SHRI SHANKARACHARYA TECHNICAL CAMPUS, BHILAI

(An Autonomous Institute affiliated to CSVTU, Bhilai)

SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Sl.No.	Board of Studies (BOS)	Courses(Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1	**Applied Mathematics**	**Applied Mathematics-III**	AM100301	2	1	-	100	20	30	150	3
2	**Electrical Engineering**	**Generation of Electrical Energy**	EE104302	2	1	-	100	20	30	150	3
3	**Electrical Engineering**	**Electrical Machines - I**	EE104303	3	-	-	100	20	30	150	3
4	**Electrical Engineering**	**Analog Electronics Circuits-I**	EE104304	3	-	-	100	20	30	150	3
5	**Electrical Engineering**	**Electrical Circuits & Network Analysis**	EE104305	3	-	-	100	20	30	150	3
6	**Electrical Engineering**	**Programming Lab With Python(Beginners Course)**	EE104391	-	-	2	25	-	25	50	1
7	**Electrical Engineering**	**Electrical Machines – I Lab**	EE104392	-	-	2	25	-	25	50	1
8	**Electrical Engineering**	**Analog Electronics Circuits-I Lab**	EE104393	-	-	2	25	-	25	50	1
9	**Electrical Engineering**	**Workshop Designs Lab (Mini Project – I)**	EE104394	-	-	2	25	-	25	50	1
10	**Electrical Engineering**	**Health Hygiene & Yoga**	EE100395	-	-	2	-	-	25	25	1
11	**Information Technology**	**Cyber Laws and Ethics**	IT100396	-	-	-	-	-	25	25	-
Total				**13**	**2**	**10**	**600**	**100**	**300**	**1000**	**20**

Note:

(a)Abbreviations used:L-Lecture,T-Tutorial,P-Practical,ESE-EndSemesterExam,CT-ClassTest,TA-Teacher'sAssessment

(b)Thedurationofendsemesterexaminationofalltheorypaperswillbeofthreehours.

SHRI SHANKARACHARYA TECHNICAL CAMUS
BHILAI (C.G.)
(An Autonomous Institution)
SCHEME OF TEACHING AND EXAMINATION
B.Tech. (Electrical Engineering) Fourth Semester

Sl .No.	Board of Studies (BOS)	Courses(Subject)	Course Code	Period per Week			Scheme of Examination			Total Marks	Credit
							Theory/Lab				
				L	T	P	ESE	CT	TA		
1	Electrical Engineering	Power System-I	EE104401	3	1	-	100	20	30	150	4
2	Electrical Engineering	Electro Magnetic Field	EE104402	3	-	-	100	20	30	150	3
3	Electrical Engineering	Digital Electronics	EE104403	2	1	-	100	20	30	150	3
4	Electrical Engineering	Electrical Measurements & Measuring Instruments	EE104404	3	-	-	100	20	30	150	3
5	Electrical Engineering	Electrical Machines-II	EE104405	3	-	-	100	20	30	150	3
6	Electrical Engineering	Computer Simulation Lab	EE104491	-	-	-	25	-	25	50	1
7	Electrical Engineering	Electrical Measurement and Measuring Instruments Lab	EE104492	-	-	2	25	-	25	50	1
8	Electrical Engineering	Digital Electronics Lab	EE104493	-	-	2	25	-	25	50	1
9	Electrical Engineering	Electrical Machines-II (Mini Project – II)	EE104494	-	-	2	50	-	25	75	1
10	Applied Chemistry	Biology for Engineers	AC100495	-	-	2	-	-	25	25	-
Total				**14**	**2**	**8**	**625**	**100**	**275**	**1000**	**20**

Note:
(a)Abbreviations used:L-Lecture,T-Tutorial,P-Practical,ESE-EndSemesterExam,CT-ClassTest,TA-Teacher'sAssessment
(b)Thedurationofendsemesterexaminationofalltheorypaperswillbeofthreehours.

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	**AM100301**	**L=2**	**T=1**	**P=0**	**Credits=3**
Subject	**APPLIED MATHEMATICS-III**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**100**	**20**	**30**	**150**	**3 Hours**

COURSE OBJECTIVES	**COURSE OUTCOMES**
The objective of this course is to familiarize the prospective engineers with techniques in calculus of multivariable and infinite series expansion of continuous function as well as some statistical treatment of discrete functions. More precisely, the objectives are: • To instigate a thorough knowledge of partial differential equations which arise in mathematical descriptions of situations in Engineering. • To develop the tool of Fourier series for learning advanced Engineering Mathematics. • To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differential equations. • To originate a thorough study about random quantities and their description in terms of their probability. • To introduce the tools of differentiation and integration of functions of complex variable that is used in various techniques dealing engineering problems.	**Student will be able to:-** **CO1:** To have a thorough knowledge of PDE which arise in mathematical descriptions of situations in Engineering. **CO2:** To make the students understand that Fourier series analysis is powerful methods where the formulas are integrals and to have knowledge of expanding periodic functions that explore variety of applications of Fourier series. **CO3:**To provide knowledge of Laplace transform of elementary functions including its properties and applications to solve ordinary differentials equations. **CO4:**To study about a quantity that may take any of a given range of values that can't be predicted as it is but can be described in terms of their probability **CO5:**To provide a sound background of complex analysis to perform a thorough investigation of major theorems of complex analysis and to apply these ideas to a wide range of problem that include the evaluation of both complex line integrals and real integrals..

UNIT I: Partial differential equation: Formation, Solution by Direct Integration Method, Linear Equation of First Order, Homogeneous Linear Equation with Constant Coefficients, Non-Homogeneous Linear Equations, Method of Separation of Variables; Equation of Vibrating String (Wave Equation).	**CO1[6 Hrs]**
UNIT II: Fourier Series: Euler's Formula; Functions Having Point of Discontinuity; Change of Interval; Even and Odd Function; Half Range Series; Harmonic Analysis.	**CO2[8Hrs]**
UNIT III: Laplace transform: Definition; Transform of Elementary Functions; Properties of Laplace Transform; Inverse Laplace Transform (Method of Partial Fraction, Using Properties and Convolution Theorem); Transform of Unit Step Function and Periodic Functions; Application to The Solution of Ordinary Differential Equations.	**CO3[8 Hrs]**
UNIT IV: Probability Distributions: Random Variable; Discrete and Continuous Probability Distributions; Mathematical Expectation; Mean, Variance and Moments; Moment Generating Functions; Probability Distribution (Binomial, Poisson and Normal Distributions).	**CO4[8 Hrs]**
Unit V:Complex Analysis: Analytic Functions; Cauchy-Riemann Equations and Its Applications to Flow Problems; Complex Integration; Cauchy Theorem (Without Proof), Cauchy Integral Formula (Without Proof); Expansion of Complex Functions (Taylor's and Laurent's Series); Cauchy Residue Theorem (Without Proof) and Its Application in Evaluation of Real Definite Integrals.	**CO5[6Hrs]**

			1.00	Applicable for AY 2020-21 Onwards
Chairman (AC)	Chairman (BoS)	Date of Release	Version	

Text Books:

S.No.	Title	Author	Publisher
1.	Higher Engineering Mathematics	B.S. Grewal	Khanna Publishers
2.	Advanced Engineering Mathematics	H. K. Dass	S. Chand Publication
3.	Advanced Engineering Mathematics	Erwin Kreyszig	John Wiley & Sons
4.	Applied Engineering Mathematics	Madan Mohan Singh	BS Publications
5.	Linear Algebra: A Modern Introduction	D. Poole	Brooks/Cole

Reference Books:

S.No.	Title	Author	Publisher
1.	Calculus and Analytic geometry	G. B. Thomas &R. L.Finney	Pearson, Reprint
2.	Engineering Mathematics for first year	T. Veerarajan	Tata McGraw- Hill, New Delhi

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	0EE104302	L = 2	T = 1	P = 0	Credits = 3
Subject	GENERATION OF ELECTRICAL ENERGY	CT	TA	Total	ESE Duration
Evaluation Scheme	100	20	30	150	3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. Students will understand the need of generation of electrical energy, Tariff and Economic aspects in power Generation**.** 2. Students will understand the operation and major components of Thermal Power generating plants. 3. Students will understand the operation and major components of Hydro and Nuclear Power generating plants. 4. Students will have a basic understanding of Solar and Wind Power Generation. 5. Students will have a basic understanding of MHD Generation and other methods of generation like Tidal, Geothermal, Ocean Thermal and Biomass.	After learning the course the Students should be able to: **CO1:**Successfully applies advanced concepts of electrical power generation and development of electric systems. **CO2:**Understand the operation and working of various conventional power generation methods. **CO3:**Understand the operation and working of various non-conventional power generation methods.

Unit I:Introduction Sources of Energy, Comparison of Sources of Energy, Growth of Power Generation in India, Need For Non Conventional Energy Sources. **Tariff And Economic Aspects In Power Generation:** Definition of Connected Load, Maximum Load, Maximum Demand, Demand Factor, Load Factor, Diversity Factor, Plant Capacity Factor, Plant Utilization Factor, Load Curve, Load Duration Curve, Tariff and Its Types, Calculation Based on Above Factors.	**CO1 [8 Hrs]**
UNIT II: Thermal Power Generation: Schematic Arrangement, Advantages and Disadvantages, Choice of Site, Main Parts and Working of Thermal Power Station, Main Features of Boilers, Steam Turbines, Auxiliary Equipments, Coal Preparation, Coal and Ash Handling.	**CO1,2 [6Hrs]**
Unit III: Hydro Power Stations: Schematic Arrangement, Advantages and Disadvantages, Choice For Selecting The Sites and Locations of Hydro Power Stations, Hydrology, Hydrographs, Flow Duration & Mass Curve, Main Types of Dams, Turbines & Generators, Pumped Storage Plant. **Nuclear Power Generation:** Principles of Nuclear Power Generation, Schematic Arrangement, Advantages and Disadvantages, Selection of Site, Main Parts Of Nuclear Power Plants, Types of Reactors, Nuclear Waste Hazards & Disposal**.**	**CO1,2 [8Hrs]**
Unit IV :Solar Energy: Solar Radiation, Solar Collectors , Conversion of Solar Energy in to Electrical Energy , Solar Photovoltaic (SPV) Systems Concept and Its Operating Principle , Types of Solar Cells , Application of SPV , Solar Hydrogen Energy Cycle. **Wind Energy:** Introduction to Wind Energy, Basic Principles of Wind Energy Conversion, Forces on The Blade, Power in The Wind Maximum Power, Site Selection Considerations, Basic Components of Wind Energy Conversion Systems, Classifications of Wecs-Hawt, Vawt, Advantages And Disadvantages of Wecs.	**CO1,3[8Hrs]**
Unit V:MHD Generation: Principle of Mhd Generation, MHD Cycles & Working Fluids, Open Cycles & Closed Cycle MHD System, Advantages and Disadvantages of MHD Generation. **Other Methods Of Power Generation**: Tidal Power Generation, Ocean Thermal Energy, Geothermal Power Generation, Biomass Applications in Power Generation. .	**CO1,3 [6Hrs]**

			1.00	Applicable for AY 2020-21 Onwards
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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Text Books:

S. No.	Title	Author	Publisher
1.	Generation of Electrical Energy	B.R. Gupta	S Chand Publications
2.	A Course in Electrical Power	J.B. Gupta	S K Kataria Publications.
3.	Nonconventional Energy Sources	G. D. Rai	Khanna Publications

Reference Books:

S. No.	Title	Author	Publisher
1.	A Course in Electrical Power	Soni Gupta, Bhatnagar	Dhanpat Rai Publications
2.	Renewable Energy Technologies	Solanki, Chetan S.	PHI Learning, New Delhi

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	**0EE104303**	**L=3**	**T=0**	**P=0**	**Credits=3**
Subject	**ELECTRICAL MACHINES-I**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**100**	**20**	**30**	**150**	**3 Hours**

COURSE OBJECTIVES	**COURSE OUTCOMES**
1. Summarize the basics of Single and Three Phase transformers. Analyze and model the auto-transformer equivalent circuit, evaluate parameters and determine performance. 2. To provide basic knowledge of Three- phase Transformer and its applications. 3. To understand the concept of DC Machines, various tests and applications. 4. Understand the basic concept of Three-phase induction motor and its torque slip characteristics	**CO1:**Infer the operating concepts of single phase and autotransformer phase for examining their performance. **CO2:**Apply the knowledge of vector groups to analyse three phase transformers under different conditions. **CO3**:Interpret the operating concepts and related tests of DC machine for examining it's performance. **CO4:**Analyse different industrial and domestic applications of transformer and DC machine. **CO5:**Learn about the fundamentals of three phase induction machines.

Unit I: Single Phase Transformer And Auto-Transformer: Introduction, Working Principle, Emf Equation, Ideal And Actual Transformer: On-Load with Phasor Diagram, , Per Unit Representation, Voltage Regulation of a Transformer, Testing of Single Phase Transformer: Open Circuit and Short Circuit Test, Back-To-Back Test, Parallel Operation of Single-Phase Transformers (Equal and Unequal Voltage Ratios), Separation of Losses. **Auto-Transformer:** Equivalent Circuit and Phasor Diagram, Its Comparison With Two Winding Transformer, Conversion From Auto-Transformer to Two Winding Transformer.	**CO1,2[8Hrs]**
UNIT II: Three Phase Transformer: Three-Phase Transformers, Constructional Details, Bank of Three Single Phase Units, Three Phase Single Unit Transformer, Different Connections and Vector Groups, Calculation of Efficiency and Regulation, Parallel Operation of Three-Phase Transformer, Scott Connection, Open Delta Connection.	**CO1,2[6 Hrs]**
Unit III: DC Generator: Electromagnetic Principle of DC Machine, BLV Concept and Production of Voltage in DC Generator, Constructional Details, Classification of DC Machine, Armature Reaction and Its Effect, Methods To Reduce Armature Reaction, Commutation, Methods of Improving Commutation, Effect of Brush Shift, Operating Characteristics of DC Separately Excited and Shunt (Condition of Self-Excitation, Critical Speed and Critical Resistance) Generator, Losses in DC Generators and Efficiency.	**CO3,4[6 Hrs]**
UNITIV: DC Motor: Electrical and Mechanical Characteristics of DC Motor, BLI Concept and Production of Torque, Operating Characteristics of DC Series, Shunt and Compound Wound Motors, Starters For DC Motors (Two Point, Three Point and Four Point), Speed Control of DC Motors- Armature and Field Control Method, Losses in DC Motors, Efficiency and Condition For Maximum Efficiency, Testing of DC Machines- Swinburne's Test and Regenerative Test(Study Only).	**CO3,4[8 Hrs]**
UNITV: Fundamentals of Three Phase Induction Machine: Introduction, Construction (Cage And Slip-Ring Induction Motors), Principle of Operation, Equivalent Circuit, , Power Across Air-Gap, Torque And Power Output, Torque-Speed (Slip) Relationship, Loss and Efficiency(Elementary)	**CO5 [8 Hrs]**

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Chairman (AC)	Chairman (BoS)	Date of Release	Version	

Text Books:

S.No.	Title	Author	Publisher
1.	Electric Machines	Nagrath& Kothari	TMH Publications
2.	Performance & Design of A.C. Machines	M.G. Say	C.B.S. Publishers
3.	Electrical Machinery	P. S. Bimbhra	Khanna Publishers
4.	Electrical Machinery	A.E. Fitzgerald	Mc.Graw-Hill

Reference Books:

S.No.	Title	Author	Publisher
1.	Fundamentals of Electrical Machines	B. R, Gupta	New age International
2.	Electrical Machines	Samarjeet Ghosh	PHI Publications
3.	Electric Machines	P.K. Mukherjee & S. Chakravarti	Dhanpat Rai Publication,

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	**0EE104304**	**L = 3**	**T = 0**	**P = 0**	**Credits = 3**
Subject	**ANALOG ELECTRONICS CIRCUITS-I**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**100**	**20**	**30**	**150**	**3 Hrs**

COURSE OBJECTIVES	**COURSE OUTCOMES**
1. To prepare the students to understand the state of art of electronic circuits. 2. To enable the students to model and analyze analog electronic circuits. 3. To make the students to implement various electronic circuits.	At the end of this course, students will demonstrate the ability to : **CO1:**Understand the basic functions of electronic devices and circuits. **CO2:**Design and analyze the simple existing electronic circuits. **CO3:**Implement new electronic circuits for various applications.

UNIT I: Junction Diode Characteristics: PN Junction Diode, Forward Bias, Reverse Bias, Avalanche and Zener Breakdown, V-I Characteristic, Diode Resistance, Transition Capacitance, Diffusion Capacitance, Effect of Temperature on V-I Characteristic, Zener Diode, Light Emitting Diode(LED), Varactor Diode, Photo Diode. **Diode Applications:** Clippers: Series and Shunt Clippers, Clampers: Positive and Negative Clampers, Rectifiers: Half wave Rectifier (HWR), Full wave Rectifier (FWR).	**CO1,2,3[8Hrs]**
UNIT II: Transistor Characteristics: Bi-Polar Junction Transistor (BJT), Current Components, Transistor as an amplifier, Common Base Configuration, Common Emitter Configuration, Common Collector Configuration, Active, Saturation and Cutoff Region, Early Effect, Ebers-Moll Model.	**CO1,2[6 Hrs]**
UNIT III: Field Effect Transistors: Junction Field Effect Transistors (JFET): Construction, Operation, Characteristics, Pinch of Voltage, FET as Voltage Variable Resistor(VVR), Low Frequency Equivalent Circuit. **Metal Oxide Semiconductor Field Effect Transistor (MOSFET):** Depletion and Enhancement Types, Construction, Operation, Characteristics.	**CO1,2[6 Hrs]**
UNIT IV: Transistor Amplifier at Low Frequencies: h Parameter model, Analysis of Transistor Amplifier Using h Parameters, Comparison of Transistor Amplifier Configurations Common Base (CB), Common Emitter (CE) and Common Collector (CC) Configurations. **Transistor Amplifier at High Frequencies**: Hybrid-pi CE Transistor Model, Hybrid-pi Parameters, CE Short Circuit Current Gain, Current Gain with Resistive Load, Gain Bandwidth Product, Unity Gain Bandwidth. **Introduction to Operational Amplifier (OPAMP):** Common Mode and Differential Mode Operations.	**CO1,2,3[8 Hrs]**
UNIT V: Multi-stage Amplifier: Types of Amplifier, Frequency Response of an amplifier, Step Response, Cascade stages, Types of coupling. **Feedback Amplifier:** Types of Feedback amplifiers, Feedback Concept, Advantages of Negative Feedback. **Oscillators:** Sinusoidal Oscillator, Barkhausen Criterion, RC Phase Shift Oscillator Using BJT and FET, Wien Bridge Oscillator.	**CO1,2,3[8 Hrs]**

Text Books:

S. No.	Title	Author	Publisher
1.	Integrated Electronics Analog and Digital Circuits Systems	J. Milliman, C. Halkias and C. D. Parikh	Second Edition, McGraw Hill Education (India) Private Limited, 2018.
2.	Basic Electronics	S. K. Mandal	First Edition, McGraw Hill Education (India) Private Limited, 2017.

Reference Books:

S. No.	Title	Author	Publisher
1.	Microelectronic Circuits	A. S. Sedra and K. C. Smith	New York, Oxford University Press, 1998.
2.	Microelectronics	J. Millman and A. Grabel,	McGraw Hill Education, 1988.

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	0EE104305	L = 3	T = 0	P = 0	Credits = 3
Subject	ELECTRICAL CIRCUITS & NETWORK ANALYSIS	CT	TA	Total	ESE Duration
Evaluation Scheme	100	20	30	150	3 Hours

Course Objectives	Course Outcomes
1. The objective of this course is to provide knowledge about the fundamentals of network theorems.. 2. This course is also useful to understand single-phase and three-phase ac circuits. 3. The aim of this course is to understand transient and steady-state response. 4. This course is also useful to understand Laplace Transform applied to electrical circuits. 5. The objective of this course is to understand two port circuit.	**Students will be able to:-** **CO1:**To analyze various electrical circuits, their simplification techniques and sysnthesis. **CO2:**Evaluate the responses by applying network theorems to electrical circuits,Analyze circuits in the sinusoidal steady state. and the transient response of electrical circuits. **CO3:**Analyze the response of electrical circuits using Laplace Transform for standard inputs. **CO4:**Analyze two port circuit behavior with different parameters.

UNIT I: AC Power Analysis and Network Theorems Introduction, Instantaneous and Average Power, Maximum Average Power Transfer, Effective or RMS Value, Apparent Power and Power Factor, Complex Power, Conservation of AC Power. Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, Millman's theorem (all theorems analysis with dependent current and voltage sources). Super node and Super mesh Analysis, Concept of duality and dual networks.	**CO1,2[8 Hrs]**
UNIT II: Three phase Circuit & Magnetically coupled circuit Introduction, Balanced Three Phase Voltage, Balanced Three phase Connections (Y-Y, Y-Δ, Δ-Y, Δ-Δ) Unbalanced Three Phase circuits. Magnetically coupled circuits: Introduction, Mutual Inductance, Coupling Coefficient, Analysis of Coupled Coils, Dot Rule, Energy in a Pair of Coupled Coils, Conductively Coupled Equivalent Circuits. Series and Parallel Resonance.	**CO1,2[8 Hrs]**
UNIT III: Transient Response of AC & DC networks & basic filter concept. Solution of first order differential equations for Series and parallel R-L, R-C Circuit, Second order system (R-L-C circuits), initial and final conditions in network elements, forced and free response, time constants, steady state and transient state response. Basic filter concept, High pass, Low pass & band pass filters.	**CO1,2[6Hrs]**
UNIT IV: Electrical Circuit Analysis Using Laplace Transforms Review of Laplace Transform, initial and final value theorem. Analysis of electrical circuits using Laplace Transform for standard inputs (step, ramp and impulse functions), convolution integral, inverse Laplace transform, transformed network with initial conditions.	**CO1,3[6 Hrs]**
UNIT V: Two Port Network and Network Functions Transfer function representation. Poles and Zeros. Frequency response (magnitude and phase plots), Two Port Networks, terminal pairs, relationship of two port variables, impedance parameters, admittance parameters, transmission parameters and hybrid parameters, interconnections of two port networks, Reciprocity & Symmetry, cascade, series, parallel and series-parallel connections of Two Port Networks, Bartlett's bisection Theorem.	**CO1,4[8 Hrs]**

			1.00	Applicable for AY 2020-21 Onwards
Chairman (AC)	Chairman (BoS)	Date of Release	Version	

Text Books:

S. No.	Title	Author	Publisher
1.	Network Analysis	M.E. Valkenburg	PHI
2.	Engineering Circuit Analysis	W. H. Hayt and J. E. Kemmerly	McGraw Hill Education
3.	Networks and Systems	D. Roy Choudhury	New Age International Publications

Reference Books:

S.No.	Title	Author	Publisher
1.	Fundamental of Electric Circuits	C. K. Alexander and M. N. O. Sadiku	Mc Graw Hill
2.	Electric Circuits	Nillson and Riedel	Pearson
3.	Network Analysis & Synthesis	C. L. Wadhwa	New Age Publications

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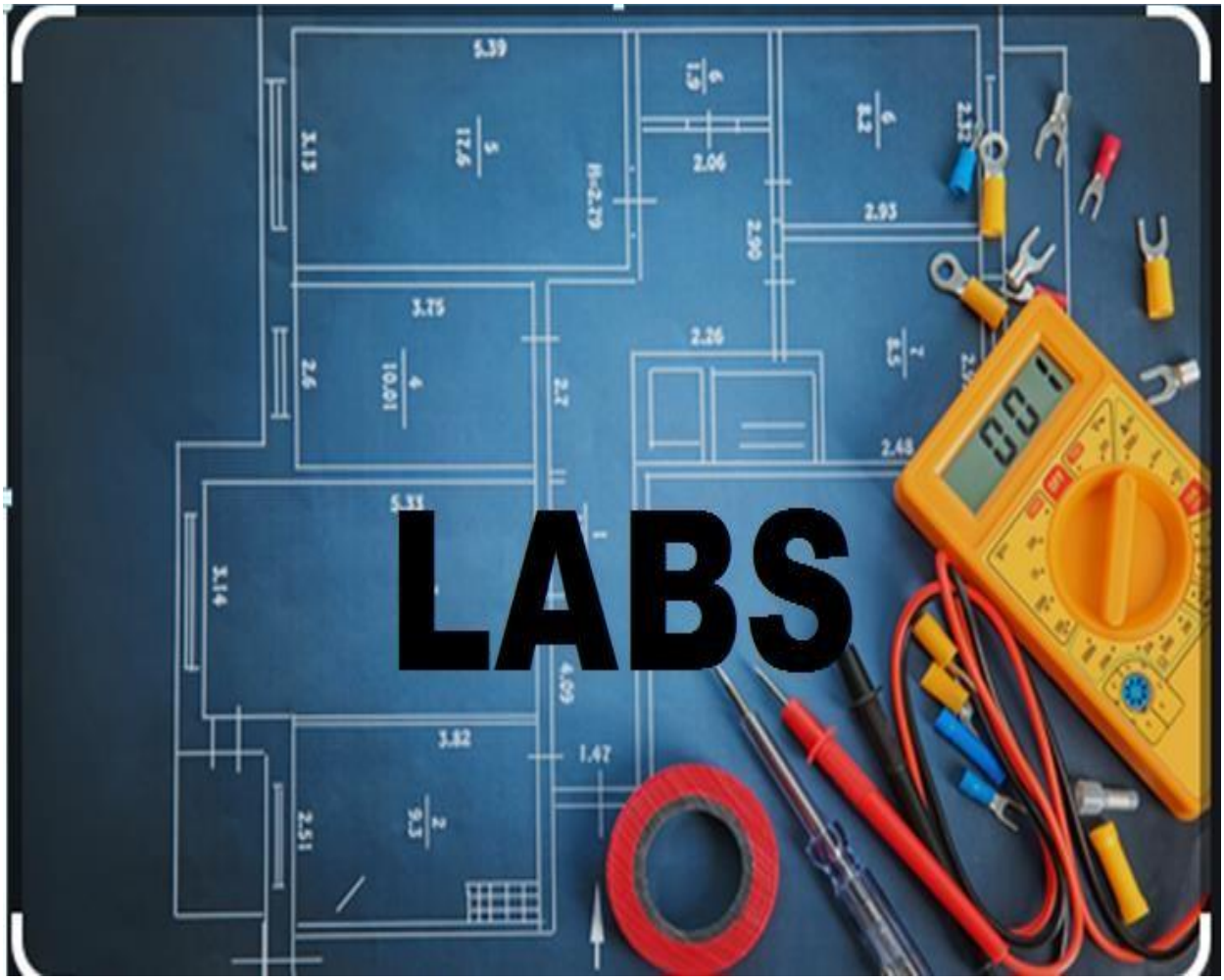
SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester



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SCHEME OF TEACHING AND EXAMINATION
(EFFECTIVE FROM 2020-2021 BATCH B.Tech
(Electrical Engineering) Third Semester

Subject Code	**0EE104391**	**L=0**	**T=0**	**P=2**	**Credits=1**
Subject	**PROGRAMMING LAB WITH PYTHON(BEGINEERS COURSE)**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**25**	**-**	**25**	**50**	**-**

Course Objectives	**Course Outcomes**
1. To gain basic knowledge of python programming. 2. To enhance skills in software field. 3. To gain knowledge so as to develop desktop applications.	**Students will gain knowledge of:-** **CO1:** Basic python programming. **CO2:** Basic operations of mathematics. **CO3:** Basic calculations.

List of Experiments: (At least ten experiments are to be performed)

1. Write a Python program to print the any sample string in a specific format.
2. Write a Python program to get the Python version you are using.
3. Write a Python program to display the current date and time.
4. Write a Python program which accepts the radius of a circle from the user and compute the area.
5. Write a Python program which accepts the user's first and last name and print them in reverse order with a space between them.
6. Write a Python program which accepts a sequence of comma-separated numbers from user and generate a list and a tuple with those numbers.
7. Write a Python program to accept a filename from the user and print the extension of that.
8. Write a Python program to display the first and last colors from the following list.
color_list = ["Red","Green","White" ,"Black"]
9. Write a Python program to display the examination schedule. (extract the date from exam_st_date).
exam_st_date = (11, 12, 2014)
Sample Output : The examination will start from : 11 / 12 / 2014
10. Write a Python program that accepts an integer (n) and computes the value of n+nn+nnn.
11. Write a Python program to print the documents (syntax, description etc.) of Python built-in function(s).
12. Write a Python program to print the calendar of a given month and year.
Note : Use 'calendar' module.
13. Write a Python program to test whether a number is within 100 of 1000 or 2000.
14. Write a Python program to calculate number of days between two dates.
15. Write a Python program to get the volume of a sphere with radius 6.

List of Equipment Required in the Lab.

S.No.	Equipment/Machines/Instruments/Software Required
1.	Python Idle Software

Recommended Book:

S. No.	Title	Author
1.	Python Crash Course: A Hands-On, Project-Based Introduction to Programming	Eric Matthes
2.	Head-First Python: A Brain-Friendly Guide.	

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	**0EE104392**	**L=0**	**T=0**	**P=2**	**Credits=1**
Subject	**ELECTRICAL MACHINES-I LAB**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**25**	**-**	**25**	**50**	**-**

Course Objectives	**Course Outcomes**
1. To provide the students basic knowledge of construction and working of transformers. 2. To help them model thetransformer equivalent circuit, evaluate parametersand determineperformance. 3. To provide the knowledge of direct current electrical machines, its operational constraints, starting mechanisms, conventional speed control methods, various tests and applications.	**CO1:**Understand the method of evaluation of transformer equivalent circuit parameters and determine its performance. **CO2:**Infer the performance of auto-transformer and operation of transformers in parallel. **CO3:**Analyse the vector group for parallel operation of three phase transformers and understand the three phase to two phase conversion. **CO4:**Understand the working principle and operation of direct current machines in generating mode. **CO5:**Understand the operating fundamentals of d.c. motors like starting, speed control, tests etc.

List of Experiments: (At least ten experiments are to be performed)

1. To determine the equivalent circuit parameters of a single-phase transformer. [CO1]
2. To determine the voltage regulation of a single-phase transformer operating at lagging and upf condition. [CO1]
3. To determine the efficiency of a single-phase transformer under different loading condition. [CO1]
4. To perform Back to Back test on two single phase transformers. [CO1]
5. To perform different auto transformer connections with tapped winding transformer. [CO2]
6. To perform the ratio and polarity test on single phase transformer. [CO2]
7. To perform parallel operation of two single phase transformer. [CO2]
8. To perform parallel operation of three phase transformers. [CO3]
9. To perform 3- phase to 2- phase conversion (Scott connection) [CO3]
10. To determine the armature & field winding resistance of D.C machine. [CO4]
11. To determine the magnetization characteristics of a D.C separately excited Generator.[CO4]
12. To perform load test on D.C shunt generator. [CO4]
13. To perform Swinburne's test a D.C machine. [CO5]
14. To study two-point, three-point and four-point motor starters and observe their impact on the motor staring current. [CO5]
15. To perform the speed control of D.C shunt motor.[CO5]
16. To obtain the operating characteristics of D.C motor. [CO5]

List of Equipment Required in the Lab.

S.No.	Equipment/Machines/Instruments Required
1.	Single Phase Tapped Transformers, Auto Transformer
2.	Three Phase Transformer, Three Phase Auto Transformer
3.	DC Shunt Motor, DC Series Motor.
4.	Two point, 3 point, 4 point Starters.
5.	DC Shunt Motor-Generator Set.
6.	Ammeters (AC & DC), Voltmeter (AC & DC), Wattmeter, Tachometer.
7.	Rheostats, Variac 1phase. and 3phase.

Recommended Book:

S.No.	Title	Author	Publisher
1.	Laboratory courses in Electrical Engineering	S.G. Tarnekar & P.K. Kharbanda,	Dhanpat Rai and Sons
2.	Electrical Technology	B.L.Theraja	S. Chand and Co.

SHRI SHANKARACHARYA TECHNICAL CAMPUS, BHILAI

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SCHEME OF TEACHING AND EXAMINATION

(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	**0EE104393**	**L = 0**	**T = 0**	**P = 2**	**Credits = 1**
Subject	**ANALOG ELECTRONICS CIRCUIT-I LAB**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**25**	**NA**	**25**	**50**	**3 hrs.**

COURSE OBJECTIVES	**COURSE OUTCOMES**
1. To prepare the students to understand the state of art of analog electronic circuits. 2. To enable students to model and analyze analog electronic circuits. 3. To make students to implement various analog circuits viz. rectifiers, clippers, clampers, amplifiers, oscillators etc.	At the end of this course, students will demonstrate the ability to:- **CO1:** Understand the characteristics of various electronic devices viz. diodes, BJT, FET etc. **CO2:** Understand the characteristics and functions of various electronic circuits viz. amplifiers, clippers, clampers, rectifiers, oscillators etc. **CO3:** Design various circuits using electronic devices**CO2**

List of Experiments: (At least ten experiments are to be performed)

1. To draw the characteristics of a semiconductor diode and to find cut-in voltage, reverse resistance, static resistance and dynamic resistance.
2. To draw the characteristics of a Zener diode.
3. To design a voltage regulator circuit using Zener diode.
4. To design series and shunt clippers and find its output waveform.
5. To design positive and negative clampers and find its output waveform.
6. To design a half wave rectifier and find its output waveform.
7. To design a full wave rectifier and find its output waveform.
8. To study the characteristics of CE configuration transistor.
9. To study the characteristics of CB configuration transistor.
10. To draw the Static input characteristic curves of CE transistor and determine its h-parameter values.
11. To draw the Static output characteristic curves of CE transistor and determine its h-parameter values.
12. To study the frequency response of single stage CE transistor amplifier & determine its bandwidth (with & without bypass capacitor).
13. To draw the characteristics of Junction Field Effect Transistor (JFET).
14. To study the frequency response of RC coupled double stage CE transistor amplifier and determine its bandwidth.
15. To study Wein Bridge Oscillator and RC phase shift oscillator.

Equipment/Machines/Instruments/Tools/Software Required:

S.No.	**Equipment/Machines/Instruments Required**
1.	Circuit components
2.	Power supply
3.	CRO
4.	Function generator
5.	Multimeter
6.	Breadboard

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Recommended Books:

S. No.	Title	Author(s)	Publisher
1.	Integrated Electronics Analog and Digital Circuits Systems	J. Milliman, C. Halkias and C. D. Parikh	Second Edition, McGraw Hill Education (India) Private Limited, 2018.
2.	Basic Electronics	S. K. Mandal	First Edition, McGraw Hill Education (India) Private Limited, 2017.

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(EFFECTIVE FROM 2020-2021 BATCH B.Tech

(Electrical Engineering) Third Semester

Subject Code	**0EE104394**	**L = 0**	**T = 0**	**P = 2**	**Credits = 1**
Subject	**WORKSHOP DESIGNS LAB(MINI PROJRCT -I)**	**CT**	**TA**	**Total**	**ESE Duration**
Evaluation Scheme	**25**	**NA**	**25**	**50**	**3 Hours**

Course Objectives	**Course Outcomes**
1. Students will develop the appreciation of using some of the basic electrical tools and symbols used in domestic wiring. 2. Students will understand different system of wiring used for domestic wiring. 3. Students will understand various types of electrical connections. 4. Students will have a basic knowledge to dismantle and reassemble of different electrical equipments. 5. Students will have a basic understanding of Panel board wiring and industrial installation.	After learning the course the Students should be able to: **CO1:**Successfully apply the basic electrical tools and symbols used in domestic wiring. **CO2:**Understand different system of wiring used for domestic wiring. **CO3:**Understand various types of electrical connections such as staircase connection, Go-down wiring, etc. **CO4:**Dismantle and Reassemble of different electrical equipments such as electric heater, electric iron, etc. **CO5:**Understand the Panel board wiring and industrial installation.

List of Experiments(At least ten experiments are to be performed)

1. Introduction of Electrical Tools, Electrical Symbols And Abbreviations used in Domestic Wiring.
2. To Study Different System Of Wiring Used For Domestic Wiring I.E, Batten, Cleat, Casing-Caping And Conduit Wirings.
3. To Study the Assembly Of Single Fluorescent Tube Light Wiring With Choke And Starter.
4. To Study the Assembly Of Ceiling Fan Wiring With The Regulator.
5. To Study the Assembly Of Domestic Wiring With One Switch, One Socket And An Incandescent Lamp.
6. To Study Stair Case Wiring Using Two-Way Switches.
7. To Study Godown Wiring Circuit.
8. To Study the Removal of Insulation And Fixing Of Various Types Of Lugs In Wire / Cable Using Crimping Tool.
9. To Study the Fixing Of ACSR Conductor On Pin Type Insulator.
10. Dismantle and Reassemble an Electric Iron, Heater, Kettle, Room Heater, Toaster, Hair Dryer, Mixier etc. (Minimum 2 Appliances)
11. To Provide Service Connection for Industrial Installation (3 Phase- 4 Wire)
12. To Study Panel Board Wiring Using MCBS, ELCBS.
13. Visit to Nearby Leading Motor Rewinding Workshop and Observing Various Repairing And Testing Activities).

Equipment/Machines/Instruments/Tools/Software Required:

S.No.	**Equipment/Machines/Instruments Required**
1.	Electric Heater
2.	Electric Iron
3.	Ceiling Fan
4.	Washing Machine
5.	Automatic Iron
6.	Cooking Range
7.	Storage Heater
8.	Wet Grinder
9.	Multimeter
10.	Tri Square 30 cm, Fermer chisel 14cm,20cm, 25cm, Pocker 15cm, Power drilling Machine 6 mm, Hacksaw 30 cm, Wire shipper 10 cm, PCB Preparation set, Hand Crimping Tool
11.	Connector, 6", Screw Driver 8" 10", 12", Cutting Pliers 6", 8", Neon Tester, Heavy Duty Screw Driver10", 12", Nose Pliers 6", Soldering iron

			1.00	Applicable for
Chairman (AC)	Chairman (BoS)	Date of Release	Version	AY 2020-21 Onwards

Recommended Books:

S.No.	Title	Author	Publisher
1.	Laboratory courses in Electrical Engineering	S.G. Tarnekar & P.K. Kharbanda,	Dhanpat Rai and Sons
2.	Electrical Workshops	Dr.Umesh Rathore	S. Chand and Co.

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(Electrical Engineering) Third Semester

Subject Code	EE100395	L=2	T=1	P=0	Credits=1
Subject	HEALTH, HYGIENE & YOGA	CT	TA	Total	ESE Duration
Evaluation Scheme	0	0	25	25	1 Hours

COURSE OBJECTIVES

- To provide understanding and importance of health
- To provide insight into the hygiene aspect and quality of lifestyle
- To study the concepts of various medical therapy
- To practice different types of yogasan and pranayama.
- To provide knowledge about common diseases and its cure through yogasan and pranayama.
- To develop and improve concentration through various methods

COURSE OUTCOMES

On successful completion of the course, the student will be able to:

- Demonstrate a better understanding about mental and physical health for human life
- Understand the correlation of mental and physical health with hygiene and yoga
- Demonstrate the understanding about the health hazards resulting due to improper lifestyle
- Display understanding about eminent yogis and primary texts on yoga
- Apply various techniques of yoga to counter various lifestyle issues
- Understand the utility of health, hygiene and yoga for society welfare

UNIT – I

(A) Health:

- Concept of Health – Physical and Mental Health and Wellbeing
- Meaning and definition of Health according to WHO and Ayurveda Charaksamhita
- Primary Health Care –Food, Nutrition and Cleanliness
- Human Psychology and Health Consciousness

(B) Hygiene:

- Meaning, definition and importance of Hygiene in life
- Types of Hygiene and general rules for Hygiene and Cleanliness
- Ayurveda: Ayurveda, Vata, Pitta and Cough

UNIT – II

(A) Medicinal Cure:

- Introduction and basic concepts of common streams of medicinal cure
- Introductory knowledge about modes of operation of Alopathy, Ayurveda, Homoeopathy, Bio-chemic, Unani, Siddha, Acupressure, Acupuncture and Naturopathy
- Introduction of Anatomy and Physiology concerned

(B) Occupational Health:

- Diseases and their occupational relevance, risk factors for deficiency diseases
- Drugs, Tobacco, Alcohol and Food intoxication: chemical agents, side effects and control measures
- Stress, anxiety, depression and emotional imbalance: causes and prevention

(C) Modern Silent Killers:

- High blood pressure, diabetes and cancer – causesand cure
- Common health problems due to stomach disorders such as indigestion, acidity, etc.

UNIT – III

(A) Yogasans:

- Meaning, concept and importance of Yoga for healthy life
- Yogasans and its mode of operation, Prone and Supine Posture
- Common Yogasans such as Bhujangasan, Halasan, Padmaasan, Sarvangasan, Shavasan, Surya Namaskar, Utshep Mudra, Vajrasan, Jal-Neti, etc.
- Asans for Brain: Shirshpadasan, Shashankasan
- Asans for Eye Sight: Tratak, Neti-Kriya

(B) Yogis and Yogic Texts:

- Ashtang yoga from Patanjali Yoga Sutra
- Somantic and Psychosomatic from YogVashishth
- BhagwadGeeta
- Basic knowledge of Shat Darshan

UNIT – IV

(A) Pranayama:

- Definition, concept and types of Pranayama
- NadiShodhan, AnulomVilom, Bhastrika, Bhramari,Shitakari, etc.
- Usefulness of Pranayamafor students
- Introduction to Kumbhak

(B) Meditation:

- Basic concept of Meditation
- Concentration of mind: Dhyan
- Concentration on breath; Japa, Ajapajap, Internal Silence
- Concentration on point of light, Concentration on feeling, Concentration on figure
- Visualization in mental sky

UNIT – V

Social Awareness and Community Health:

- NSS / NCC activities for society and nation
- Health and family welfare
- Nutrition and welfare programmes for childs, elders and divyangs
- Blood Donationand health check-up campaign
- Green environment campaign - Plantation
- Co-management of HIV and TB diseases
- Gender Equity and National Integrity
- Natural calamities and Disaster Management
- Road safety awareness, Swachhataaawareness, etc.

Text Books:	***Reference Books:***
1. *Health, Hygiene & Yoga; Dr P. B. Deshmukh; Gyan Book Private Ltd. New Delhi.* ***2.*** *Health, Hygiene and Yoga; Dr. ManjuShukla; Gyan Bharti Publications, New Delhi.*	***1.*** *Yogic MateriaMedica.* ***2.*** *Asan, Pranayama Mudrabandha; Swami SatyanandaSaraswati; Yoga Publication Trust, Munger (Bihar).* ***3.*** *Fundamentals of Yogic Practices - A Complete Guide on Yoga; Shrikant, R. Kushwah, Y. Kushwah; KhelSahitya Kendra, Delhi.*

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Subject Code (IT100396)	CYBER LAWS & ETHICS	L	T	P	Credits=0
EvaluationScheme	ESE	CT	TA	Total	ESEDuration
	-	-	25	25	--

CourseObjectives	CourseOutcomes
1. To explore brief idea about the CYBER LAWS. 2. To get the basic idea about IT ACT. 3. Awareness about ecommerce and related cyber laws. 4. Awareness regarding Trademarks, Copyrights and Patents. 5. Awareness regarding Cyber Ethics.	**ter the completion of course, student will be** **CO 1**. Understand Cyber laws **CO 2**. Understand IT Act. **CO 3**.Describe Information Technology act and Related Legislation. **CO 4**. Demonstrate Electronic business and legal issues. **CO 5**. Interpret Cyber Ethics.

UNIT – I:Introduction to Cyber law:CO 1
Evolution of computer Technology, emergence of cyber space. Cyber Jurisprudence, Jurisprudence and law, Doctrinal approach, Consensual approach, Real Approach, Cyber Ethics, Cyber Jurisdiction, Hierarchy of courts, Civil and criminal jurisdictions, CyberspaceWeb space, Web hosting and web Development agreement, Legal and Technological Significance of domain Names, Internet as a tool for global access.

UNIT – II:Information Technology Act: CO 2
Overview of IT Act, 2000, Amendments and Limitations of IT Act, Digital Signatures, Cryptographic Algorithm, Public Cryptography, Private Cryptography, Electronic Governance, Legal Recognition of Electronic Records, Legal Recognition of Digital Signature, Certifying Authorities, Cyber Crime and Offences, Network Service Providers Liability, Cyber Regulations Appellate Tribunal, Penalties and Adjudication.

UNIT – III:Cyber law and Related Legislation:CO 3
Patent Law, Trademark Law, Copyright, Software – Copyright or Patented, Domain Names and Copyright disputes, Electronic Data Base and its Protection, IT Act and Civil Procedure Code, IT Act and Criminal Procedural Code.

UNIT – IV:Electronic Business and legal issues:CO 4
Evolution and development in E-commerce, paper vs paper less contracts E-Commerce models- B2B, B2C, E security. Business, taxation, electronic payments, supply chain, EDI, E-markets, Emerging Trends.

UNIT-V:Cyber Ethics:CO 5
The Importance of Cyber Law, Significance of cyber Ethics, Need for Cyber regulations and Ethics. Ethics in Information society, Introduction to Artificial Intelligence Ethics: Ethical Issues in AI and core Principles, Introduction to Block chain Ethics

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TextBooks:

S.No.	Title	Authors	Publisher
1)	Cyber Laws: Intellectual property & E Commerce, Security	Kumar K	dominant Publisher
2)	Cyber Ethics 4.0, Christoph Stuckelberger	Pavan Duggal	Globethic
3)	Information Security policy & Implementation Issues	NIIT	PHI
4)	Computers, Internet and New Technology Laws	Karnika Seth	Lexis Nexis Butterworths Wadhwa Nagpur

ReferenceBooks:

S.No.	Title	Authors	Publisher
1)	Legal Dimensions of Cyber Space	Verma S, K, MittalRaman	Indian Law Institute, New Delhi
2)	Cyber Law	Jonthan Rosenoer	Springer, New York, (1997)
3)	The Information Technology Act 2005	A Handbook	OUP Sudhir Naib,, New York, (2011)
4)	Information Technology Act, 2000	S. R. Bhansali	University Book House Pvt. Ltd., Jaipur (2003)
5)	Cyber Crimes and Law Enforcement	Vasu Deva	Commonwealth Publishers, New Delhi, (2003)