

I-YEAR NON-SEMESTER

SUBJECT CODE	COURSE TITLE	L	P	M
<i>THEORY</i>				
36410211	Technical English	3	0	100
36410212	Engineering Mathematics	3	0	100
36410213	Engineering Physics	3	0	100
36410214	Engineering Chemistry	3	0	100
36410215	Basic Engineering Mechanics	3	0	100
36410216	Basic computer Engineering			
36410217	Basic Electrical & Electronics Engineering	3	0	100
PRACTICALS				
34102LB1	Engineering Physics Lab	0	3	100
34102LB2	Engineering Chemistry lab	0	3	100
34102LB3	Basic Mechanics Lab	0	3	100
34102LB4	Basic Electrical & Electronic Engineering Lab			
34102LB5	Engineering Drawing and Graphics Lab	0	3	100

**I YEAR (Non Semester)
TECHNICAL ENGLISH**

UNIT 1: FOCUS ON LANGUAGE

18

Word formation with prefixes and suffixes-synonyms and antonyms-compound nouns-subject, verb-Agreement-Modal verbs-probability and improbability-Tense form (Simple present, present continuous, present perfect. Simple past continuous, past perfect and simple future)- Adjectives –Degrees of Comparison –Adverb-Passive voice-Impersonal Passive –Infinitives.And Gerunds-Prepositions-Conditional Clauses- question tag, Abbreviation & Acronyms, Rules for writing SI units, numerical expression.

UNIT II: LISTENING

18

Listening Comprehension-Listening for specific information-Note-marking.

UNIT III: READING

18

Skimming- Scanning-Detailed reading-Infering meaning –Guessing meaning of the contexts-Note making –Understanding the organization of the texts- Predicting and evaluating context-Interpreting tables- flow charts.

UNIT IV: SPEAKING

18

Definitions-Describing the objects-Framing questions-Providing answers- Describing processes-Stating purpose- offering opinions, suggestions and recommendation – Summarising –Reporting –Free discussion on chosen topics –pronunciation practice (word stress, consonant clusters, and homonyms).

UNIT V: WRITING

18

Sentence definitions-Extended definition-Comparison and contrast- Classification of information-Recommendations- Formal and Informal Letter Writing – Using flow charts and diagrams –Paragraph Writing –Editing (précis)
-Safety instructions- Check List- letter of applications- Resume, Process description.

THE SYLLABUS AIMS AT DEVELOPING THE FOLLOWING FOUR SKILLS

Listening and speaking skills can be developed among the students by giving only oral practice. Therefore, for assessing the students in oral practice, 5 marks can be given in Internal Assessment. The remaining 15 marks can be distributed to Attendance, Assignment and Performance in the class test.

I YEAR (Non Semester)

ENGINEERING MATHEMATICS

(Common to the Branches MECH, ECE, CSE, EEE, EIE, CIVIL, IT, Mechtronics)

UNIT I : MATRICES AND DIFFERENTIAL CALCULUS

18

Characteristic equation – Eigen values and eigenvectors of a real matrix – Properties of eigenvalues and eigenvectors – Cayley-Hamilton theorem (excluding proof) – Orthogonal transformation of a symmetric matrix to diagonal form. Curvature – Cartesian and Parametric Co-ordinates – Centre and radius of curvature – Circle of curvature – Evolute.

UNIT II : PARTIAL DERIVATES AND ORDINARY DIFFERENTIAL EQUATIONS **18**

Partial Derivatives – Total Differential - Maxima and Minima – constrained Maxima and Minima by Lagrange Multiplier
Simultaneous first order linear equations with constant coefficients

UNIT III : MULTIPLE INTEGRALS AND VECTOR CALCULUS

Double integration - Cartesian and polar coordinates – Change of order of integration – Area as a double integral – Triple integration – volume as a triple integral.

Directional derivatives – Gradient, Divergence and Curl – irrotational and solenoidal vector fields – vector integration – Green's theorem, Gauss divergence theorem and Stoke's theorem (excluding proof) – simple applications.

UNIT IV : ANALYTIC FUNCTIONS AND COMPLEX INTEGRATION

18

Function of a complex variable – Analytic function – Necessary conditions - Cauchy Riemann equations – Sufficient conditions (excluding proof) – Harmonic conjugate – Constructions of analytic functions – Conformal mapping ($w = z+a$, az , $1/z$, z^2) and bilinear transformations.

Statement and application of Cauchy's integral theorem and integral formulae – Taylor's and Laurent's expansions – Isolated Singularities – Residues – Cauchy's residue theorem – Contour integration over unit circle and semi circular contours (excluding poles on boundaries).

UNIT V: LAPLACE TRANSFORMS

18

Laplace transform – transform of elementary functions – basic properties – derivatives and integrals of transforms – transforms of derivatives and integrals – initial and final value theorems – Transform of periodic functions. Inverse Laplace transform – Convolution theorem – Solution of linear ODE of second order with constant coefficients and first order simultaneous equation with constant coefficients using Laplace transform

TEXT BOOK

1. Veerarajan, T., “Engineering Mathematics”, Tata McGraw Hill Publishing Co., NewDelhi, 2006.

REFERENCE BOOKS

1. N. Subramaniam., “Engineering Mathematics” (First Edition), SCM Publisher., 2006.
2. Grewal, B.S., “Higher Engineering Mathematics” (36th Edition), Khanna Publishers, Delhi 2001.
3. Kandasamy .P., Thilagavathy. K., and Gunavathy. K., “Engineering Mathematics”, Volumes I & II (4th edition), S.Chand & Co., New Delhi., 2001.
4. Kreyszig, E., “Advanced Engineering Mathematics” (8th Edition), John Wiley and Sons (Asia) Pvt Ltd., Singapore, 2001.

**I YEAR (Non Semester)
ENGINEERING PHYSICS**

UNIT I : ACOUSTICS AND CRYSTAL PHYSICS

18

Acoustics: Classification of sound – Characteristics of musical sound – Loudness – Weber-Fechner law – Decibal – Absorption coefficient – Reverberation – Reverberation time – Sabine's formula (growth & decay) - Factors affecting acoustics of buildings (reverberation time, loudness, focusing, echo, echelon effect, resonance and noise) and their remedies.

Crystal Physics: Lattice – Unit cell – Bravais lattice planes – Miller indices – 'd' spacing in cubic lattice – calculation of number of atoms per unit cell – Atomic radius – coordination number – Packing factor for SC, BCC, FCC and HCP structures.

UNIT II : LASERS AND FIBRE OPTICS

18

Lasers: Einstein coefficients (A&B), Nd – YAG laser, CO2 laser, semiconductor laser (homo junction) – User of lasers – Holography – Construction and Reconstruction of a hologram.

Fibre Optics: Principles and propagation of light in optical fibres – Numerical Aperture and Acceptance angle – Types of optical HPRES (material, refractive index, mode) – applications Fibre optics communication system (Block diagram only) Fibre optics sensors (displacement sensor and pressure sensor).

UNIT III : CLASSICAL PHYSICS & QUANTUM PHYSICS

18

Classical Physics: Conduction in metals – Mobility and conductivity – Classical free electron theory of metals – Electrical conductivity – Thermal conductivity – Wiedmann Franz law – Lorentz number – Drawbacks of classical theory.

Quantum Physics: Black body radiation – Planck's theory (derivation) – Deduction of Wien's displacement law Rayleigh – Jean's law from Planck's theory - Compton effect – Theory and experimental verification – Schrodinger's wave equation – Time independent and time dependent equations – Physics significance of wave function – Particle in a one dimensional box – Extension to 3 dimension (no derivation) – Degeneracy.

UNIT IV : HEAT AND THERMODYNAMICS

18

Heat: Thermal conductivity – Forbe’s and Lee’s Disc methods – radial flow of heat – Thermal conductivity of rubber and glass – Thermal insulation in buildings
Thermodynamics: Laws of thermodynamics – Carnot’s cycle as heat engine and refrigerator – Carnot’s theorem – ideal Otto and Diesel engines – Concept of entropy – Entropy Temperature diagram of Carnot’s cycle.

UNIT V : ULTRASONICS AND NON DESTRUCTIVE TESTING

Ultrasonics: Ultrasonic production: Magnetostriction and piezo electric methods – Determination of velocity of ultrasonic waves (acoustic grating) – Applications of ultrasonic.
Non Destructive Testing: Liquid penetrant method – Ultrasonic flaw detection – Ultrasonic flaw detector (block diagram) – X-ray Radiography: displacement method-X-ray Fluorosocopy-Merits and Demerits of each method.

Total

Hours: 90

TEXT BOOK

1. Gaur R.K .and Gupta S.L.,”Engineering Physics”, Dhanpat Rai Publishers, New Delhi, 2001.

I YEAR (Non Semester)
ENGINEERING CHEMISTRY
(Common to all Branches of BE)

UNIT I : TECHNOLOGY OF WATER

18

Basic concepts of hardness (types, definition, units, and expression of hardness in CaCO₃ equivalents) – estimation of hardness by EDTA and alkalinity methods (problems to be avoided) - boiler feed water – requirements - disadvantages of using hard water in boilers – internal conditioning (phosphate ,calgon and carbonate conditioning methods) – external conditioning (demineralization and zeolite process) – desalination (reverse osmosis and electrophoresis) – domestic water treatment.

UNIT II : ELECTROCHEMISTRY AND CORROSION

18

Cells – types (electrolytic and electrochemical cells) – electrode potential – Nernst equation - EMF (definition and measurement) – corrosion – principle of chemical and electrochemical corrosion – pilling - bed worth rule – difference between chemical and electrochemical corrosion – galvanic corrosion – differential corrosion – factors influencing corrosion - corrosion control – cathodic protection (sacrificial anodic method and impressed current method) - corrosion inhibitors(definition and examples)

PROTECTIVE COATINGS

Paints – constituents – functions - mechanism of drying – special paints (fire retardant, water repellent and temperature indicating paints) – surface preparation – metallic coatings – electroplating and electrodeless plating (only process) – surface conversion coatings (anodizing)

UNIT III : ENGINEERING MATERIALS

18

Abrasives – Moh's scale of hardness – natural abrasives (diamond, emery and quartz) - synthetic abrasives (silicon carbide and boron carbide) – refractories (classifications characteristics and uses) – adhesives – adhesive – action – classification with examples - Lubricants – classification with example – properties (viscosity index, flash and fire points, cloud and pour points and oiliness) – solid lubricants (graphite and molybdenum disulphide)

POLYMERS

Introduction – polymerization (definition and types) – engineering plastics (PVC,TEFLON and Thermocol) – compounding of plastics – moulding methods (injection and compression moulding) – polymer blends alloys (definition, properties and uses).

UNIT IV: SURFACE CHEMISTRY

18

Adsorption – types – adsorption of gases on solids – adsorption isotherm (Freundlich and Langmuir isotherms) – adsorption of solutes from solution – role of adsorbents – activated carbon in pollution abatement of air and waste water.

PHASE RULE

Statement – explanation of the terms involved – one component water system – condensed phase rule – simple eutectic system – lead – silver system – alloys (definition and importance)- steel (mild and stainless), brass (solder) and bronze (bell metal)

UNIT V: FUELS AND COMBUSTION

18

Proximate and ultimate analysis of coal – significance – manufacture by Otto-Hoffman's method – synthetic petrol by Fischer-Tropsch's and Bergius processes – knocking – octane number and cetane number (only definitions)

Gaseous fuels (composition and uses of natural gas, LPG, water gas, producer gas and CNG)- gross and net calorific values (definition only) – theoretical calculation – Dulong's formula – simple problems – calculations of minimum air requirement (by mass and volume only) – simple problems – flue gas analysis – Orsat's apparatus.

INSTRUMENTAL METHODS

Beer-Lambert's law - visible - UV -IR spectroscopy – principle and instrumentation (block diagram only) – estimation of iron by colorimetry - flame photometry - principle and instrumentation (block diagram only)

REFERENCE BOOKS

1. P.C .Jain and monica jain, Engineering chemistry, dhanpatraj publishing company (p) Ltd, New Delhi.
2. S.S .Dara, A. Text -book of engineering chemistry , S Chand & Co Ltd, New Delhi

I YEAR (Non Semester)
BASIC ENGINEERING MECHANICS

UNIT I : STRENGTH OF MATERIALS

18 Introduction – Units and Dimension – Properties of materials – stresses and strains – Tension, Compression and shear stress – Deformation of simple and compound bars – Elastic constants – Thermal stresses – Simple problems.

UNIT II : STATICS OF PARTICLES & PROPERTIES OF SURFACE AND SOLIDS

18 Introduction – laws of mechanics – classification of force system – Coplanar forces – resolution of composition of forces – moment of a force – Varignon's principle – moment and couple – Equilibrium of particle – Principle of Transmissibility – single equivalent force. Simple problems.

Centroid – Centre of gravity – Moment of Inertia – Radius of gyration – parallel and perpendicular axis theorems – determination of centroid and Moment of Inertia of standard section – rectangle, circle and triangle from integration – T section, I section and angle section only.

UNIT III: MECHANICS OF SOLIDS

18

Beams – types – and transverse loading on beams – shear force and bending moment diagrams of cantilever and simply supported beams under Point load and Uniformly Distributed load only. Simple problems.

Stability and equilibrium of plane frames – perfect frames only – type of trusses – analysis of forces in truss members – methods of joints only – simple problems.

UNIT IV: DYNAMICS OF PARTICLES AND FRICTION

18

Friction – definitions, types, laws of Coulomb friction, angle of repose, Displacement, velocity, acceleration and their relationship. Relative motion, curvilinear motion and projectile motion. Newton's laws of linear motion. Principle of work energy equation, impulse and momentum equation Impact of elastic bodies – definition, types, co-efficient of restitution – Simple problems.

UNIT V : MECHANISMS

18

Mechanisms – Terminology and definition – Degree of freedom – 4 bar mechanism – Slider crank mechanism, Quick return mechanism, cranks, springs.

Definitions, classification, terminology, construction and application of gears – spur, helical, bevel and worm, Belts – flat, 'V' types, Chains, rope and Pulleys.

TEXT BOOKS

1. "BASIC Engineering Mechanics" – Department of Mechanical & Civil Engineering, V.M.K.V.Engineering College.

REFERENCES

1. Beer and Johnson, "Vector Mechanics for Engineers", Vol.I.Statics and Vol.2.Dynamics, McGraw Hill International Edition, 1995.
2. Merriam, "Engineering Mechanics", Vol.I "Statics" and Vol.2."Dynamics" 2/e Wiley International 1988.
3. Rajasekaran S.& Sankara Subramanian, G.,"Engineering Mechanics – Statics and Dynamics"
4. Irving, H., Shames, "Engineering Mecfhanics – Statics and Dynamics" Third Edition, Prentice – Hall of India Pvt Ltd., 1993.

I YEAR (Non Semester)

BASICS OF COMPUTER ENGINEERING

UNIT I : BASIC OF COMPUTER AND INFORMATION TECHNOLOGY

18

Digital Computer Fundamentals – Block diagram of a computer – component of a computer system Hardware and Software definitions – Categories of Software – Booting – Installing and Uninstalling Software – Software piracy - Software terminologies - Applications of Computer – Role of Information Technology- History of Internet – Internet Services.

UNIT II : PROBLEM SOLVING METHODOLOGY & OFFICE AUTOMATION

18

Problems Solving Techniques- Program-Program development cycle – Algorithm-Design – Flow chart –Program control structures – Types and generation of programming languages – Development of algorithms for simple problems. Top Down and Bottom up approaches of software development.

Office Automation: Application Packages – word processing- Spread sheet Applications.

UNIT III : BASIC ELEMENTS OF C

18

Introduction to C –Declarations – Operators and expression – operator precedence and associativity of operators – Input and Output Functions – Simple computational problems.

DECISION MAKING

Control statements –Branching, Looping, nested control structures, switch, break, continue, go to statements –Problems using control structure.

FUNCTIONS AND PROGRAM STRUCTURES

Prototypes and Functions- Declaring, defining and accessing functions – Parameter passing methods – Recursion –Storage classes = auto, extern , static and register – Library functions –Programs using function.

UNIT IV: ARRAYS AND POINTERS

18

Defining and processing arrays – passing arrays to function – Multi –dimensional arrays – Strings and basic operations on strings –Enumerated data types – Programs Using simple sorting, Searching and merging of arrays.

POINTERS

Pointer concept –Declaration –Accessing variable through pointer – initialing pointer variable – pointer variable – Pointer and functions- pointers and arrays - Pointers and Structures – Example programs using pointer with function with function ,arrays and structures – command line arguments- Dynamic memory allocation – Operations on pointers.

UNIT V: STRUCTURES AND LINKED LIST

18

Structures – User defined data types – Union - Nested structure, passing structures to functions – self referential structure – File pointer – High level File operations- Opening and closing of file – creating, processing and Updation on files – Simple file handling programs.

LINKED LISTS

Singly linked list-Creation, insertion and deletion of element – Stack and Queue implementation using linked list.

TEXT BOOKS

1. Ashok N.Kamthane, programming with ANSI and TURBO C, pearson Education (India)2005.
2. V.Ramesh babu, fundamental of computing,VRB publisher,2004.

REFERENCES

1. ITL Education solutions Limited,” Introduction to information Technology”, Pearson Education (India), 2005.
2. Brain W.Kernighan & Dennis M.Ritchie,” The C Programming Language”, Pearson Education inc (2005)
3. Behrouz A. Forouzan and Richard .F.Gilberg , “ Approach using C “,II Edition Brook – Cole Thomson learning publications, 2001.
4. Jeri R. Hanly and Elliot B .Koffman, “ Problem solving and program design in C”, Fourth Edition, Pearson Education India, 2005.
5. Johnsonbaugh R . and Kailn M .,”Applications programming in ANSI C “, III Edition , Pearson Education India ,2003

I YEAR (Non Semester)

BASIC ELECTRICAL & ELECTRONICS ENGINEERING

ELECTRICAL ENGINEERING

UNIT - 1 ELECTRIC CIRCUITS AND INSTRUMENTS

15

Definition of current –potential-resistance, power and energy – symbol and units – international systems and units – Ohm’s law – Kirchoff’s law - solution of series and parallel circuits.

Generation of sinusoidal EMF, average and RMS values – form and peak factors – phasor representation – R,RL,RC and RLC circuits – complex power- power factor – resonance circuits – energy concepts of passive elements.

Construction and principle of operation of moving coil and moving iron instruments (voltmeters and ammeters) – dynamometer type wattmeter – induction type energy meter – Megger.

UNIT - 2 DC MACHINES & TRANSFORMERS (QUALITATIVE TREATMENT ONLY)

**1
5**

Faraday’s law of electromagnetic induction. Construction of DC machines – theory of operation of DC generators – types – EMF equation. Operating principles of DC motors – types and their characteristics – speed control of DC motors – starters. Construction and principle of operation of single phase transformers – types – voltage regulation – efficiency – Principle of operation of three phase transformers.

UNIT - 3 AC MACHINES & WIRING (QUALITATIVE TREATMENT ONLY)

15

Three phase induction motor – construction – principle of operation – torque slip characteristics

Single phase induction motor – Construction and principle. Alternator – constructional details – types – principle Construction and principle of Synchronous motors. Application of various AC machines Types of wiring and joints – principle of Earthing Common Electrical appliances.

TEXT BOOKS

1. “Basic Electrical and Electronics Engineering”, Compiled by Department of EEE & ECE, Faculty of Engineering and Technology, VMRFDU, Anuradha agencies,2006.
2. Edward Hughes, “Electrical and Electronics Technology”, Pearson Education limited, Ninth edition,2005

REFERENCES

1. B.R.Guptha, “Principle of Electrical Engineering”, S.Chand & CO., 2002.

2. I.J.Nagrath, "Elements of Electrical Engineering", Tata McGraw Hill Publishing Co., 2002.
3. H.Cotton. "Advanced Electrical Technology", Wheeler, 1983.

I YEAR (Non Semester)
ELECTRONICS ENGINEERING

UNIT - 4 ELECTRONIC COMPONENTS AND DEVICES

15

Active and Passive components, Introduction to transducers, Inductive and Capacitive transducers, Oscillation transducer, potentiometer transducer, Electrical strain gauges: unbounded strain gauge, bonded wire strain gauge (Resistive thermometer, Thermister, Thermocouple). Basic principle and characteristics of PN diode, Zener diode and special diodes (LED, LCD, Varactor, Tunnel diodes PIN diode,), Bipolar Junction Transistor, Field Effect Transistors, UJT, SCR. Introduction to Operational amplifier.

UNIT - 5 DIGITAL ELECTRONICS

15

Symbol, truth table and circuit of basic logic gates, universal gates, Half adder, full adder, flip flops – RS, JK, T and D, Basics of Counters and Shift registers, IC 555 timer.

UNIT - 6 COMMUNICATIONS

15

Telecommunication system – block diagram, Principles of Modulation: AM, FM, Pulse and Digital Modulation, Data Transmission – Modem, Various Communication systems like Radio, TV, Microwave, Satellite, Radar, Fiber optic and ISDN (block diagram description only), Concepts of cellular communication.

TEXT BOOKS

1. "Basic Electrical and Electronics Engineering", Compiled by Department of EEE & ECE, Faculty of Engineering and Technology, VMRFDU, Anuradha agencies, 2006.

REFERENCES

1. K.A.Muraleedharan, R.Muthusubramanian and S.Salivahanan, Basic Electrical and Electronics and Computer Engineering, Tata McGraw Hill, 1977.
2. Anokh Singh, Principles of Communication Engineering, S.Chand & Co, 1994.
3. Floyd & jain, Digital Fundamentals, Pearson Education, 8th Edition, 2003.
4. Malvino"Electronics Principles"PHI.
5. John Kennedy "Electronics Communication System" Tata McGraw Hill.
6. Millman and Halkias, "Electronic Devices and Circuits", Tata McGraw hill.

I YEAR (Non Semester)

ENGINEERING DRAWING INCLUDING GRAPHICS

ENGINEERING GRAPHICS

(Common to all branches of B.E)

UNIT - 1 PLANE CURVES

18

CURVES USED IN ENGINEERING PRACTICES

Conics – Construction of ellipse, parabola and hyperbola by eccentricity method – Construction of cycloid – construction of involutes of square, pentagon and circle.

UNIT -2 PROJECTION OF POINTS, LINES AND PLANE SURFACES

18

General principles of orthographic projection – First angle projection – Layout of view – projection of points, located in all quadrant and straight lines located in the first quadrant – Determination of true lengths and true inclinations and location of traces – Projection of polygonal surface and circular lamina inclined to both reference planes.

UNIT -3 PROJECTION OF SOLIDS AND SECTION OF SOLIDS

18

Projection of simple solids like prisms, pyramids, cylinder and cone when the axis is inclined to one reference plane by change of position method and change of reference plane (Auxiliary projection method) method.

Sectioning of above solids in simple vertical position by cutting planes inclined to one reference plane – Obtaining true shape of section.

UNIT -4 DEVELOPMENT OF SURFACES AND INTERSECTION OF SOLIDS

18

Developments of lateral surfaces of simple and truncated solids – prisms, pyramids, cylinders and cones

Intersection of lateral surfaces of two intersecting solids – cylinder & cylinder, cone & cylinder – Axis at right angles with no offset.

UNIT -5 ISOMETRIC AND FREE HAND SKETCH

18

Principles of isometric projection – isometric scale – isometric projections of simple solids, truncated prisms, pyramids, cylinders and cones.

FREE HAND SKETCHING

Representation of Three Dimensional objects – Need for and importance of multiple view and their placement – Developing visualization skills through free hand sketching of multiple views from pictorial views of objects.

COMPUTER AIDED DRAFTING

(Demonstration only) Demonstration of Computer Aided Drafting and dimensioning using appropriate software.

I YEAR (Non Semester)
ENGINEERING PHYSICS LABORATORY

(Common to all branches of B.E)

LIST OF EXPERIMENTS

1. Young`s modulus by non-uniform bending
2. Rigidity modulus and moment of inertia using Torson Pendulum
3. Viscosity of a liquid by Poiseuille`s method
4. Ultrasonic velocity and compressibility of liquids using Ultrasonic Interferometer
5. particle size determination by laser
6. Wavelength determination using grating by spectrometer
7. Thickness of wire by Air Wedge
8. Thermal conductivity by Lee`s disc
9. Band gap determination using Post office Box
10. Thermo E.M.F measurement by potentiometer.

**I YEAR (Non Semester)
CHEMISTRY LABORATORY**

LIST OF EXPERIMENTS

1. Weighing and preparation of standard solutions
 - (a) Preparation of molar and normal solutions of the following substances-oxalic acid, sodium hydroxide and hydrochloric acid.
 - (b) Preparation of buffer solutions: borate buffer, phosphate buffer using Henderson's equation.
2. Determination of total hardness, temporary & permanent hardness of water by EDTA method.
3. Determination of alkalinity of water sample.
4. Determination of DO content by Winkler's method.
5. Estimation of copper in the given ore
6. Determination of strength of Hydrochloric acid by pH metric method.
7. Conductometric titration between strong acid and strong base.
8. Conductometric precipitation titration using barium chloride and sodium sulphate.
9. Determination of strength of iron by potentiometric method using dichromate.
10. Estimation of iron in the given solution by spectrophotometric method
11. Determination of sodium ions in sample by flame photometric method.
12. Determination of molecular weight of a polymer by viscometry method.

REFERENCES

1. J. Mendham, R.C. Denney, J.D. Barnes and N.J.K. Thomas, Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, Pearson Education, 2004.
2. D.P. Shoemaker and C.W. Garland, Experiments in Physical Chemistry, McGraw Hill, London.

I YEAR (Non Semester)
BASIC MECHANICAL LAB

UNIT I : FITTING

Tools and Equipments-Practice in chipping, Filing, Drilling – making Vee joints, square and dove tail joints.

UNIT II : CARPENTRY

Tools and Equipments- Planning Practice-making halving joint and dove tail joint models.

UNIT III : WELDING

Tools and Equipments – Arc welding of butt joint, Lap joint, Tee fillet etc.,
Demonstration of Gas welding.

**UNIT IV : DEMONSTRATION ON
PLUMBING**

Basic pipe connection using valves, taps, couplings unions, reducers, elbows in house
hold
plumbing.

SHEET METAL

Fabrication of tray, cone etc.,

SMITHY

Making simple parts like keys, bolts etc.,

FOUNDRY

Tools and Equipments – Preparation of moulds of simple objects like flange, V-grooved
pulley,
etc.,

TEXT BOOKS

1. K.Jeyachandran & S.Natarajan, Basic Workshop Practice Manual, Anuradha
gencies.

I YEAR (Non Semester)

BASIC ELECTRICAL & ELECTRONICS LAB

1. Familiarization with Electronic Components like R, L, C and active devices.
2. Familiarization with Bread board, CRO, Power supply (RPS, FPS) and Soldering Practice.
3. Measurement of amplitude and frequency using CRO.
4. Study of the Characteristic of PN-Junction diode.
5. Study of the Characteristic of Zener diode
6. Study of the Characteristic of Clipper, Clamper.
7. Verification of truth table & Realization of Boolean expression using logic gates.
8. Study of half adder and full adder
9. Study of AM/FM Receiver.