SCHEME OF INSTRUCTION AND EXAMINATION
FIRST YEAR OF BACHELOR'S DEGREE COURSE

SEMESTER I:

Sub code	Subjects	Scheme Of Instruction Hrs/Week			Scheme Of Examination					
					Th. Dur (Hrs)	Marks				
		L	T	P		Th.	S	P	O	Total
1.1	Applied Mathematics-I	3	0	0	3	100	25	0	0	125
1.2	Applied Sciences-I (Physics & Chemistry)	4	0	2	3	100	50	0	0	150
1.3	Basic Engineering –I (Civil & Mechanical Engineering)	4	0	2	3	100	50	0	0	150
1.4	Information Technology -I	3	0	2	3	100	50	0	0	150
1.5	Engineering Graphics	2	0	4	4	100	50	0	0	150
1.6	Communication Skills	2	0	0	0	0	50	0	0	50
1.7	Workshop Practice	0	0	4	0	0	50	0	0	50
1.8	Environmental Science	3	0	0	3	100	25	0	0	125
	Total	21	0	14	-	600	350	0	0	950

SEMESTER I1:

Sub code	Subjects	Scheme Of Instruction Hrs/Week			Scheme Of Examination					
					Th. Dur (Hrs)	Marks				
		L	T	P		Th.	S	P	O	Total
2.1	Applied Mathematics-II	3	0	0	3	100	25	0	0	125
2.2	Applied Sciences-II (Physics & Chemistry)	4	0	2	3	100	50	0	0	150
2.3	Basic Engineering –II (Electrical & Electronics Engineering)	4	0	2	3	100	50	0	0	150
2.4	Information Technology –II (Problem solving and Programming)	3	0	2	3	100	50	0	0	150
2.5	Engineering Mechanics	3	0	1	3	100	50	0	0	150
2.6	Social Sciences	2	0	0	0	0	50	0	0	50
2.7	Modern Workshop Practice	0	0	4	0	0	50	0	0	50
2.8	Computer Aided Drafting	0	0	2	0	0	50	0	0	50
	Total	19	0	13	-	500	375	0	0	875

1.1   Applied Mathematics-I
MODULE 1
1. Beta and Gamma functions-various forms and properties.
2. Infinite sequence, infinite series, convergent series, test for convergence and divergence. \power series and range of convergence.

MODULE 2
Complex variables: De Moivre's theorem, expontial, trigonometric, hyperbolic and logarithmic functions, inverse trigonometric and hyperbolic functions. Continuity and differentiability and analytic functions. CauchyReiman equations, \harmonic functions, conformal mapping.

MODULE 3
Differential Calculus: Leibnitz theorem, Taylor's theorem(without proof). Taylor's and Maclaurin's series expansion, indeterminate forms.

MODULE 4
Partial differentiation: Total differentiation, Euler theorem on homogenous functions, Extreme value of functions of two and three variables, Langrange's method of undetermined multipliers.

Text books & References:
1. Applied mathematics-P.N.Wartikar and J.N.Wartikar
2. Advanced Engineering Mathematics-Erwin Kreysig.

1.2 APPLIED SCIENCE-I
SECTION-I
MODULE I
(A)   **INTERFERENCE:** Interference of light by division of wavefront and division of amplitude method, interference in thin films, wedge shaped film, Newton's rings, Applications-test for optical flatness and antireflection films.

(B)   **ULTRASONIC:** Production by piezoelectric effect and by magnetostriction method, Applications.

MODULE II
(A)   **THERMOELECTRICITY:** Seeback effect, Peltier effect, variation of thermo-emf with temperature, measurement of thermoemf, law of intermediate metals and temperatures, thermoelectric series, thermoelectric power thermoelectric diagrams, Applications.

(B)   **ELECTRON BALLISTICS:** Motion of charged particles in electric and magnetic fields, electron lens, magnetic lens, CRO, cyclotron, e/m by Thomson method.

SECTION-II
MODULE I
(A)   **ELECTROCHEMISTRY:** Galvanic cell, Concentration cells & reversible cell, EMF of cell & its measurements, standard cell-Weston cadmium cell, electrode

potential, concept of electrode potential, measurement of electrode potential, Nernst's equation, Liquid junction potential & function of salt bridge, Reference electrodes, hydrogen electrode, calomel electrode, glass electrode, Quinhydrone electrode.

(B)   ELECTROPLATING: Decomposition potential and overvoltage objective of electroplating with refernce to Chromium and Nickel.

MODULE II

(A)   CORROSION: Definition, Electrochemical theory of corrosion, factors influencing corrosion, protection against corrosion by proper selection and design, corrosion, control, metallic coating(anodic and cathodic coating), organic coating (paints, varnishes or enamels).

(B)   WATER TECHNOLOGY: Impurities in water, \hardness of water, units of measuring hardness, scales and sludges formation in boilers, harmful effects of scales, caustic embrittlement, boiler corrosion, internal treatment(colloidal conditioning, phosphate conditioning, calgon conditioning), external treatment of boiler feed water(lime soda process, ion-exchange process and zeolite or permutit process).

1.3 BASIC ENGINEERING-I
(CIVIL & MECHANICAL ENGINEERING)
SECTION I

MODULE 1

Building materials and Construction-

Introduction to various building materials such as cement, bricks, stones, timber, structural steel sections- their properties and uses, use of concrete in building construction.

Various components of a building-sub structure and super structure, types of structures such as load bearing and framed structure, foundation, column, beam, lintel, arch, door and windows, roof types.

MODULE 2

Surveying and building drawing.

Introduction to surveying, basic principles, scales and vernier; chain, tape and compass surveying.

Indian standard specifications for conventional signs and symbols, site plan and working drawing of a building.

SECTION II

1. **Steam Boilers:** Cochran boiler, Locomotive boiler, Babcock and Wilcox boiler, La-mont boiler, Differences between fire tube and water tube boilers, Cogeneration.

2. **Steam Turbines:** Main parts of a steam turbine, Types of turbines, working of a single stage impulse turbine(De-Laval turbine), Compounding of impulse steam turbines, working of Parson's reaction turbine, Differences between impulse and raction turbines.

3. **Power Plants:** Classification of power plants, Steam power plant, Nuclear power plant, Gas turbines, Diesel power plant, Hydro power plant, alternate sources of energy, solar energy, Wind mills, Tidal power, Geothermal power, Ocean thermal power, Ocean thermal energy conversion(OTEC)

4. **Internal Combustion Engine:** classification of I.C. engines, Main components of I.C. engines, working of a 4-stroke petrol engine, working of a 2-stroke petrol engine, Differences between a 4-stroke and a 2-stroke engine, 5

5. **Refrigeration:** Working principle of vapour compression and vapour absorption system, domestic refrigeration.

MODULE 4

1. **Metal Casting Process:** Advantages of casting process, Patterns, Moulding, Melting of cast iron, Fettling, Casting defects.
2. **Metal Forming Processes:** Forging, Rolling, Extrusion, Drawing.
3. **Metal Joining Processes:** Welding, Arc welding, Gas welding, Gas cutting, Brazing, Soldering.
4. **Metal Removal Or Machining Processes:** Lathe, Drilling machines, Shaping machine, Milling Machine.

TEXT BOOKS & REFERENCES :

1. Building Construction-Sushil Kumar
2. Construction Engineering Vol I – (Building construction) –Y.S.Sane
3. Surveying Vil.I-Dr. B.C.Punmia
4. ISI – 962-1967 code of practice for Architectural and Buildin Drawings.
5. Basic Mechanical Engineering Sciences-K.R. Gopalkrishna-Subhas Publications. Bangalore.
6. Basic Civil & Mechanical Engineering. 2/e – Shanmugam & Palanichamy – TMH
7. Workshop Technology Vol. I &II – Hajra & Choudhary
8. Mechanical Engg. Sciences – by Ravi Subhash Publications.

1.4 INFORMATION TECHNOLOGY-I

MODULE 1

Data and information: Types of data, representation of data, types of information and quality of information.

A review of evolution of computers.

Introduction to computer organization: Features, characteristics and specifications of different components of a personal computer; their functions and interconnections.

MODULE 2

Operating systems: Functions of an operating system, salient features and elementary operations with DOS, Windows and Linux.

Programming languages: Concept of machine, assembly and high level languages; functions of an assembler, interpreter and compiler.

MODULE 3

Applications of computers: Applications of computers in different fields, features and concepts and elementary applications of database management systems, multimedia, Elementary applications and simulation with MATLAB. Familiarization with embedded computer systems: Micro-controller and its applications.

MODULE 4

Networks of computers: Concept and advantages of networking, local area and wide area networks, e-mail, Internet and World Wide Web. Issues relating to security.

Impact of computers on society.

TEXT BOOKS:

1. Information Technology by D.P.Curtin, K.M.Folly, K.Sen and C.Morin, TMH

2. Computer Systems Today by S.K. Basandra, WHEELER .

3. Fundamentals of IT-ALEXIS LEON & MATHEWS LEON/LEON, Leon Techworld.

REFERENCE BOOKS:

1. Fundamentals of Computers by Rajaraman. PHI
2. Computers Today by Donald Sanders, McGraw Hill.
3. Computer Primer by D.Rajaraman and V.Rajaraman, PHI
4. Computers by Trainer et al., McGraw Hill.

1.5   ENGINEERING GRAPHICS

MODULE 1

1. Introduction to engineering graphics, different types of lines used in engineering graphics, knowledge regarding different dihedral angles.

2. Projections of points, straight lines- when line is parallel to both the planes, parallel to one & perpendicular to other, line inclined to both the principle planes, traces.

MODULE 2

1. Projections of planes like circle, square, triangle, rectangle, pentagon, hexagon & combination of these.

2. Projections of solids like cube, tetrahedron, cylinder, cone, pyramid, prism & composite solids.

MODULE 3

1. Developments of lateral surfaces of the objects like cube, tetrahedron, cylinder, cone, pyramid, prism & composite solids, pipe & pipe joints.

2. Sections of solids.

MODULE 4

Orthographic projection(using 1st angle projection only) of machine parts & castings etc.

Isometric projection.

TEXT BOOKS:

1. Engineering Drawing- N.D.Bhat – Charotar Publishing company

2.	Engineering Drawing- K.R.Gopalkrishna- Subash Publications.

3.	Engineering Drawing—K.R. Mohan – Dhanpat Rai & Sons.

REFERENCE BOOKS:

Engineering Drawing- P.J.Shah – Vol. 1 & 2 – Praveen Shah Publishers.

1. Engineering Drawing- Luzadeer & Duff-PHI
2. Engineering Drawing- P.S.Gill – S.K.Kataria & Sons

1.6   COMMUNICATION SKILLS

MODULE 1

REFERENCE WORK
1. Interpretation: Note taking and summarizing: selection of keywords and key phrases from reference books and from lectures. Precise writing. Importance of being concise and relevant.
2. Comprehension: Ability to understand ideas, ability to interpret ideas, emphasis on vocabulary and conscious expansion of volabulary.

MODULE 2

REPORT WRITING

Business Correspondence: Reports, Memorandums, Letters(applications etc.)

MODULE 3

1.	LANGUAGE CONSTRUCTION PRECISE WRITING: Correct usage of language: prefixes and suffixes, spellings of technical words, correct tenses, prepositions and prepositional phrases, conjunctions to promote compactness, punctuation, active and passive voice, direct and indirect speech, transformation, common errors, idioms, sentence patterns

2.	TECHNICAL DESCRIPTION: Main features of technical writing, forms of technical description of processes and objects, instructions, reports.

MODULE 4

ORAL EXPRESSION

1)i)   Characteristics of good public speaking.

ii)   Evaluation of the audience.

2) i)   Attitudes in team speaking.

ii)   Debates and discussions.
iii)   Seminars and symposia.

REFERENCE BOOKS:

1. The use of English for technical students-R.A. Kelly.
2. Technical English- Wooley
3. Technical English-
4.   Aiyer & Desai
5. Linguaphone- Advanced English
6. Articles in relevant Journals/Publications.

1.7 WORKSHOP PRACTICE

Practicals per week   ::4 hrs
Total no. of modules   :3
Max. marks for sessional: :50

MODULE I

CARPENTARY:

Timber classification, seasoning and prescribing defects in timber, plywood, hardwood, adhesive glues, paints, varnish and polish.

Description and use of tools used in carpentry:

Important joints and their use

Simple exercises as below:

1. On wood turning.
2. Important wooden joints.

MODULE –II

FITTING:

Nature of work done in a Fitting shop. Fitting tools and their use. Simple exersises involving cutting, filing, fitting, drilling and tapping operation as follows

1. Excersise involving flling, fitting, drilling and tapping operation
2. One simple exercise involving pipe threading and pipe fitting
3. Demonstration of various pipe fittings.
4.

MODULE – III

FOUNDRY:Nature of work done in a Foundry shop. Hand tools and equipment used in Foundry. Shop. Pattern types, Materials and allowances, Moulding methods, Casting practices, Casting defects,

Simple exercise as below:

1. Making a simple wood pattern
2. Considering different pattern allowances.
3. Practice in making sand moulds and cores.

Demonstration of a simple ferrous/non-ferrous casting.

1.8 Environmental Studies

Lectures per week   : 3 hours
Maximum marks for the paper   : 100
Max. marks for Sessional   : 25
Duration of the paper   : 3 hours
Total number of modules   : 4
Questions to be drawn from each module   : 2
Min. no. of questions to be answered in the paper   : 1
Total number f questions to be answered in the paper   : 5

MODULE I

The Multidisciplinary nature of environmental studies
Definition, scope and importance   **(2 lectures)**

Need for public awareness

Natural Resources :
Renewable and non-renewable resources :
> Natural resources and associated problems
> a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
> b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.
> c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
> d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
> e) Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
> f) Land resources: Land as a resources, land degradation, man induced landslides, soil erosion and desertification.

* Role of an individual in conservation of Natural resources.
* Equitable use of resources for suitable lifestyles.   (**8 lectures**)

MODULE II
Ecosystems
   * Concept of an ecosystem.
   * Structure and function of an ecosystem.
   * Producers, consumers and decomposers.
   * Energy flow in the ecosystem.
   * Ecological succession
   * Food chains, food webs and ecological pyramids.
   * Introduction, types, characteristics features, structure and function of the following ecosystem:-
        a) Forest ecosystem
        b) Grassland ecosystem
        c) Desert ecosystem
        d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)
                                                              (**6 lectures**)

Biodiversity and its conservation

   * Introduction –Definition : genetic, species and ecosystem diversity
   * Biogeographically classification of India.
   * Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values.
   * Biodiversity at global, National and local levels.
   * India as a mega-diversity nation.
   * Hot-spots of biodiversity.

* Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.
* Endangered and endemic species of India.
* Conservation of biodiversity : In –situ and Ex –situ conservation of biodiversity.

(8 lectures)

MODULE III

Environmental Pollution
Definition
* Causes, effects and control measures of :-
    a) Air pollution
    b) Water pollution
    c) Soil pollution
    d) Marine pollution
    e) Noise pollution
    f) Thermal pollution
    g) Nuclear hazards
* Solid waste Management : Causes, effects and control measures of urban and
* Industrial wastes.
* Role of an individual in prevention of pollution.
* Pollution case studies.
* Disaster management: Floods, earthquake, cyclone and landslides.

(8 lectures)

Social Issues and the Environment
* From Unsuitable to Sustainable development.
* Urban problems related to energy
* Water conservation, rain water harvesting, watershed management.
* Resettlement and rehabilitation of people; its problems and concerns, Case studies.
* Environmental ethics : Issues and possible solutions.
* Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.
* Case studies
* Waste land reclamation.
* Consumerism and waster products.
* 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.

(7 lectures)

MODULE IV

Human Population and the Environment
* Population growth, variation among nations.
* Population explosion – Family Welfare Programme
* Environment and human health and Human Rights

- ∗ Value Education
- ∗ HIV/ AIDS
- ∗ Women and Child Welfare.
- ∗ Role of information Technology in Environment and human health.
- ∗ Case Studies.

(6 lectures)

Field work
- ∗ Visit to a local area to document environmental assets – river/forest/grassland/hill/mountain
- ∗ Visit to a local polluted site – Urban/ Rural/ industrial/ Agricultural.
- ∗ Study of common plants, insects, birds.
- ∗ Study of simple ecosystems – pond, river; hill slopes, etc, (Field work Equal to 5 lecture hours)

Second Semester

2.1   APPLIED MATHEMATICS – II
MODULE 1

1. Differentiation under the integral sign. Integral with its limit as constant and as a function of the parameter.

2. Rectification of plane curve, double integration in Cartesian co-ordinates.

MODULE 2

Double integration in polar and Cartesian co-ordinates, double integration to compute centre of gravity, triple integration in cartesian co-ordinate system spherical polar co-ordinate system and cylindrical co-ordinate system. Geometrical interpretation and applications to area, surface area and volume.

MODULE 3

Vector algbebra and calculus: Differentiation of vector, Application to vector space and dynamics, line integral and its properties, Greens's theorem in a plane, scalar and vector fields, gradients, divergence, curl, Divergence theorem, Stroke's theorem(\both without proof).

MODULE 4

Ordinary differential Equations. First order and first degree ordinary differential equations, higher order differential equation with constant coefficients and with right hand side of the form eax, Sin ax, Cos ax, eax f(x), xf(x) and others, Linear equations with homogeneous coeffcients, method of variation of parameter.

TEXT BOOKS & REFERENCES:

1. **Advanced Engineering Mathematics - Erwin Kreysig.**
2. **Applied Mathematics - P.N.Wartikar and J.N.Wartikar**
3. **Vector Calculus- S.Narayan**
4. Theory & Problems of Probability and statistics by Murray R. Spiegel, Schaums outline series.
5. Introduction to Probability and Statistics by Seymour Lipschutz, Schaums outline series.

2.2 APPLIED SCIENCE-II

SECTION-I

MODULE I

(A)   LASERS: Absorption , spontaneous and stimulated emission population inversion, Einstein's theory of stimulated emission, principle of laser, Helium-Neon laser, Ruby laser, Applications

(B)   FIBRE OPTICS: Optical fibre, propagation of light through optical fibre, acceptance angle, Numerical aperture, Modes of propagation, types of optical fibre, fibre materials, Applications.

MODULE II

(A)   ATOMICA AND NUCLEAR PHYSICS: Atomic nucleus, nuclear force, proton-neutron theory, mass defect, binding energy, Nuclear fission and fusion, chain reaction, thermonuclear reactions, nuclear reactors.

(B)   SEMICONDUCTORS: PN junction, barrier potential, forwarde and reverse bias, mechanisms of breakdown, Zener and avalanche breakdown, Zener diode characteristics, thermisters, Zener diode as voltage regulator.

SECTION-II

MODULE I

(A)   FUELS: Definition, classification of fuels, calorific value, determination of calorific value using bomb calorimeter, analysis of coal(promimate and ultimate) petroleum, refining, thermal and catalytic cracking, synthetic petrol-knocking and antiknocking agents, octgane number and cetane number and octane number gaseous fuels: producer gas and water gas.

(B)   POLYMERS: Definition, classification , Functionality, degree of polymerization, addition, condensation and copolymerization.

Plastics- definition and classification of plastics, compounding and fabrication of plasticws, important thermop0lastic and thermosetting resins, examples.

Elastomers- natural rubber, compounding of rubber , synthetic rubbers, examples.

MODULE II

(A)   CORROSION:

(i)   REFRACTORIES:

Characteristics, properties, classification preparation, properties and uses of silica, dolomite and magnesite.

(ii)   LUBRICANTS: Types of methods of lubrication, classification and properties of lubricants.

(B)   POLLUTION: Causes of pollution and types of air pollutants, sources, effects on animals and plants, climate(acid rain, green house effect, depletion of ozone layer), control methods for gaseous and particulate pollutants.

Reference Books:

1) Essentials of physical chemistry by Bahl and Tuli –S.Chand

2) Engineering chemistry by M.M. uppal- Khanna publishers

3) Elements of Applied Chemistry by C.V. Agarwal- Khanna publishers

4) Engineering chemistry by P.C.Jain

5) Text book of Engg. Chemistry Khanna publishers S.S.Dara

6) Engineering Physics by Gaur and Gupta, Dhanpatrai publishers

7) Modern physics by B.I. Theraja, Narosa \pub. \house

8) Applied Physics by V.R.Doiphode, Pune " Griha vidhayarthi publishers

9) Applied physics by Patgaonkar and others, Vol I, II Technology Pub.

10) Nuclear physics by Irving Kaplan, Narosa Pub. House

2.3 BASIC ENGINEERING-II
(ELECTRICAL & ELECTRONICS ENGINEERING)

MODULE 1

Fundamental laws of Electrical Engineering, solution of Kirchoff's law equations, Maxwell/Matrix methods, network theorems, Thevenin's theorem, Norton's theorem,

Maximum power transfer theorem, compensation theorem, reciprocity theorem, Millman's theorem, star delta transformation, applications.

AC fundamentals, sinusoidal waveforms, definitions, sinusoidal steady state response to R-L-C, phasor algebra, series and parallel circuits, Q-factor, three phase circuits, balanced and unbalanced loads, power, power factor, energy.

MODULE 2

Magnetic circuits, series and parallel magnetic circuits with and without air gap, magnetically coupled circuits, B-H curve, energy stored

Single phase transformer, complex diagrams, equivalent circuits, efficiency, regulation.

MODULE 3

Diodes, small signal equivalent, static and dynamic resistance, diffusion and transition capacitance, piece wise linear approximations, effect of temperature, avalanche breakdown, graphical analysis of diode circuits, graphical analysis and applications of series and parallel combinations of diodes.

Half wave and full wave rectification, transfer utilization factor, derivation of ripple factor, DC voltage and voltage regulation, peak inverse voltage, basic concept of C- filter, diode clipper, types of clippers, diode clamper circuits, voltage doubler.

Zener diode as a voltage regulator.

Principles of uninterrupted power supply (block diagram).

MODULE 4

Bipolar junction transistor, active, saturation, cut-off regions of transistor, common base and common emitter configuration of BJT, graphical analysis of CB and CE amplifier for determination of load line, Q-point, voltage gain, current gain, power gain, input impedance,

output impedance and efficiency, phase relationship between input and output. Methods of biasing the transistor. Transistor as a switch, switching losses.

Junction Field effect transistor, principle of working, drain and transfer characteristics, amplification factor, transconductance, dynamic resistance, their relation with characteristic curve, fixed biasing of FET, graphical analysis for CS configuration.

Introduction to communication, need for modulation, basic concept of amplitude, frequency modulation using waveform sketches. Introduction to satellite communication and cellular technology

BOOKS:

1. Electric circuits-Joseph A. Edminister, Schaums outline series-McGraw Hill Publications

2. Principles of Electrical Engineering- Vincent Del Toro-PHI publications

3. Transistor Circuit Approximation- A P Malvino
4. Electronic Devices and Circuits- Allen Mottershed- PHI publications
5. Electronic Devices and Circuits –Robert Boylestad and Louis Nashelsky-PHI publications
6. Principles of communication-George Kennedy

2.4 INFORMATION TECHNOLOGY-II
(PROBLEM SOLVING AND PROGRAMMING)

MODULE 1

Computer problem solving and algorithms: Introduction to problem solving, problem solving aspects, top down design, development of algorithms, flowcharts, implantations and program verification.

Fundamental algorithms: Exchanging values of two variables, counting, summation of a set of numbers, generation of prime numbers, reversal and sum of digits of a number etc.

MODULE 2

Merging, sorting and searching algorithms: Two way merge, bubble sort, insertion sort, linear search, binary search and hash searching. Implementation and applications.

MODULE 3

C Language: C fundamentals, operators and expressions, data input output, control statements, functions, arrays.

MODULE 4

C Language (contd..): Pointers, structures and unions and data files. Implentation of C programs based on selected topics from above.

TEXT BOOKS:

1. Electric How to solve it by Computers-R.G.Dromey-PHI
2. Theory and programming with C –B.S.Gottfried - PHI

REFERENCE BOOKS:

1. Let us C -Y.Kanetkar –BPB.
2. Programming with C –K.R.Venugopal and S.R.Prasad-TMH
3. Introduction to algorithms – T.Cormen, C.Leiserson and R.Rivest PH.

2.5 ENGINEERING MECHANICS

MODULE 1

1. Introduction and basic concepts of mechanics.

2. Coplanar forces- General system, resultant and equilibrium, moment of a force and couple, equilibrium conditions for coplanar force systems, determination of support reactions.

3. Analysis of pin pointed frames- Methods of joints and method of section.

MODULE 2

1. Friction- Laws of friction and problems based on limiting equilibrium condition.

2. Centroid and moment of inertia of plane figures.

MODULE 3

1. Shear force and bending moment for beams and cantilevers carrying concentrated and uniformly distributed loads.

2. Kinematics-Rectilinear and rotary motions, projectiles.

MODULE 4

1. Kinetics- Differential equation of motion, impulse momentum principle, work energy principle, D'Almbert's principle.

2. Simple lifting machines-Laws of lifting machines, Wheel and Differential axle, worm and worm wheel, pulleys etc.

TEXT BOOKS:

1. Engineering Mechanics Vol. I and II – V.S.Mokashi
2. Engineering Mechanics Vol. I and II – B.N.Thadani
3. Engineering Mechanics Vol. I and II – Beev and Johnson
4. Engineering Mechanics – Flingoon and Styles
5. Engineering Mechanics – Irvin Shames

2.6 SOCIAL SCIENCE

Lectures per week	:2 hrs.
Practicals per week	:
Max. marks for the paper	:
Duration of paper	:
Total no. of modules	:3
Max. marks for sessional	:50
Questions to be drawn from each module	:
Min. no. of questions to be answered from each module	:
Total no. of questions to be answered in the paper	:

MODULE I

- History of the Scientific Temperament.
- Industrial Geography
- Globalization and World Peace
- Democracy
- Our Constitution – Rights- Duties.

MODULE –II

- Inter-Group Relations
- Inter-Personal Relations
- Empowerment of Women
- Responsibility
- Our Culture
- Education-Evaluation

MODULE – III

-   Personality: Types(Heredity+Environment Tolerance)
-   Psychology-Coping with Stress-Repetitive Prayer Meditation
-   Adjustment
-   Business Mannuers- Etiquette
-   Positive Livine.

MODULE – IV

SOCIETY CULTURE AND PERSONALITY

1. Ethics: Moral foundations of social order-Responsibility(biography)
2. Culture and Identity
3. Education: Nature, Significance and Limitations
4. Personality and Motivation

Reference:

Articles in relevant Journals/Publications.

2.7 MODERN WORKSHOP PRACTIC

Lectures per week   :
Practicals per week   :3 hrs
Max. marks for the paper   :
Duration of paper   :
Total no. of modules   :4
Max. marks for sessional   :50
Questions to be drawn from each module   :
Min. no. of questions to be answered from each module   :
Total no. of questions to be answered in the paper   :

Modern Workshop Practices

MODULE I: Turning

MODULE –II: Welding

MODULE – III: Switchboards, Wiring & Winding.

MODULE – IV: Art-work, PCB Design, & Soldering

2.8 COMPUTER AIDED DRAFTING

Lectures per week   :
Practicals per week   :2 hrs
Max. marks for the paper   :
Duration of paper   :
Total no. of modules   :4
Max. marks for sessional   :50
Questions to be drawn from each module   :
Min. no. of questions to be answered from each module   :
Total no. of questions to be answered in the paper   :

MODULE I

1. Starting software, geometry and the computer:-
2. Two and three dimensional geometry, geometric primitives, geometric lines, circles, arcs, curves and planes. Edit tools, CAD strategy for principal views.

MODULE –II

1. 3-D objects: Creating 3-D objects by giving thickness, view point, hide, shade and render.

MODULE – III

Construction of graphs and charts

MODULE – IV

Mechanical Engineering drawing: Drawing of bolts, nuts, flanges. Isometric drawing.

Text books:

Reference Manual Auto CAD.

References:

Fundamentals of Engineering drawing- W.J.Luzadder and J.M.Duff-PHI