, Quark mode
February	12	15	Non Linear mechanics	Nonlinear mechanics: Qualitative approach to chaos, The anharmonic oscillator, Numerical solution of Duffing's equation. 2. Transition to chaos: Bifurcations and strange attractors, Aspects of chaotic behavior (Logistic map).
March				
April				

Signature

Signature
Head of Department

Semester wise Plan

Name of the Teacher: Archana R Gawde

Semester: first 2021-22

Class: TyBsc Subject: Statistical and thermodynamics_

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic

June				
July	17	15	Statistical thermodynamics	Microstate and configuration,dominance of boltzman distribution ,Physical meaning of Boltzman's distribution law, definition of , the canonical ensemble, relating Q to q for an ideal gas, translational partition function, equipartition theorem, energy,
August	17	15	Classical and Quantum Statistics	The probability of a distribution, The most probable distribution, MaxwellBoltzmann statistics, Molecular speeds. Bose-Einstein statistics, Black-body radiation, The Rayleigh-Jeans formula

September	15	15	Molecular spectra (Diatomic Molecules	): Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra. Electronic Spectra of Diatomic molecules: The Born-Oppenheimer approximation, Intensity of vibrational-electronic spectra: The Franck-Condon principle.
October	15	15	Raman effect	Raman effect: Quantum Theory of Raman effect, Pure Rotational Raman spectra: Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra: Raman activity of vibrations, Experimental set up of Raman Effect. 2. Electron spin resonance: Introduction, Principle of ESR, ESR spectrometer

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic

November				
December	12	15	Nuclear Energy and Particle Accelerator	Nuclear energy: Introduction, Asymmetric fission - Mass yield, Emission of delayed neutrons, Nuclear release in fission, Nature of fission fragments, Energy released in the fission of U235, Fission of lighter nuclei, Fission chain reaction, Neutron cycle in a thermal nuclear reactor (Four Factor Formula), Nuclear power and breeder reactors, Natural fusion Possibility of controlled fusion. 2. Particle Accelerators: Van de Graff Generator, Cyclotron, Synchrotron, Betatron and Idea of Large Hadron Collider.
January	12	15	Nuclear Force and Elementary Particle	. Nuclear force: Introduction, Deuteron problem, Meson theory of Nuclear Force- A qualitative discussion. 2.Elementary particles: Introduction, Classification of elementary particles, Particle interactions, Conservation laws (linear &angular momentum, energy, charge, baryon number & lepton number), particles and antiparticles (Electrons and positrons, Protons and anti-protons, Neutrons and antineutrons, Neutrinos and anti-neutrinos), Photons, Mesons, Quark mode
February	12	15	Non Linear mechanics	Nonlinear mechanics: Qualitative approach to chaos, The anharmonic oscillator, Numerical solution of Duffing's equation. 2. Transition to chaos: Bifurcations and strange attractors, Aspects of chaotic behavior (Logistic map).

March				
April				

Signature

Signature
Head of Department

Semester wise Plan

Name of the Teacher: Archana R Gawde

Semester: first 2022-23

Class: TyBsc Subject: Statistical and thermodynamics_

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July	17	15	Statistical thermodynamics	Microstate and configuration,dominance of boltzman distribution ,Physical meaning of Boltzman's distribution law, definition of , the canonical ensemble, relating Q to q for an ideal gas, translational partition

				function, equipartition theorem, energy,
August	17	15	Classical and Quantum Statistics	The probability of a distribution, The most probable distribution, MaxwellBoltzmann statistics, Molecular speeds. Bose-Einstein statistics, Black-body radiation, The Rayleigh-Jeans formula
September	15	15	Molecular spectra (Diatomic Molecules	): Rotational energy levels, Rotational spectra, Vibrational energy levels, Vibrational-Rotational spectra, Electronic Spectra of Diatomic molecules: The Born-Oppenheimer approximation, Intensity of vibrational-electronic spectra: The Franck-Condon principle.
October	15	15	Raman effect	Raman effect: Quantum Theory of Raman effect, Pure Rotational Raman spectra: Linear molecules, symmetric top molecules, Asymmetric top molecules, Vibrational Raman spectra:

				Raman activity of vibrations, Experimental set up of Raman Effect. 2. Electron spin resonance: Introduction, Principle of ESR, ESR spectrometer

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November				
December	12	15	Nuclear Energy and Particle Accelerator	Nuclear energy: Introduction, Asymmetric fission - Mass yield, Emission of delayed neutrons, Nuclear release in fission, Nature of fission fragments, Energy released in the fission of U235, Fission of lighter nuclei, Fission chain reaction, Neutron cycle in a thermal nuclear reactor (Four Factor Formula), Nuclear power and breeder reactors, Natural fusion Possibility of controlled fusion. 2. Particle Accelerators: Van de Graff Generator, Cyclotron, Synchrotron, Betatron and Idea of Large Hadron

				Collider.
January	12	15	Nuclear Force and Elementary Particle	. Nuclear force: Introduction, Deuteron problem, Meson theory of Nuclear Force- A qualitative discussion. 2.Elementary particles: Introduction, Classification of elementary particles, Particle interactions, Conservation laws (linear &angular momentum, energy, charge, baryon number & lepton number), particles and antiparticles (Electrons and positrons, Protons and anti-protons, Neutrons and antineutrons, Neutrinos and anti-neutrinos), Photons, Mesons, Quark mode
February	12	15	Non Linear mechanics	Nonlinear mechanics: Qualitative approach to chaos, The anharmonic oscillator, Numerical solution of Duffing's equation. 2. Transition to chaos: Bifurcations and strange attractors, Aspects of chaotic behavior (Logistic map).
March				
April				

Signature

Signature
Head of Department

Semester wise Plan

Name of the Teacher: Archana R Gawde

Semester: first 2022-23

Class: M.Sc. II Subject: Statistical and thermodynamics_

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
August	12	11+4(Tutorials)	The Grand Canonical Ensemble	Equilibrium between a system and a particle-energy reservoir, a system in the grand canonical ensemble, physical significance of the various statistical quantities, Examples, Density and energy fluctuations in the grand canonical ensemble, correspondence with other ensembles
September	12	11+4(Tutorials)	Quantum Statistics	Formulation of Quantum Statistics - Quantum-mechanical ensemble theory: the density matrix, Statistics of the various ensembles, Examples, systems composed of indistinguishable particles, the density matrix and the partition function of a system of free particles.
October	12	11+4(Tutorials)	Elementary	The Eight fold way, the Quark Model, the

			Particles	November revolution and aftermath, The standard Model, Revision of the four forces, cross sections, decays and resonances, Introduction to Quantum Eletrodynamics, Introduction to Quantum Chromodynamics. Weak interactions and Unification Schemes (qualitative description), Revision of Lorentz transformations, Four-vectors, Energy and Momentum. Properties of Neutrino, helicity of Neutrino, Parity, Qualitative discussion on Parity violation in beta decay and Wu's Experiment, Charge conjugation, Time reversal, Qualitative introduction to CP violation and TCP theorem

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
November	12			
December	12	15	Nuclear Detector	Nuclear Detectors: Gamma ray spectrometer using NaI scintillation detector, High Purity Germanium detector, Multi-wire Proportional counter Acclerators: Cockroft Walten Generator, Van de Graaf Generator, Sloan and Lawrence type Linear Accelerator, Proton Linear Accelerator, Cyclotron and

January	12	15	Characterization techniques for materials analysis	Spectroscopy: XRD,XRF, XPS, EDAX , Raman, UV Visible spectroscopy, FTIR spectroscopy. Microscopy: SEM, TEM, AFM
February	12	15		
March				
April				

Signature

Semester Wise Plan
Academic Year: 2022-23
Note: Please follow timetable
Prepare separate for UG and PG

Name of the Teacher: Rizwana Shaikh

Semester: I,II,III & IV

Class: MSc-I & II

subject: QM-I,CM,NP,SM,EP,AMP,QM-II,ED

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	21	21	**NP-I** • All static properties of nuclei • Deuteron Problem and its ground state properties **CM-III** • Small Oscillations • Legendre transformations • Hamilton equations of motion • Class Test	• charge, mass, binding energy, size, shape, angular momentum, magnetic dipole momentum, electric quadrupole momentum, statistics, parity, isospin • Estimate the depth and size of (assume) square well potential • Tensor force as an example of non-central force • nucleon-nucleon scattering-qualitative discussion on results • Spin-orbit strong interaction between nucleon • double scattering experiment. • Formulation of the problem • Frequencies of free vibration and normal coordinates • Cyclic coordinates and conservation theorems, Derivation of Hamilton's equations from a variational principle.
September	21	21	**CM-IV** • Canonical Transformations • Poisson brackets **SM-I**	• The symplectic approach to canonical transformations • canonical invariants, Equations of motion, infinitesimal canonical

			• The Statistical Basis of Thermodynamics • Ensemble Theory • Quantum states and the phase space • Class Test	• conservation theorems in the Poisson bracket formulation • The macroscopic and the microscopic state • The entropy of mixing and the Gibbs paradox • Phase space of a classical system, Liouville's theorem and its consequences
October	21	21	**SM-II** • The Canonical ensemble • the equipartition theorem • the virial theorem • system of harmonic oscillators **QM-I** • Review of concepts: Postulates of quantum mechanics, observables and operators • time-dependent Schrodinger equation • The Superposition principle • commutator relations • Formalism: Linear Vector Spaces and operators, Dirac notation • Matrix mechanics: Schrodinger • Heisenberg and interaction picture. • Class test	• Equilibrium between a system and a heat reservoir • partition function • energy fluctuations in the canonical ensemble • statistics of paramagnetism, thermodynamics of magnetic systems • measurements, state function and expectation values • Time development of state functions • Solution to the initial value problem • connection to the uncertainty principle • complete set of commuting observables • Time development of expectation values • conservation theorems and parity • Hilbert space, Hermitian operators and their properties • Basis and representations • unitary transformations, the energy representation.
November	21	21	**QM-II** • Wave packet • Schrodinger equation solutions • General properties of one dimensional Schrodinger equation finite potential well	• Gaussian wave packet, Fourier transform • one dimensional problems Introduction to Quantum • Particle in a box, Harmonic oscillator by raising and lowering operators •

			• Class Test	
December			•	•
January	28	28	**EP-I** • Data Analysis for Physical Sciences **QM-III** • Laboratory and centre of mass frames • Partial wave analysis and phase shifts, optical theorem • Born approximation • Class Test	• Population and Sample • Data distributions Probability • Probability Distribution • Experimental Error • Measurement, error and uncertainty • The process of measurement • True value and error, Precision and accuracy • Random and systematic errors • Random errors • Uncertainty in measurement • Combining uncertainties • Expanded uncertainty • differential and total scattering cross-sections, scattering amplitude • S-wave scattering from finite spherical attractive and repulsive potential wells
February	28	28	**QM-IV** • Identical Particles • Bosons and Fermions • slater determinant • Relativistic Quantum Mechanics • The Klein Gordon and Dirac equations Nonrelativistic limit of the Dirac equation • Vacuum Techniques • Class Test	• Symmetric and antisymmetric wave functions • Pauli Exclusion Principle • Dirac matrices, spinors, positive and negative energy solutions physical interpretation • Fundamental processes at low pressures • Mean Free Path, Time to form monolayer • Number density • Materials used at low pressures
March	28	28	**AMP-I** • Fine structure of hydrogenic atoms • Lamb shift • Schrodinger equation for two electron atoms • Identical particles, The Exclusion Principle	• Hyperfine structure and isotope shift • Linear and quadratic Stark effect in spherical polar coordinates • Zeeman effect in strong and weak fields • Paschen-Back effect. (BJ, GW) • Exchange forces and the helium atom (ER)

			ED-IV • Relativistic covariant Lagrangian formalism • Conservation laws • Class Test	• Covariant Lagrangian formalism for relativistic point charges • The energy-momentum tensor
April			**AMP-II** • The central field, Thomas-Fermi potential. • The Hartree theory • The L-S coupling approximation • Class Test	• Gross structure of alkalis (GW) • ground state of multi-electron atoms and the periodic table (ER) • Allowed terms in LS coupling, fine structure in LS coupling

Rizwana Shaikh

Semester planning for teacher
Semester Wise Plan
Academic Year: 2021-22
Note: Please follow timetable
Prepare separate for UG and PG

Name of the Teacher: Rizwana Shaikh

Semester: I,II,III & IV

Class: MSc-I & II

subject: QM-I,CM,NP,SM,EP,AMP,QM-II,ED

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	21(pandemic period online lecture)	21	**NP-I** • All static properties of nuclei • Deuteron Problem and its ground state properties **CM-III** • Small Oscillations • Legendre transformations • Hamilton equations of motion • Class Test	• charge, mass, binding energy, size, shape, angular momentum, magnetic dipole momentum, electric quadrupole momentum, statistics, parity, isospin • Estimate the depth and size of (assume) square well potential • Tensor force as an example of non-central force • nucleon-nucleon scattering-qualitative discussion on results • Spin-orbit strong interaction between nucleon • double scattering experiment. • Formulation of the problem • Frequencies of free vibration and normal coordinates • Cyclic coordinates and conservation theorems, Derivation of Hamilton's equations from a variational principle.
September	21(pandemic period online lecture)	21	**CM-IV** • Canonical Transformations • Poisson brackets **SM-I**	• The symplectic approach to canonical transformations • canonical invariants, Equations of motion, infinitesimal canonical • conservation theorems in the Poisson bracket formulation

			• The Statistical Basis of Thermodynamics • Ensemble Theory • Quantum states and the phase space • Class Test	• The macroscopic and the microscopic state • The entropy of mixing and the Gibbs paradox • Phase space of a classical system, Liouville's theorem and its consequences
October	21(pandemic period online lecture)	21	**SM-II** • The Canonical ensemble • the equipartition theorem • the virial theorem • system of harmonic oscillators **QM-I** • Review of concepts: Postulates of quantum mechanics, observables and operators • time-dependent Schrodinger equation • The Superposition principle • commutator relations • Formalism: Linear Vector Spaces and operators, Dirac notation • Matrix mechanics: Schrodinger • Heisenberg and interaction picture. • Class test	• Equilibrium between a system and a heat reservoir • partition function • energy fluctuations in the canonical ensemble • statistics of paramagnetism, thermodynamics of magnetic systems • measurements, state function and expectation values • Time development of state functions • Solution to the initial value problem • connection to the uncertainty principle • complete set of commuting observables • Time development of expectation values • conservation theorems and parity • Hilbert space, Hermitian operators and their properties • Basis and representations • unitary transformations, the energy representation.
November	21(pandemic period online lecture)	21	**QM-II** • Wave packet • Schrodinger equation solutions • General properties of one dimensional Schrodinger equation finite potential well • Class Test	• Gaussian wave packet, Fourier transform • one dimensional problems Introduction to Quantum • Particle in a box, Harmonic oscillator by raising and lowering operators •
December			•	•

January	28	28	**EP-I** • Data Analysis for Physical Sciences **QM-III** • Laboratory and centre of mass frames • Partial wave analysis and phase shifts, optical theorem • Born approximation • Class Test	• Population and Sample • Data distributions Probability • Probability Distribution • Experimental Error • Measurement, error and uncertainty • The process of measurement • True value and error, Precision and accuracy • Random and systematic errors • Random errors • Uncertainty in measurement • Combining uncertainties • Expanded uncertainty • differential and total scattering cross-sections, scattering amplitude • S-wave scattering from finite spherical attractive and repulsive potential wells
February	28	28	**QM-IV** • Identical Particles • Bosons and Fermions • slater determinant • Relativistic Quantum Mechanics • The Klein Gordon and Dirac equations Nonrelativistic limit of the Dirac equation • Vacuum Techniques • Class Test	• Symmetric and antisymmetric wave functions • Pauli Exclusion Principle • Dirac matrices, spinors, positive and negative energy solutions physical interpretation • Fundamental processes at low pressures • Mean Free Path, Time to form monolayer • Number density • Materials used at low pressures
March	28	28	**AMP-I** • Fine structure of hydrogenic atoms • Lamb shift • Schrodinger equation for two electron atoms • Identical particles, The Exclusion Principle **ED-IV**	• Hyperfine structure and isotope shift • Linear and quadratic Stark effect in spherical polar coordinates • Zeeman effect in strong and weak fields • Paschen-Back effect. (BJ, GW) • Exchange forces and the helium atom (ER) • Covariant Lagrangian formalism for relativistic point charges • The energy-momentum tensor

			• Relativistic covariant Lagrangian formalism • Conservation laws • Class Test	
April			**AMP-II** • The central field, Thomas-Fermi potential. • The Hartree theory • The L-S coupling approximation • Class Test	• Gross structure of alkalis (GW) • ground state of multi-electron atoms and the periodic table (ER) • Allowed terms in LS coupling, fine structure in LS coupling

Rizwana Shaikh

Semester Wise Plan
Academic Year: 2020-21
Note: Please follow timetable
Prepare separate for UG and PG

Name of the Teacher: Rizwana Shaikh

Semester: I,II,III & III

Class: MSc-II

subject: NP (I, II, III & IV),EP

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August	08(pandemic period online lecture)	15	• All static properties of nuclei • Deuteron Problem and its ground state properties • Class Test	• charge, mass, binding energy, size, shape, angular momentum, magnetic dipole momentum, electric quadrupole momentum, statistics, parity, isospin • Estimate the depth and size of (assume) square well potential • Tensor force as an example of non-central force • nucleon-nucleon scattering-qualitative discussion on results • Spin-orbit strong interaction between nucleon • double scattering experiment.
September	08(pandemic period online lecture)	15	• Review of alpha decay • Introduction to Beta decay • Gamma decay • Class Test	• derivation of Fermi's Golden rule, Information from Fermi–curie plots, Comparative halflives, selection rules for Fermi and G-T transitions • Multipole radiation, Selection rules for gamma ray transitions, Gamma ray interaction with matter, and Charge-particle interaction with matter
October	08(pandemic period online lecture)	15	• Nuclear Models • Nuclear Reaction • Class Test	• Shell Model (extreme single particle): Introduction, Assumptions, Evidences, Spin-orbit interactions • Predictions including Schmidt lines, limitations, Collective model - Introduction to Nilsson • Kinematics, scattering and reaction cross sections, Compound nuclear reaction, direct nuclear reaction

Novemb er	08(pande mic period online lecture)	15	• Introduction to the elementary particle Physics • Class Test	• The Eight fold way, the Quark Model, the November revolution and aftermath • The standard Model, Revision of the four forces, cross sections, decays and resonances • Introduction to Quantum Eletrodynamics, Introduction to Quantum Chromodynamics
Decembe r				
January	15(pande mic period online lecture)	15	• Data Analysis for Physical Sciences • Class Test	• Population and Sample • Data distributions Probability • Probability Distribution • Experimental Error • Measurement, error and uncertainty • The process of measurement • True value and error, Precision and accuracy • Random and systematic errors • Random errors • Uncertainty in measurement • Combining uncertainties • Expanded uncertainty
February	15(pande mic period online lecture)	15	• Vacuum Techniques	• Fundamental processes at low pressures • Mean Free Path, Time to form monolayer • Number density • Materials used at low pressurs
March	15(pande mic period online lecture)	15	• Nuclear Detectors • Acclerators	• Gas Detector with emphasis on GM counter • NaI Scintillation Detector • Gamma ray spectrometer using NaI scintillation detector • Cockroft Walten Generator • Van de Graaf Generator • Sloan and Lawrence type Linear Accelerator • Proton Linear Accelerator • Cyclotron • Synchrotron
April	15(pande mic period online lecture)	15	• Characterization techniques for materials analysis • Class Tests	• Spectroscopy: SXRD,XRF, XPS, EDAX , Raman, UV Visible spectroscopy, FTIR • Microscopy: SEM, TEM, AFM

Rizwana Shaikh

Semester Wise Plan
Academic Year: 2019-20
Note: Please follow timetable
Prepare separate for UG and PG

Name of the Teacher: Rizwana Shaikh
Class: MSc-II

Semester: IV
subject: Experimental Physics

Semester planning for teacher

Month	No. of Lectures as per time table	No. of Lectures as per syllabus	Title of Topic to be covered	Key points of topic
June				
July				
August				
September				
October				
November				
December				
January	15	15	• Data Analysis for Physical Sciences • Class Test	• Population and Sample • Data distributions Probability • Probability Distribution • Experimental Error • Measurement, error and uncertainty • The process of measurement • True value and error, Precision and accuracy • Random and systematic errors • Random errors • Uncertainty in measurement • Combining uncertainties • Expanded uncertainty
February	15	15	• Vacuum Techniques	• Fundamental processes at low pressures • Mean Free Path, Time to form monolayer • Number density • Materials used at low pressurs
March	15	15	• Nuclear Detectors • Acclerators • Characterization techniques for materials analysis •	• Gas Detector with emphasis on GM counter • NaI Scintillation Detector • Gamma ray spectrometer using NaI scintillation detector • Cockroft Walten Generator • Van de Graaf Generator

				• Sloan and Lawrence type Linear Accelerator • Proton Linear Accelerator • Cyclotron • Synchrotron • Spectroscopy: SXRD,XRF, XPS, EDAX , Raman, UV Visible spectroscopy, FTIR • Microscopy: SEM, TEM, AFM
April			**Lockdown**	

Rizwan*

Rizwana Shaikh