

ANNA UNIVERSITY COIMBATORE

CURRICULUM AND SYLLABI UNDER REGULATIONS 2008 FOR AFFILIATED INSTITUTIONS (with effect from the academic year 2008 – 2009)

(Common to all B.E. / B.Tech. Degree Programmes)

SEMESTER II

Sino	Course Code	Course Title	L	T	P	M	C
		THEORY					
1	080020003	Technical English – II*	3	1	0	100	4
2	080030004	Mathematics – II*	3	1	0	100	4
3	080040002	Engineering Physics – II*	3	0	0	100	3
4	080010002	Engineering Chemistry –II*	3	0	0	100	3
5a	080120002	Engineering Mechanics (For non-circuit branches)	3	1	0	100	4
b	080280005	Circuit Theory (For branches under Electrical Faculty)	3	1	0	100	4
c	080290007	Electric Circuits and Electron Devices (For branches under I & C Faculty)	3	1	0	100	4
6a	080280011	Basic Electrical & Electronics Engineering (For non-circuit branches)	4	0	0	100	4
b	080510002	Basic Civil & Mechanical Engineering (For circuit branches)	4	0	0	100	4
7	080230006	Computer Practice Laboratory-II *	0	1	2	100	2
8	080640001	Physics & Chemistry Laboratory*	0	0	3	100	2
9a	080120008	Computer Aided Drafting and Modeling Laboratory (For non-circuits branches)	0	1	2	100	2
b	080280008	Electrical Circuits Laboratory (For branches under Electrical Faculty)	0	0	3	100	2
c	080290004	Circuits and Devices Laboratory (For branches under I & C Faculty)	0	0	3	100	2
Total : 32 periods							

* Common to all BE/B.Tech Programmes

A. CIRCUIT BRANCHES

I Faculty of Electrical Engineering

1. B.E. Electrical and Electronics Engineering
2. B.E. Electronics and Instrumentation Engineering
3. B.E. Instrumentation and Control Engineering

II Faculty of Information and Communication Engineering

1. B.E. Computer Science and Engineering
2. B.E. Electronics and Communication Engineering
3. B.E. Bio Medical Engineering
4. B.E. Medical Electronics
5. B.Tech. Information Technology

B. NON – CIRCUIT BRANCHES

I Faculty of Civil Engineering

1. B.E. Civil Engineering

II Faculty of Mechanical Engineering

1. B.E. Aeronautical Engineering
2. B.E. Automobile Engineering
4. B.E. Mechanical Engineering
5. B.E. Production Engineering
6. B.E. Mechatronics Engineering

III Faculty of Technology

1. B.Tech. Chemical Engineering
2. B.Tech. Biotechnology
3. B.Tech. Textile Technology
4. B.Tech. Textile Technology (Fashion Technology)
5. B.Tech. Textile Chemistry

Aims and Objectives same as in Semester I

UNIT I

- L - Listening to cultural awareness
- R - Inferential Reading
- W - Letter writing - Informal and Formal
- S - Developing confidence
- LF - Adjectives, Degrees of comparison

SUGGESTED ACTIVITIES:

- L - Listening to casual conversations, talks, interviews and lectures.
- R - Reading business articles
- W - Thank you letters, calling for quotations, placing an order,
seeking clarification, letters of complaint
- S - Describing and Discussing
- LF - Exercises - equal and unequal comparison

UNIT II

- L - Listening to specific information relating to technical content
- R - Reading Texts
- W - Letter writing - Formal
- S - Expressing opinions
- LF - Simple, compound and complex sentences

SUGGESTED ACTIVITIES:

- L - Listening for statistical information
- R - Exercises related to articles (in magazines) and comparing articles
- W - Letter seeking permission to undergo practical training
and undertake project work
- S - Exercises related to discussing, describing role play and oral summarising
- LF - Exercises related to transformation of sentences

UNIT III

- L - Listening to specific information relating to technical content
- R - Skimming and Scanning
- W - Formal Letter writing
- S - Giving Instructions
- LF - Pronouns, Phrasal verbs, Restrictive and Non - restrictive clauses

SUGGESTED ACTIVITIES:

- L - Exercises related to listening to interviews and presentations
 - R - Reading Job applications
 - W - Applying for a Job, Writing a CV
 - S - Exercises related to discussing, describing role play and oral summarising of instructions
 - LF - Exercises related to vocabulary and Grammar
-

UNIT IV

- L - Listening and retrieving Information
- R - Skimming and Scanning
- W - Letter writing, Report writing
- S - Developing fluency and Coherence
- LF - Countable, Uncountable nouns, Vocabulary relating to graphical representation, Recommendations

SUGGESTED ACTIVITIES:

- L - Exercises related to listening and retrieving information
 - R - Reading advertisements
 - W - Letters to the Editor, Letter of Complaint, Various kinds of Report writing meetings, industrial visits
 - S - Activities related to intonation and improving voice quality
 - LF - Exercises related to vocabulary and grammar structure and examples of situational recommendations (Should form)
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UNIT V

- L - Listening and retrieving Information
- R - Predicting content
- W - Writing proposals, Agenda, Minutes of the meeting
- S - Developing coherence and self expression, making presentations
- LF - British and American Vocabulary, Error Detection, Punctuation

SUGGESTED ACTIVITIES:

- L - Exercises related to listening and retrieving information, gapped texts
 - R - Interpreting Business reports
 - W - Writing Proposals (Symposiums, seminars, conferences)
Agenda and Minutes of the meeting (Class committee meeting etc.)
 - S - Paralinguistic and extra linguistic features (body language, short presentations)
 - LF - Exercises related to British and American vocabulary (Differences in vocabulary, spelling etc), Editing texts
-

Text Book:

Norman Whitby - Business Benchmark Pre-Intermediate to Intermediate, Students Book, Cambridge University Press, 2008.

References:

A Course in Communication Skills(Anna University, coimbatore edition) : Dutt, Rajeevan, Prakash. Cambridge University Press India Pvt.Ltd, 2007

Meenakshi Raman and Sangeeta Sharma-'Technical Communication English Skills for Engineers'; Oxford University Press, 2008.

Extensive Reading:

A.P.J. Abdul Kalam with Arun Tiwari, 'Wings of Fire' An Autobiography, University Press India Pvt. Ltd., 1999, 30th Impression 2007.

Randy Pausch, The Last Lecture: July 2008. Also available on youtube.com

Edward De Bono :Six Thinking Hats, Little Brown & Co. 1999 Also available as e book on Google 192 pages

(The students can select any two of the above books)

UNIT I CONDUCTING MATERIALS

9

Conductors – classical free electron theory of metals – Electrical and thermal conductivity – Wiedemann – Franz law – Lorentz number – Draw backs of classical theory – Quantum theory – Fermi distribution function – Effect of temperature on Fermi Function – Density of energy states – carrier concentration in metals.

UNIT II SEMICONDUCTING MATERIALS

9

Intrinsic semiconductor – carrier concentration derivation – Fermi level – Variation of Fermi level with temperature – electrical conductivity – band gap determination – extrinsic semiconductors – carrier concentration derivation in n-type and p-type semiconductor – variation of Fermi level with temperature and impurity concentration – compound semiconductors – Hall effect – Determination of Hall coefficient – Applications.

UNIT III MAGNETIC AND SUPERCONDUCTING MATERIALS

9

Origin of magnetic moment – Bohr magneton – Dia and para magnetism – Ferro magnetism – Domain theory – Hysteresis – soft and hard magnetic materials – anti – ferromagnetic materials – Ferrites – applications – magnetic recording and readout – storage of magnetic data – tapes, floppy and magnetic disc drives.
Superconductivity : properties - Types of super conductors – BCS theory of superconductivity(Qualitative) - High T_c superconductors – Applications of superconductors – SQUID, cryotron, magnetic levitation.

UNIT IV DIELECTRIC MATERIALS

9

Electrical susceptibility – dielectric constant – electronic, ionic, orientational and space charge polarization – frequency and temperature dependence of polarisation – internal field – Claussius – Mosotti relation (derivation) – dielectric loss – dielectric breakdown – uses of dielectric materials (capacitor and transformer) – ferroelectricity and applications.

UNIT V MODERN ENGINEERING MATERIALS

9

Metallic glasses: preparation, properties and applications.
Shape memory alloys (SMA): Characteristics, properties of NiTi alloy, application, advantages and disadvantages of SMA
Nanomaterials: synthesis –plasma arcing – chemical vapour deposition – sol-gels – electrodeposition – ball milling - properties of nanoparticles and applications.
Carbon nanotubes: fabrication – arc method – pulsed laser deposition – chemical vapour deposition - structure – properties and applications.

TEXT BOOKS:

1. Charles Kittel ‘ Introduction to Solid State Physics’, John Wiley & sons, 7th edition, Singapore (2007)
2. Charles P. Poole and Frank J.Owren, ‘Introduction to Nanotechnology’, Wiley India(2007) (for Unit V)

REFERENCES:

1. Rajendran, V, and Marikani A, ‘Materials science’ TMH publications, (2004) New delhi.
2. Jayakumar, S. ‘Materials science’, R.K. Publishers, Coimbatore, (2008).
3. Palanisamy P.K, ‘Materials science’, Scitech publications(India) Pvt. LTd., Chennai, second Edition(2007)
4. M. Arumugam, ‘Materials Science’ Anuradha publications, Kumbakonam, (2006).

To impart a sound knowledge on the principles of chemistry involving the different application oriented topics required for all engineering branches.

OBJECTIVES

- The student should be conversant with the principles electrochemistry, electrochemical cells, emf and applications of emf measurements.
- Principles of corrosion control
- Chemistry of Fuels and combustion
- Industrial importance of Phase rule and alloys
- Analytical techniques and their importance.

UNIT I ELECTROCHEMISTRY 9

Electrochemical cells – reversible and irreversible cells – EMF – measurement of emf – Single electrode potential – Nernst equation (problem) – reference electrodes – Standard Hydrogen electrode – Calomel electrode – Ion selective electrode – glass electrode and measurement of pH – electrochemical series – significance – potentiometer titrations (redox - Fe^{2+} vs dichromate and precipitation – Ag^+ vs Cl^- titrations) and conductometric titrations (acid-base – HCl vs, NaOH) titrations,

UNIT II CORROSION AND CORROSION CONTROL 9

Chemical corrosion – Pitting – Bedworth rule – electrochemical corrosion – different types – galvanic corrosion – differential aeration corrosion – factors influencing corrosion – corrosion control – sacrificial anode and impressed cathodic current methods – corrosion inhibitors – protective coatings – paints – constituents and functions – metallic coatings – electroplating (Au) and electroless (Ni) plating.

UNIT III FUELS AND COMBUSTION 9

Calorific value – classification – Coal – proximate and ultimate analysis metallurgical coke – manufacture by Otto-Hoffmann method – Petroleum processing and fractions – cracking – catalytic cracking and methods-knocking – octane number and cetane number – synthetic petrol – Fischer Tropsch and Bergius processes – Gaseous fuels- water gas, producer gas, CNG and LPG, Flue gas analysis – Orsat apparatus – theoretical air for combustion.

UNIT IV PHASE RULE AND ALLOYS 9

Statement and explanation of terms involved – one component system – water system – condensed phase rule – construction of phase diagram by thermal analysis – simple eutectic systems (lead-silver system only) – alloys – importance, ferrous alloys – nichrome and stainless steel – heat treatment of steel, non-ferrous alloys – brass and bronze.

UNIT V ANALYTICAL TECHNIQUES 9

Beer-Lambert's law (problem) – UV-visible spectroscopy and IR spectroscopy – principles – instrumentation (problem) (block diagram only) – estimation of iron by colorimetry – flame photometry – principle – instrumentation (block diagram only) – estimation of sodium by flame photometry – atomic absorption spectroscopy – principles – instrumentation (block diagram only) – estimation of nickel by atomic absorption spectroscopy.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. P.C.Jain and Monica Jain, "Engineering Chemistry" Dhanpat Rai Pub, Co., New Delhi (2002).
2. S.S.Dara "A text book of Engineering Chemistry" S.Chand & Co.Ltd., New Delhi (2006).

REFERENCES:

1. B.Sivasankar "Engineering Chemistry" Tata McGraw-Hill Pub.Co.Ltd, New Delhi (2008).
2. B.K.Sharma "Engineering Chemistry" Krishna Prakasan Media (P) Ltd., Meerut (2001).

OBJECTIVE

At the end of this course the student should be able to understand the vectorial and scalar representation of forces and moments, static equilibrium of particles and rigid bodies both in two dimensions and also in three dimensions. Further, he should understand the principle of work and energy. He should be able to comprehend the effect of friction on equilibrium. He should be able to understand the laws of motion, the kinematics of motion and the interrelationship. He should also be able to write the dynamic equilibrium equation. All these should be achieved both conceptually and through solved examples.

UNIT I BASICS & STATICS OF PARTICLES 12

Introduction – Units and Dimensions – Laws of Mechanics – Lame's theorem, Parallelogram and triangular Law of forces – Vectors – Vectorial representation of forces and moments – Vector operations: additions, subtraction, dot product, cross product – Coplanar Forces – Resolution and Composition of forces – Equilibrium of a particle – Forces in space – Equilibrium of a particle in space – Equivalent systems of forces – Principle of transmissibility – Single equivalent force.

UNIT II EQUILIBRIUM OF RIGID BODIES 12

Free body diagram – Types of supports and their reactions – requirements of stable equilibrium – Moments and Couples – Moment of a force about a point and about an axis – Vectorial representation of moments and couples – Scalar components of a moment – Varignon's theorem – Equilibrium of Rigid bodies in two dimensions – Equilibrium of Rigid bodies in three dimensions – Examples

UNIT III PROPERTIES OF SURFACES AND SOLIDS 12

Determination of Areas and Volumes – First moment of area and the Centroid of sections – Rectangle, circle, triangle from integration – T section, I section, - Angle section, Hollow section by using standard formula – second and product moments of plane area – Rectangle, triangle, circle from integration – T section, I section, Angle section, Hollow section by using standard formula – Parallel axis theorem and perpendicular axis theorem – Polar moment of inertia – Principal moments of inertia of plane areas – Principal axes of inertia – Mass moment of inertia – Derivation of mass moment of inertia for rectangular section, prism, sphere from first principle – Relation to area moments of inertia.

UNIT IV DYNAMICS OF PARTICLES 12

Displacements, Velocity and acceleration, their relationship – Relative motion – Curvilinear motion – Newton's law – Work Energy Equation of particles – Impulse and Momentum – Impact of elastic bodies.

UNIT V FRICTION AND ELEMENTS OF RIGID BODY DYNAMICS 12

Frictional force – Laws of Coloumb friction – simple contact friction – Rolling resistance – Belt friction.
Translation and Rotation of Rigid Bodies – Velocity and acceleration – General Plane motion.

TOTAL: 60 PERIODS

TEXT BOOK:

1. Beer, F.P and Johnson Jr. E.R. "Vector Mechanics for Engineers", Vol. 1 Statics and Vol. 2 Dynamics, McGraw-Hill International Edition, (1997).

REFERENCES:

1. Rajasekaran, S, Sankarasubramanian, G., "Fundamentals of Engineering Mechanics", Vikas Publishing House Pvt. Ltd., (2000).
2. Hibbeler, R.C., "Engineering Mechanics", Vol. 1 Statics, Vol. 2 Dynamics, Pearson Education Asia Pvt. Ltd., (2000).
3. Palanichamy, M.S., Nagam, S., "Engineering Mechanics – Statics & Dynamics", Tata McGraw-Hill, (2001).
4. Irving H. Shames, "Engineering Mechanics – Statics and Dynamics", IV Edition – Pearson Education Asia Pvt. Ltd., (2003).
5. Ashok Gupta, "Interactive Engineering Mechanics – Statics – A Virtual Tutor (CDROM)", Pearson Education Asia Pvt., Ltd., (2002).

UNIT I BASIC CIRCUITS ANALYSIS 12

Ohm's Law – Kirchoffs laws – DC and AC Circuits – Resistors in series and parallel circuits – Mesh current and node voltage method of analysis for D.C and A.C. circuits.

UNIT II NETWORK REDUCTION AND NETWORK THEOREMS FOR DC AND AC CIRCUITS: 12

Network reduction: voltage and current division, source transformation – star delta conversion.

Thevenins and Norton & Theorem – Superposition Theorem – Maximum power transfer theorem – Reciprocity Theorem.

UNIT III RESONANCE AND COUPLED CIRCUITS 12

Series and parallel resonance – their frequency response – Quality factor and Bandwidth - Self and mutual inductance – Coefficient of coupling – Tuned circuits – Single tuned circuits.

UNIT IV TRANSIENT RESPONSE FOR DC CIRCUITS 12

Transient response of RL, RC and RLC Circuits using Laplace transform for DC input and A.C. with sinusoidal input.

UNIT V ANALYSING THREE PHASE CIRCUITS 12

Three phase balanced / unbalanced voltage sources – analysis of three phase 3-wire and

4-wire circuits with star and delta connected loads, balanced & unbalanced – phasor diagram of voltages and currents – power and power factor measurements in three phase circuits.

TOTAL :60 PERIODS

TEXT BOOKS:

1. William H. Hayt Jr, Jack E. Kemmerly and Steven M. Durbin, "Engineering Circuits Analysis", TMH publishers, 6th edition, New Delhi, (2002).
2. Sudhakar A and Shyam Mohan SP, "Circuits and Network Analysis and Synthesis", Tata McGraw Hill, (2007).

REFERENCES:

1. Paranjothi SR, "Electric Circuits Analysis," New Age International Ltd., New Delhi, (1996).
2. Joseph A. Edminister, Mahmood Nahri, "Electric circuits", Schaum's series, Tata McGraw-Hill, New Delhi (2001).
3. Chakrabati A, "Circuits Theory (Analysis and synthesis), Dhanpath Rai & Sons, New Delhi, (1999).
4. Charles K. Alexander, Mathew N.O. Sadik, "Fundamentals of Electric Circuits", Second Edition, McGraw Hill, (2003).

080290007 ELECTRIC CIRCUITS AND ELECTRON DEVICES 3 1 0 100 4
(For ECE, CSE, IT and Biomedical Engg. Branches)

UNIT I CIRCUIT ANALYSIS TECHNIQUES 12

Kirchoff's current and voltage laws – series and parallel connection of independent sources – R, L and C – Network Theorems – Thevenin, Superposition, Norton, Maximum power transfer and duality – Star-delta conversion.

UNIT II TRANSIENT RESONANCE IN RLC CIRCUITS 12

Basic RL, RC and RLC circuits and their responses to pulse and sinusoidal inputs – frequency response – Parallel and series resonances – Q factor – single tuned and double tuned circuits.

UNIT III SEMICONDUCTOR DIODES 12

Review of intrinsic & extrinsic semiconductors – Theory of PN junction diode – Energy band structure – current equation – space charge and diffusion capacitances – effect of temperature and breakdown mechanism – Zener diode and its characteristics.

UNIT IV TRANSISTORS 12

Principle of operation of PNP and NPN transistors – study of CE, CB and CC configurations and comparison of their characteristics – Breakdown in transistors – operation and comparison of N-Channel and P-Channel JFET – drain current equation – MOSFET – Enhancement and depletion types – structure and operation – comparison of BJT with MOSFET – thermal effect on MOSFET.

UNIT V SPECIAL SEMICONDUCTOR DEVICES (Qualitative Treatment only) 12

Tunnel diodes – PIN diode, varactor diode – SCR characteristics and two transistor equivalent model – UJT – Diac and Triac – Laser, CCD, Photodiode, Phototransistor, Photoconductive and Photovoltaic cells – LED, LCD.

TOTAL : 60 PERIODS

TEXT BOOKS:

1. Joseph A. Edminister, Mahmood, Nahri, "Electric Circuits" – Shaum series, TMH, (2001)
2. S. Salivahanan, N. Suresh kumar and A. Vallavanraj, "Electronic Devices and Circuits", 2nd Edition, (2008).
3. David A. Bell, "Electronic Devices and Circuits", Oxford University Press, 5th Edition, (2008).

REFERENCES:

1. Robert T. Paynter, "Introducing Electronics Devices and Circuits", Pearson Education, 7th Edition, (2006).
2. William H. Hayt, J.V. Jack, E. Kemmebly and Steven M. Durbin, "Engineering Circuit Analysis", TMH, 6th Edition, 2002.
3. J. Millman & Halkins, Satyabranta Jit, "Electronic Devices & Circuits", TMH, 2nd Edition, 2008.

080280011 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING 4 0 0 100 4
(Common to branches under Civil, Mechanical and Technology faculty)

UNIT I ELECTRICAL CIRCUITS & MEASUREMENTS 9

Ohm's Law – Kirchoff's Laws – Steady State Solution of DC Circuits – Introduction to AC Circuits – Waveforms and RMS Value – Power and Power factor – Single Phase and Three Phase Balanced Circuits.

Operating Principles of Moving Coil and Moving Iron Instruments (Ammeters and Voltmeters), Dynamometer type Watt meters and Energy meters.

UNIT II ELECTRICAL MECHANICS 9

Construction, Principle of Operation, Basic Equations and Applications of DC Generators, DC Motors, Single Phase Transformer, single phase induction Motor.

UNIT III SEMICONDUCTOR DEVICES AND APPLICATIONS 9

Characteristics of PN Junction Diode – Zener Effect – Zener Diode and its Characteristics – Half wave and Full wave Rectifiers – Voltage Regulation.

Bipolar Junction Transistor – CB, CE, CC Configurations and Characteristics – Elementary Treatment of Small Signal Amplifier.

UNIT IV DIGITAL ELECTRONICS 9

Binary Number System – Logic Gates – Boolean Algebra – Half and Full Adders – Flip-Flops – Registers and Counters – A/D and D/A Conversion (single concepts)

UNIT V FUNDAMENTALS OF COMMUNICATION ENGINEERING 9

Types of Signals: Analog and Digital Signals – Modulation and Demodulation: Principles of Amplitude and Frequency Modulations.

Communication Systems: Radio, TV, Fax, Microwave, Satellite and Optical Fibre (Block Diagram Approach only).

TOTAL : 45 PERIODS

TEXT BOOKS:

1. V.N. Mittle "Basic Electrical Engineering", TMH Edition, New Delhi, 1990.
2. R.S. Sedha, "Applied Electronics" S. Chand & Co., 2006.

REFERENCES:

1. Muthusubramanian R, Salivahanan S and Muraleedharan K A, "Basic Electrical, Electronics and Computer Engineering", TMH, Second Edition, (2006).
2. Nagsarkar T K and Sukhija M S, "Basics of Electrical Engineering", Oxford press (2005).
3. Mehta V K, "Principles of Electronics", S.Chand & Company Ltd, (1994).
4. Mahmood Nahvi and Joseph A. Edminister, "Electric Circuits", Schaum' Outline Series, McGraw Hill, (2002).
5. Premkumar N, "Basic Electrical Engineering", Anuradha Publishers, (2003).

LIST OF EXPERIMENTS

1. UNIX COMMANDS	15
Study of Unix OS - Basic Shell Commands - Unix Editor	
2. SHELL PROGRAMMING	15
Simple Shell program - Conditional Statements - Testing and Loops	
3. C PROGRAMMING ON UNIX	15
Dynamic Storage Allocation-Pointers-Functions-File Handling	
	TOTAL : 45 PERIODS

HARDWARE / SOFTWARE REQUIREMENTS FOR A BATCH OF 30 STUDENTS

Hardware

■ UNIX Clone Server
33 Nodes (thin client or PCs)
Printer – 3 Nos.

Software

OS – UNIX Clone (33 user license or License free Linux)
Compiler - C

080640001

PHYSICS LABORATORY - II

0 0 3 100 2

LIST OF EXPERIMENTS

1. Determination of Young's modulus of the material – non uniform bending.
 2. Determination of Band Gap of a semiconductor material.
 3. Determination of specific resistance of a given coil of wire – Carey Foster Bridge.
 4. Determination of viscosity of liquid – Poiseuille's method.
 5. Spectrometer dispersive power of a prism.
 6. Determination of Young's modulus of the material – uniform bending.
 7. Torsional pendulum – Determination of rigidity modulus.
- * A minimum of FIVE experiments shall be offered.
 - * Laboratory classes on alternate weeks for Physics and Chemistry.
 - * The lab examinations will be held only in the second semester.

CHEMISTRY LABORATORY

0 0 3 100 2

LIST OF EXPERIMENTS

1. Conduct metric titration (Simple acid base)
 2. Conduct metric titration (Mixture of weak and strong acids)
 3. Conduct metric titration using BaCl_2 vs Na_2SO_4
 4. Potentiometric Titration (Fe^{2+} / KMnO_4 or $\text{K}_2\text{Cr}_2\text{O}_7$)
 5. PH titration (acid & base)
 6. Determination of water of crystallization of a crystalline salt (Copper sulphate)
 7. Estimation of Ferric iron by spectrophotometry.
- * A minimum of FIVE experiments shall be offered.
 - * Laboratory classes on alternate weeks for Physics and Chemistry.
 - * The lab examinations will be held only in the second semester.

List of Exercises using software capable of Drafting and Modeling

- I. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, etc.) – Creation of simple figures like polygon and general multi-line figures.
2. Drawing of a Title Block with necessary text and projection symbol.
3. Drawing of curves like parabola, spiral, involute using Bspline or cubic spline.
4. Drawing of front view and top view of simple solids like prism, pyramid, cylinder, cone, etc, and dimensioning.
5. Drawing front view, top view and side view of objects from the given pictorial views (eg. V-block, Base of a mixie, Simple stool, Objects with hole and curves).
6. Drawing of a plan of residential building (Two bed rooms, kitchen, hall, etc.)
7. Drawing of a simple steel truss.
8. Drawing sectional views of prism, pyramid, cylinder, cone, etc,
9. Drawing isometric projection of simple objects.
10. Creation of 3-D models of simple objects and obtaining 2-D multi-view drawings from 3-D model.

Note: Plotting of drawings must be made for each exercise and attached to the records written by students.

List of Equipments for a batch of 30 students:

- I. Pentium IV computer or better hardware, with suitable graphics facility - 30 No.
2. Licensed software for Drafting and Modeling. – 30 Licenses
3. Laser Printer or Plotter to print / plot drawings – 2 No.

080280008

ELECTRICAL CIRCUIT LABORATORY

0 0 3 100 2

(Common to EEE, EIE and ICE)

LIST OF EXPERIMENTS

1. Verification of ohm's laws and kirchoff's laws.
2. Verification of Thevemin's and Norton's Theorem
3. Verification of superposition Theorem
4. Verification of maximum power transfer theorem.
5. Verification of reciprocity theorem
6. Measurement of self inductance of a coil
7. Verification of mesh and nodal analysis.
8. Transient response of RL and RC circuits for DC input.
9. Frequency response of series and parallel resonance circuits. 10. Frequency response of single tuned coupled circuits.

TOTAL: 45 PERIODS

- 1.** Verification of KVL and KCL
2. Verification of Thevenin and Norton Theorems.
3. Verification of superposition Theorem.
4. Verification of Maximum power transfer and reciprocity theorems.
5. Frequency response of series and parallel resonance circuits.
6. Characteristics of PN and Zener diode
7. Characteristics of CE configuration
8. Characteristics of CB configuration
9. Characteristics of UJT and SCR
- 10.** Characteristics of JFET and MOSFET **11.**
Characteristics of Diac and Triac.
- 12.** Characteristics of Photodiode and Phototransistor.

TOTAL : 45 PERIODS