IPS Academy

INSTITUTE OF ENGINEERING & SCIENCE

(A UGC Autonomous Institute affiliated to RGPV)

Electrical and Electronics Engineering Department

Proposed Scheme & Syllabus of II Year

2nd Year 3rd Semester

S. No.	Course Code	Course Title	Hrs./ week			Credits
			L	T	P	
1	BSC - EEE301	Numerical Methods & Transform Calculus	3	1	0	4
2	PCC - EEE301	Electrical Circuit Analysis	3	1	2	5
3	PCC - EEE302	Analog Electronics	3	0	2	4
4	PCC - EEE303	Instrumentation & Measurement	3	0	2	4
5	HSMC - EEE301	Professional Communication Skills	3	0	0	3
6	PCC- EEE304	Electrical Workshop	0	0	4	2
7	MC3	Energy and Environmental Engineering	2	0	0	0
Total credits						22

BSC-EX301	Numerical Methods & Transform Calculus	3L:1T:0P (4 Hrs)	4 Credits

Course Objective: The objective of this course is to serve the potential engineers with techniques of numerical mathematics, Transform calculus, Fourier series and their applications. It aims to equip the students to deal with advanced level of mathematics and applications that would be essential for their disciplines.

Module -1: Numerical Methods-I (10 Hours)
Solution of algebraic and transcendental equations: Newton-Raphson method and Regula-Falsi method, Finite differences, Interpolation using Newton's forward and backward difference formulae, Interpolation with unequal intervals: Newton's divided difference and Lagrange's formulae, Inverse interpolation by Lagrange's method.

Module -2: Numerical Methods-II (10 Hours)
Numerical differentiation, Numerical integration: Trapezoidal rule, Simpson's 1/3rd and 3/8th rules, Solution of simultaneous linear algebraic equations by Gauss-Jordan, Crout's triangularization methods, Jacobi's, Gauss-Seidal, Solution of ordinary differential equations: Euler and Euler's modified methods, Runge-Kutta method of fourth order for solving first order equations.

Module -3: Laplace Transformation (10 Hours)
Laplace transform, Properties of Laplace transform, Laplace transform of periodic functions, Finding inverse Laplace transform by different methods, Convolution theorem, Evaluation of integrals by Laplace transforms, Solution of ODEs by Laplace transform method.

Module -4: Fourier Series (8 Hours)
Fourier series, Periodic functions, Fourier series for even and odd functions, Half-range fourier series, Parseval's identity, Wave forms, Complex form of fourier series.

Module -5: Fourier Transformation (7 Hours)
Definition and properties of Fourier transformation, Convolution of Fourier transformation, Fourier transformation on function spaces, Solution of ordinary and partial differential equation by Fourier transformation.

Course Outcomes:

CO1: To explain and illustrate numerical methods for the solutions of algebraic and transcendental equations.
CO2: To define and calculate numerical differentiation, integration and numerical methods in evaluation of problems related with engineering.
CO3: To explain and apply the Laplace transform for the analysis of engineering problems.
CO4: To explain and apply the basic concepts of Fourier series in engineering problems.
CO5: To interpret and apply the concepts of Fourier transformation.

Textbooks/References:

1. Chandrika Prasad and Reena Garg, Advanced Engineering Mathematics, Khanna Publishing, 2018.
2. B.V. Ramana, Higher Engineering Mathematics, Tata McGraw Hill, 2006.
3. P. Kandasamy, K. Thilagavathy, K. Gunavathi, Numerical Methods, S. Chand & Company, 2nd Edition, Reprint 2012.
4. Erwin kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 9th Edition, 2007.
5. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2011.
6. T. Veerarajan , Engineering Mathematics, Tata McGraw-Hill, New Delhi, 2008.
7. R. J. Beerends , Fourier and Laplace Transforms , Cambridge University Press, 2003.
8. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003.
9. S. Ross, A First Course in Probability, Pearson Education India, 6th Ed., 2002.
10. W. Feller, An Introduction to Probability Theory and its Applications, Wiley, Vol. 1, 3rd Ed., 1968.

PCC - EEE301	Electrical Circuit Analysis	3L: 1T : 2P (6 hrs.)	5 Credits

Course Objective:-

Objective of this course is to introduce the students the analysis of Electric circuits using different types of theorem, the steady state and transient behavior, concept of different techniques such as Laplace transform, Fourier series/ transform and two port network.

Pre Requisite:-

Should have basic knowledge of Ordinary differential equations,Matrix,Laplace and Fourier Series & transform.

Module 1 (11 hrs.)

Review of circuit elements R,L,C and voltage & current sources controlled & uncontrolled sources KCL and KVL analysis, Nodal & mesh analysis, Network Theorems for AC & DC circuits- Thevenins & Norton's, Superpositions, Reciprocity, Compensation, Substitution, Maximum power transfer, and Millman's theorem, Tellegen's theorem, problems with dependent & independent sources.

Module 2(08 hrs.)

Transient analysis:- Transients in RL, RC&RLC Circuits, initial conditions, time constants. Steady state analysis. Analysis of magnetically coupled circuits: Dot convention, coupling co-efficient, tuned circuits, Series & parallel resonance. Network topology, concept of Network graph, Tree, Tree branch & link, Incidence matrix, cut set and tie set matrices, dual networks.

Module 3 (07 hrs.)

Frequency domain analysis –Review of Laplace transform, solution of Integro-differential equations, transform of waveform synthesized with step ramp, Gate and sinusoidal functions, Initial & final value theorem, Network Theorems in transform domain.

Module 4 (07 hrs.)

Concept of signal spectra, Fourier series co-efficient of a periodic waveform, symmetries as related to Fourier coefficients, Trigonometric & Exponential form of Fourier series.

Module 5 (07 hrs.)

Network function & Two port networks – concept of complex frequency, Network & Transfer functions for one port & two ports, poles and zeros, Necessary condition for driving point & transfer function. Two port parameters – Z, Y, ABCD, Hybrid parameters, their inverse &image parameters, relationship between parameters, Interconnection of two ports networks, terminated two port networks.

Experiment List

1. To Verify Thevenin Theorem.
2. To Verify Superposition Theorem.
3. To Verify Reciprocity Theorem.
4. To Verify Maximum Power Transfer Theorem.
5. To Verify Millman's Theorem.
6. To Find Frequency Response of RLC Series Circuit.
7. To Find Frequency Response of RLC parallel Circuit.
8. To Determine Open Circuit parameters of a Two Port Network and to Determine Short Circuit parameters of a Two Port Network.
9. To Determine A,B, C, D parameters of a Two Port Network
10. To Determine h parameters of a Two Port Network

Course Outcomes: Students will be able to

CO1: i. understand circuit elements R,L & C and various sources.
ii. apply various network theorems (Superposition, Thevenin's & Norton's Theorem etc). for the analysis of electrical networks

CO2: i. write equilibrium equations for the transients and steady state analysis of a network.
ii. understand resonance in circuits.

CO3: apply Laplace transforms for the solution for network with periodic /aperiodic excitation

CO4: apply Fourier series analysis for study of harmonics in voltage / current in a network.

CO5: compute z,y, ABCD etc., parameters of a two port network and their applications.

Text/ Reference books:

1. M.E. Van Valkenburg, Network Analysis, Pearson
2. U.A. Patel, Circuit And Networks, Mahajan Publishing House.
3. J David Irwin, Robert M Nelms, Engineering Circuit Analysis, WileyIndia,2015
4. Abhijit Chakrabarty Circuit Theory, Dhanpat Rai & sons

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Electrical and Electronics Engineering Department

PCC - EEE302	Analog Electronics	3L: 0T: 2P (5 hrs.)	4 credits

Course Objective: The objective of this course is to familiarize the students with fundamental properties of semiconductors, diodes, transistors, amplifiers, oscillators, operational amplifiers and performing the analysis of any Analog electronics circuit. The course also provides hands on experience in setting up of simple electronic circuit.

Pre Requisite: should know basics of circuit analysis techniques, physics and mathematics.

Module 1(10 hrs.)
Semiconductor Diodes: Theory of P-N junction, temperature dependence and break down characteristics, junction capacitances, Zener diode, Varactor diode, Tunnel diode, PIN diode, LED, Photo diode, Schottky diode, Diode applications: series –parallel configurations, full wave and half wave rectification, voltage multiplier circuits, diode testing, Zener diode as voltage regulator.

Module 2 (10hrs.)
Transistors: BJT, types& configuration, working principal, characteristics, and region of operation, load line, biasing methods, Small signal analysis of transistor (low frequency) using h parameters, thermal runaway and thermal stability.FET, MOSFET- series –parallel configurations, Transistor as an amplifier, gain, bandwidth, frequency response.

Module 3 (6 hrs.)
Feedback amplifier and Oscillators: Feedback amplifier, negative feedback, voltage-series, voltage shunt, current series and current shunt feedback, Sinusoidal oscillators, L-C (Hartley-Colpitts) oscillators, RC phase shift, Wien bridge, and Crystal oscillators. Power amplifiers, class A, class B, class A B, C amplifiers, their efficiency and power Dissipation, Push-pull and complimentary symmetry push-pull amplifier.

Module 4 (5 hrs.)
Wave Shaping circuits: Switching characteristics of diode and transistor, turn ON, OFF time, reverse recovery time, transistor as switch, Multivibrators, Bistable, Monostable, Astable multivibrators. Clipper and clamper circuit, Differential amplifier, calculation of differential, common mode gain and CMRR using h- parameters, Darlington pair, Boot strapping technique. Cascade and cascade amplifier.

Module 5 (10hrs.)
Operational Amplifier: Operational amplifier basics- various types of ICs and packages, pin identification, temperature range and other parameters. Characteristics of ideal op-amp and practical op-amp, equivalent circuit, virtual ground. Non-idealities in an op-amp: input offset

voltage, and current, input bias current, differential input resistance, input capacitance, offset voltage adjustment range, common mode rejection ratio, supply voltage rejection ratio output voltage swing, output resistance, supply current, power consumption, transient response, slew rate, gain bandwidth product. Op-amp applications: inverting, noninverting amplifier, summer, average, differentiator, integrator, differential amplifier, instrumentation amplifier, log and antilog amplifier, voltage to current and current to voltage converters, comparators, zero crossing detector ,Schmitt trigger and limitations, multivibrators, active filters, 555 timer and its application.

List of Experiments

1. Study and draw I-V characteristics of PN junction diode, zener diode and LED.
2. Design of wave shaping circuits using diode.
3. Study input and output characteristics of BJT.
4. Study BJT CE amplifier.
5. Design & measure the frequency response of an RC coupled amplifier using discrete components.
6. Design a two stage RC coupled amplifier and determine the effect of cascading on gain and bandwidth.
7. Design & realize inverting, non-inverting, buffer amplifier and wein bridge oscillator using 741 op-amps.
8. Verify the operation of a differentiator circuit using op amp IC 741 and show that it acts as a high pass filter.
9. Verify the operation of a integrator circuit using op amp 741 and show that it acts as a low pass filter.
10. Design & Verify the operation of adder and subtractor circuit using op amp 741.
11. Study of IC 555 as astable and monostable multivibrator.

Course Outcomes: Students will be able to

CO1: Apply the knowledge of semiconductors and PN junction diodes in various applications.

CO2: Illustrate design and working of BJT and FET. Analyze and discuss BJT in different types of configurations such as CC, CE, CB.

CO3: Design & analyze the transistor as an amplifier and oscillator.

CO4: Design and analyze different types of wave shaping circuits.

CO5: Design of operational amplifiers circuits and their applications.

Text/ Reference books

1. Robert L Boylestad, Louis Nashelsky; Electronic Devices and Circuits; Pearson.
2. Jacob Millman, Cristos C Halkias, Satyabrata Jit; Electronic Devices and Circuits; McGraw- Hill.
3. S Salivahanan, N Suresh Kumar; Electronic Devices and Circuits; McGraw- Hill.
4. A. S. Sedra and K. C. Smith, “Microelectronic Circuits”, New York, Oxford University Press, 1998.

HSMC-EEE-301	**Professional Communication Skills**	**3L: 0T: 0P (3 hrs.)**	**Credit 3**

Course Objectives: The objective of the course is to help the students to acquire the basics of interpersonal communication, corporate communication and soft skills, so as to improve their skills and ability to understand others along with the personality development as per the requirement of the corporate world.

Course Outcomes:

Student will develop knowledge, skills and judgment around human communication that facilitate their ability to work collaboratively with others. Such Skills could include communication competencies such as managing conflict, understanding small group processes, active listening, and appropriate self disclosure.

Course Contents:

Module-I

Fundamentals of Communication

Defining Communication, Role, Nature & Objectives of Communication, Process of Communication, Importance of Feedback, Distinguishing between General and Business Communication, Aristotle Model of Communication, Shannon and Weaver Model of Communication, Rhetoric Triangle of Communication: Understanding Logos, Ethos & Pathos (Purdue Online Writing Lab, DukeThomson Writing Program)

Module-II

Classification of Communication

Language as a tool of Communication, Verbal: Oral and Written, Merits and Demerits. Non Verbal: Kinesics, Proxemics, Haptics, Chronemics, Paralanguage, Sign/Symbol, Meta Communication, and Cultural differences in Non-Verbal Communication, Channels of Communication: Formal: Upward, Downward, Lateral, Informal: Different models of Grapevine, Advantages and Disadvantages of the Grapevine

Module- III

Barriers to Communication

Introduction, Types of Barriers: Physical, Social, Psychological, Semantic, Emotional, Cultural, Language, Technical, Organizational, Personal and ways to overcome them. Listening Skills: Importance, Process, Barriers and Types

Module- IV

Business Correspondence

Introduction to Business Writing, Nature and Function, Layout, Structure and Component of Business Writing, Types of Business Letters: Enquiry, Quotation, Order, Complaint, Adjustment, Collection, Sales, Tenders, Email Writing

Module–V

Presentation Skills and Public Speaking

Elements of Presentation, Tips for Effective Presentation, Factors affecting Public Speaking, Presentation of student with the help of audio-visual aids

Text Books:

1. Effective Technical Communication by M. Ashraf Rizvi, Tata McGraw-Hill Publishing Company Limited, New Delhi,2005
2. Communication Skills by Sanjay Kumar and Pushplata, OUP, New Delhi, 2011
3. Communication Skill for Engineers and Scientist by Sangeeta Sharma and Vinod Mishra, PHI Learning, New Delhi, 2015
4. Business Communication by Dr. V.G. Sadh, Thakur Publications, Lucknow,2013
5. Business Correspondence and Report Writing by R.C. Sharma and Krishna Mohan, Tata McGraw-Hill Publishing Company Limited, New Delhi,2008

Reference Books:

1. Bonet, Diana. The Business of Listening: Third Edition. New Delhi: Viva Books, 2004.
2. Carnegie, Dale. The Quick and Easy Way to Effective Speaking. New York: Pocket Books, 1977.
3. Hasson, Gill. Brilliant Communication Skills. Great Britain: Pearson Education, 2012.
4. Moore, Ninja-Jo, et al. Nonverbal Communication: Studies and Applications. New York: Oxford University Press, 2010.
5. Rutherford, Andrea J. Basic Communication Skills for Technology: Second Edition. Delhi: Pearson Education, 2007.

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Electrical and Electronics Engineering Department

PCC –EEE303	Instrumentation & Measurement	3L: 0T: 2P (5hrs.)	4 Credits

Course Objective: The objective of this course is to familiarize the students with fundamentals of Electrical and Electronics measuring instruments for providing an in-depth understanding of errors, different type of meters, bridge and transducers.

Pre Requisite: Students should aware about the fundamental of physics and measuring instruments.

Module 1 (07hrs.)
Unit I: **Fundamentals of Measurement system**

Introduction- Measurement and their methods, Static and Dynamic Characteristics of measurement systems, Classification of error in Measurement, Loading effects due to shunt connected and series connected in instruments, calibration curve, Testing & calibration of instruments. Classification of analog instruments, their operating principle, Operating force, Types of supports, Damping and Controlling.

Module 2(09hrs.)
Galvanometers

Theory, principle of operation and construction of ballistic galvanometer, D'arsonal galvanometer, Sensitivity Analysis– Different types of Ammeter & Voltmeter -PMMC- Ammeter, Voltmeter, MI- Ammeter, Voltmeter, dynamometer- Ammeter, Voltmeter, Induction - Ammeter, Voltmeter, Wattmeter .Electrostatic Voltmeter-Digital Voltmeter, Ammeter, Multimeter and Wattmeter ,Extension range of Instruments.

Module 3 (08hrs.)
Measurements of power & Instruments Transformer:

Power in AC and DC Circuit, Electrodynamometer type of wattmeter, Construction, operation, Low power factor & UPF wattmeter, Measurement of power in three phase circuit Using wattmeter method, Measurement of reactive power by single wattmeter .

Measurement of Energy: Single phase Induction type energy meter – construction & operation – KVAR meter Tri-vector meter, Maximum demand meter, Ampere hour meter.

Instrument transformers: Potential and current transformers, Construction and working principle

Module 4 (08hrs.)
A.C. Bridge and Resistance Measurement
Sources and detectors, Use of Bridges for measurement of inductance, Capacitance & Q factor Maxwells Bridge, Maxwells inductance Capacitance Bridge, Hays Bridge, Andersons Bridge, Owen's Bridge, De-sauty's Bridge, Schering Bridge.
Resistance Measurement -Wheatstone bridge, Kelvin's double bridge & loss of charge methods for resistance, Earth resistance measurement.

Module 5 (08hrs.)
Transducers
Transducers definition and classification, mechanical devices as primary detectors, Characteristic & choice of Transducers, Resistive inductive and capacitive transducers, strain gauge and gauge factor, Thermistor, Thermo couples, LVDT, RVDT, Synchros , Piezo Electric transducers, Magnet elastic and magneto strictive Hall effect transducers, Optoelectronic transducers, Introduction of CRO.

List of Experiments

1. Study of various types of Indicating Instruments
2. Measurement of power in a single phase ac circuit by 3 voltmeter/ 3 Ammeter method
3. Measurement of low resistance using Kelvin's Double bridge
4. Measurement of medium resistance using Wheatstone's bridge
5. Calibration of single phase energy type meter
6. Measurement of Power in three phase circuit by two wattmeters.
7. Measurement of inductance of a coil using Anderson Bridge
8. Measurement of capacitance of a capacitor using Schering Bridge
9. LVDT and capacitance transducers characteristics and calibration
10. Resistance Strain Gauge - Strain Measurement and Calibration.

Course Outcomes: Students will be able to
CO1: Explain different types of errors in measurement.
CO2: Illustrate the construction details and principle of Galvanometer and different type of ammeter and voltmeter.
CO3: Explain about power measurement and Energy meter
CO4: Knowledge of bridges for measurement of inductance, capacitance and resistance.
CO5: Describe different types of transducers and its applications.

Text/ Reference books

1. A. K. Sawhney, "A course in Electrical and Electronics Measurement and Instrumentation", Tenth edition, Dhanpat Rai, 1994
2. Helfrick and Cooper, "Modern Electronic Instrumentation and Measurement Techniques" Pearson, 2007
3. J. B. Gupta, "Electrical Measurements and Measuring Instruments", Fourth Edition, katson Publisher, 1979.Langsdorf, A.C. Machines, McGraw-Hill
4. David A.Bell, "Electronic Instrumentation & Measurements"-PHI, 2nd Edition, 2003.

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Electrical and Electronics Engineering Department

PCC-EEE304	Electrical Workshop Lab.	0L: 0T: 4 P (4 hrs.)	2 Credits

Course Objective: - The objective of this course is to familiarize the students with commonly used components, accessories and measuring equipment in Electrical installations and maintenance. The course also provides hands on experience in setting up of simple wiring circuits.

Pre Requisite: - Students should aware about the fundamentals of electrical engineering.

List of Experiments

1. Identify different types of fuses & fuse carriers, MCB, MCCB with ratings and usage.
2. Understand the working and Control of two lamps in series and in parallel.
3. Demonstrate the working principle and wiring of fluorescent lamp.
4. Understand wiring of distribution board including power plug using isolator, MCB.
5. Familiarization, soldering, testing and observing the wave forms on CRO of a HW and FW uncontrolled rectifier (using diodes) with capacitor filter.
6. Measurement of voltage, current, resistance, inductance, and capacitance in a given RLC circuit using LCR meter and Multimeter.
7. Visit your college substation and familiarize the supply system, Transformer, HT Panel and Distribution etc.
8. Demonstrate construction, working and application of workshop tools. Also study the Electrical and Electronics Symbols.
9. Demonstrate the wires, cables and their gauges, Domestic Electrical Accessories.
10. Understand fault, Remedies in Domestic Installation and Indian Electricity Rules.
11. Understand the different types of earthing system and measure the earth resistance.
12. Demonstration and measurement of power consumption of electric iron, mixer grinder, single phase pump, exhaust fan, etc.
13. Minor Project on PCB.

Course Outcomes: Students will be able to

CO1 Acquire knowledge about skills in basic electrical engineering practice & instruments to acquire measuring skills.

CO2 Acquire knowledge about fundamental concepts of different protection devices of electrical wiring system.

CO3 Learn the physical recognition of different electrical & Electronics components like

Resistances, Inductances, Capacitances, diodes, transistors and their ratings.

CO4 Check ratings of commonly used house hold electrical appliances & expected to be able to understand the different wiring schemes used around them like in their homes, shops, college, etc.

CO5 Check ratings of commonly used house hold electrical appliances. Students are expected to be able to understand the different wiring schemes used around them like in their homes, shops, college, etc.

Text/ Reference books

1. A Course in Electrical Installation Estimating & Costing by J.B. Gupta
2. Electrical Wiring Estimating and Costing By S. L. Uppal

MC3	Energy & Environmental Engineering	2L:0T:0P (02 hrs)	Credit:00

Course objective- To provide an introduction to energy resources and an emphasis on alternative energy sources and their application. To study the interrelationship between the living organism and environment. To understand the transformation and degradation of organic pollutants in the environment.

Course content

MODULE 1: (06 hrs)

Energy: Introduction, conventional and non-conventional energy resources - coal, oil, gas, solar energy, wind energy, geothermal energy, Hydropower, Bio-energy, Nuclear energy. Energy survey in India. Current and future energy requirements in India and across the world including associated environmental problems.

MODULE 2: (08 hrs)

Ecosystem and Biodiversity: Introduction of an eco system, Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, rivers, oceans),Biodiversity at global, national and local levels. Threats to biodiversity, Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values; Endangered and endemic species of India. Conservation of biodiversity: In-Situ and Ex-Situ.

MODULE 3: (08 hrs)

Air pollution and Water Pollution: Definition, Cause, effects and control measures of Air pollution; Mobile and stationary sources of air pollutants, effective stack height concept, CO, CO2, H2S, SOx, NOx emissions, and its control. Definition, Classification, Cause, effects and control measures of water pollution, Measurement of levels of pollution such as DO, BOD, COD.

MODULE 4: (06 hrs)

e-Waste: Definition, Classification, Cause, effects and control measures of e-waste, global trade issues of e-waste, Recycling method of e-waste & its benefit.

MODULE 5: (08 hrs)

Environment Impact & Protection Act Environment: Protection Act; Air (Prevention and Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act;

Forest Conservation Act; Issues involved in enforcement of environmental legislation; Public awareness. Environmental Impact Assessment. Measuring environmental impacts and policies for the regulation of environmental impacts.

Course Outcomes: After completion of this course, the students are able to:
CO1: Ability to understand basic concepts conventional and non-conventional energy resources.
CO2: Ability to understand Ecosystem& Biodiversity.
CO3: To provide knowledge about Air pollution & Water Pollution.
CO4: To provide knowledge & reuse of E-Waste
CO5: Ability to understand basic concepts of Environment Impact & Protection Act.

Text/Reference Book

1. H. Peavy, D. Rowe & G. Tchobanoglous. Environmental Engineering, McGraw Hill Education. 2017.
2. A. K. De, Environmental Chemistry, 1 st Edition New Age Publisher Int. Pvt. Ltd. 2016.
3. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai.
4. C.R. Brunner, Hazardous Waste Incineration, McGraw Hill Inc. 1993.
5. R.K. Trivedi, Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards', Vol I and II, B.S. Publications, 2010.