SCHEME OF INSTRUCTIONS AND EXAMINATION
For F. E. (Semester I and II)

Semester I (Civil, Mechanical, Electronics & Tele-Comm. and Computer Engg.)

Sr No.	Subject	Deptartment to teach	Teaching Schedule			Duration	Examination Scheme				TOTAL
			L	T	P		Theory	Practical	TW eorrmk	Oral	
1.	Applied Maths I	Mathematics	3	1	—	3	100	—	—	—	100
2.	Applied Physics	Physics	3	1	2	3	100	—	25	—	125
3.	Applied Chemistry	Chemistry	3	1	2	3	100	—	25	—	125
4.	Communication skills	English	1	—	3	2	75	—	25	—	100
5.	Engineering Graphics I	Mechanical	2	—	6	4	100	—	50	—	150
6.	Basic Electrical Engineering	Electrical	3	1	2	3	100	—	25	—	125
7.	Basic Civil Engineering	Civil	3	1	2	3	100	—	25	—	125
8.	Work Shop Practicals	Mech. Workshop	—	—	5	—	—	—	50	—	50
		Total	18	5	22		675	—	225	—	900

GOA UNIVERSITY

F. E. (SEMESTER I) APPLIED MATHEMATICS I

1. Complex variables : De Moivre's theorem - powers and roots-Exponential and Trignometric functions. Hyperbolic and Logarithmic functions. Inverse hyberbolic and trignometric functions.

2. Vector algebra and calculus : Scalar and vector triple products of vectors - Products of four vectors. Differentiation of a vector function of a scalar variable - Derivative of a unit vector - Applications to space curves and dynamics.

3. Differential Calculus : Leibnitz' theorem. Taylor's theorem. (without proof). Taylor's and Maclaur in's series expansions. Indeterminate forms. Partial differentiation - total differential. Euler's theorem on homogeneous functions. Extreme values of functions of two and three variables. Lagrange multipliers Errors and approximations.
4. Beta and Gamma functions : definition - various forms and properties.

Books recommended :

1. Applied Mathematics - P. N. Wartikar and J. N. Wartikar

2. Vector algebra - Shanti narayan

3. Vector calculus - Shanti narayan

4. Mathematics for Engineers and Physicists - L. A. Pipes.

Applied Physics

Marks

L	T	P		Theory	Pract.	T. W.	Oral	Total
3	1	2		100	—	25	—	125

1. Interference of light by the division of amplitude method. Interference in thin films; Interference between parallel plated flims by two reflected rays. Path difference. Newton's rings and wedge shaped films. Applications : Test for optical flatness and antireflection films.

2. Elements of thermoelectric effect and thermocouple. Law of intermediate metal and tempertaure. Thompson and Peltier coefficients. Thermoelectric series. Thermoelectric power. Various types of thermocouples for different temperature ranges.

3. Motion of charged particles in electric and magnetic fields and its applications to cathode ray tube. Cyclotron, Mobility of ions.

4. Ultrasonics : Production of ultrasonics by Piezoelectric effect and magnetestriction method and applications.

5. Laser optics : Energy momentum and velocity of photons. Photon matter interaction; Equilibrium condition. Non eqūlibrium condition. Population inversion. Infrared laser, Ruby and He-Ne laser. Solid state laser. Laser coherense and intensity of laser beam. Holography : Principles and other applications.

6. Elements of fibre optics (Principle and construction only) and its applications.

Each student shall carry out a laboratory course based on the syllabus and submit a journal. The journal shall consists of report of atleast six experiments performed in the laboratory during the course. The above work shall be counted as term work and shall be submitted to the examiners and alloted marks upto a maximum of 25.

Text Books

1. Geometrical & Physical optics - B. K. Mathur

2. Text book of electricity & Magnetism - D. N. Vasudev Atmaram & Sons.

3. Text book of electricity & Magnetism - Kharve & Srivastava Atmaram & Sons.

4. Text book of sound - Bedi & Khanna

5. Lasers   - Lyngyel

6. Fibre   - Optics

Single mode fibres-I Fundamentals - Neumann E. G. Vol 57

COMMUNICATION SKILL
Marks

L	T	P	Theory	Pract.	T. W.	Oral	Total
1	0	4	75	—	25	—	100

I. Oral Expression : (A) (i) Characteristics of Good Public Speaking

        (ii) Evaluation of the Audience

    (B) (i) Attitudes in Team speaking

        (ii) Debates & Discussions.

        (iii) Seminars and Symposia.

II. Note taking and Summarising : Selection of keyboards and key-phrases from reference books and from lectures. Precis-writing. Importance of being concise and relevant.

III. Comprehension : Ability to understand ideas.

        Ability to interpret ideas.

        Emphasis on vocabulary.

        Conscious expansion of vocabulary.

IV. Business Writing : Reports, memorandums.

        Letters (Applications etc)

V. Technical Writing : Main features of technical writing, forms of technical description of processes and objects, instructions, reports.

VI. Correct usage of language : Prefixes and sufixes, spellings of technical words; correct tenses; prepositions and prepositional phrases; conjunctions to promote compactness; punctuation; active and passive voices; Direct and Indirect speech, Transformation, common errors; Idioms; sentence patterns.

Term Work

The term work shall consist of minimum six written assignments based on the above topics and shall carry a maximum marks of 25.

Text Books recommended for reference

1. "The use of English for technical students"
   By R. A. Kelly (Elbs London Publication)

2. "Corridors to communication"
   By R. Vanikar (Orient Longman)

3. "English for the technical students"
   By J. G. Wooley (Taraporvala)

4. "English for technical students"
   Communication development centre
   Technical Teacher Training Institute (Orient Longman)

5. "English for Technical students"
   Amer E. Desai (The Popular Book Store, Surat)

APPLIED CHEMISTRY

Marks

L	T	P	Theory	Pract.	T. W.	Oral	Total
3	1	2	100	—	25 ·	—	125

I. Determination of total hardness in water, problems connected with high and low pressure boilers and their remedies. Treatment of boiler feed water including power plant.

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2. Preparation, properties and uses of refractories. Testing, selection and failure of refractories.

3. Plastics, Classifications, compounding and fabrication, types of thermoplasting and thermosetting plastics, their preparation, properties and uses.

4. Lubricants : types and methods of lubrications. Classifications, testing and selections of lubricants.

5. Corrosion : Types of corrosion, factors relating to the rate of corrosion. Electro-chemical theory of corrosion, paints, varnishes and the protective coatings, Corrosion resistant materials.

6. Fuels : Solids, liquid and gaseous fuels.Analysis of Coal, Calorific value and its determination, Refining of petroleum, Fuels for Internal combustion engines, octane number and Cetane number.

Term Work

Based on the following experiments :

1. To determine the hardness of given water.
2. Determination of pH.
3. Use of Refractometer to determine the refractive index.
4. Sopanification value for lubricants.
5. Gas analysis by simple orset apparatus.
6. Viscosity (Redwood) by different methods.

7

Text books

1. Essentials of Physical Chemistry - by Bahl and Tuli - S. Chand.

2. Engineering Chemistry - by M. M. Uppal - Khanna Pub.

3. Elements of Applied Chemistry - by C. V. Agarwal - Khanna Pub. Delhi.

4. Engineering Chem. - by P.C. Jain - Khanna Pub.

ENGINEERING GRAPHICS (I)

Marks

L	T	P		Theory	Pract.	T. W.	Oral	Total
2	0	6		100	—	50	—	150

Chapter 1 : Dimensioning and lettering, according to IS 696.

Chapter 2 : Engineering curves (Parabola, Hyperbola, Ellipse, Cycloid, epi-cycloid, hypo-cycloid, Involute)

Chapter 3 : Projection of points and straight lines, including traces of lines.

Chapter 4 : Projection of planes and obliques planes.

Chapter 5 : Projection of solids and section of solids.

Chapter 6 : Orthographic views - given the pictorial views drawing other views, including sectional views).

Term Work

One sheet each (Half-imperial) on chapter 1, chapter 2, chapter 3 and chapter 4.

Two sheets each on chapter 5 and chapter 6, (Min. 4 problems in each sheet) should be completed within the four walls of the college.

Text Books

1. Engineering Drawing - N. D. Bhatt

2. Machine Drawing - N. D. Bhatt

Reference Books

1. Engineering Drawing Vol. I & II - K. R. Gopalkrishna.
   S.P. 46-1988 Engineering Drawing Practice for Schools and Colleges.

   I. S. - 919

F. E. SEMESTER - I

1. BASIC ELECTRICAL ENGINEERING

Marks

L	T	P		Theory	Pract.	T. W.	Oral	Total
3	1	2		100	—	25	—	125

1. Fundamental laws of Electrical Engineering : (Units - Electric and Magnetic quantities) coulomb's Law, Ohms law, Faraday's law of electromagnetic induction, Ampere's law.

2. Basic two terminal elements (lumped, linear, bilateral) - resistor, capacitor, inductor v-I relationship and sign convention, ideal voltage and current sources, energy concept in two terminal elements, non-linear elements and their (V-I) relationships, periodic-time varying signals sources applied to linear two terminal elements and their response, rms & average value of time varying signals.

3. Kirchoffs law (KCL and KVL), method of network analysis using, independent KCL and KVL. Series and parallel combination of elements, star-delta transformation. Matrix method & determinations for solving linear independent KCL & KVL simultenious equations.

4. Network theoroms : Homogenity and superposition theorem, Thevenin's & Norton's theorem, Reciprocity, composation, maximum power transfer theorems, Milman's Theorem.

5. Steady-state response of cuircuits to sinusoidal sources, Average and effective value, of periodic functions. Instatenous and average power, power factor, phasor represection, sinusoidal steady state response to R, L and C elements, R-L and R-L-C circuits, 3-phase e.m.f. generation, balanced R-L and R-C 3-phase circuits.

6. Magnetic circuit calculations for series & parallel magnetic circuits with and without air gap, Concepts of mutual inductance and theory of magnetically coupled circuits. Single phase transformer, development of phasor diagram and equivalent circuit. Determination of parameters of equivalent circuit Efficiency and regulation of single phase transformer.

List of Books

1. Electric Circuits - by Joseph A Ediminister (Schaum's outline series)

2. Circuit Analysis - by Sameshwar C. Gupta, John W. Bayless, Behrous Pei Kari, Willey Eastern Limited, New Delhi.

3. Electrical Circuits and field. - by M. L. Seni, L. C. Gupta P. V. Gupta, Dhanpat Rai & Sons, Delhi.

2. BASIC CIVIL ENGINEERING

Lectures - 3/week, Tutorials - 1/week and Practicals - 2/week

Paper - 3 hours - 100 marks. Term Work - 25 marks.

I. **Building Materials** —

a) Cement - Manufacture (brief outline), Constituents, types & uses.

b) Bricks - conventienal size in practice, size as per ISI, manufacture & uses.

c) Stones - Origin, classification, general characteristics & uses.

d) Concrete - constituents, Water - Cement ratio, curing, brief description of R.C.C. & prestressed concrete.

e) Timber - varieties, uses, defects, agents causing decay, seasoning & preservation, plywood & pressed wood.

f) Structural steel - Built up sections & uses.

II. Introduction to building construction —

Various parts of the building - sub structure and super structure. Load bearing structure & framed structure - Foundation, Columns, beam, lintels, arches, doors and windows (brief outline), roof types (brief outline).

III. Excavation & Dewatering —

Cutting in rocks, deep ducts, cutting in loose soils, shoring & strutting, trenches for cables & water pipes, dewatering - pumping & use of well points.

IV. Introduction to surveying —

Definition, object & principles of surveying, scales & vernier, Chain, Tape & Compass surveying (brief outline)

V. Elementary Building Drawing —

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

Term Work

1. Six assignments to cover the above syllabus.

2. Practice on surveying with chain, tape & compass.

3. Preparing a site plan & a layout plan of a existing building.

References

1. Surveying Vol I by Dr. B. C. Punmia Standard Book House, Delhi-6.

2. Building Construction by Sushilkumar Standard Publishing Disributors Nai Sarak, Delhi-6.

3. Construction Engineering Vol. I Building Construction by Y. S. Sane Manaktalas, Bombay.

4. I S I - 962-1967 Architectural and Building Drawings, Code of practice for

3. ENGINEERING MECHANICS

Lectures - 3/week, Tutorial - 1/week and Practical - 2/week. Paper - 3 hours - 100 marks, Term work - 25 marks.

1. Coplanar Forces - General system of coplanar system - resultant & equilibriant - couples - equilibrium of system of coplanar forces - determination of support reactions.

2. Analysis of pin jointed frames - By method of joints and sections.

3. Friction - Laws of friction - equilibrium of bodies on in clind plane and wedges.

4. Graphics Statics - Bow's notations, force polygon & funnicular polygon - solution of pin jointed truss.

5. Centroid, centres of gravity & moment of Inertia - Centroid of plane figures - centre of gravity of regular solids - moment of inertia of plane figures.

6. Principle of virtual work - Application to beam reactions.

7. Shear Force & Bending Moment - Beams & contilevers carrying concentrated and uniformly distributed loads.

Term work

1. Laboratory work shall cover a minimum of five experiments based on the above syllabus.

2. A minimum of four problems solved graphically on two half imperial size sheets.

Books Recommended

1. Engineering Mechanics Vol I by Beer & Johnson

2. Engineering Mechanics by B. N. Thadani

3. Engineering Mechanics by hingdon & Styles

4. Engineering Mechanics by Timesheske & Young.

WORKSHOP PRACTICE - I

Marks

L	T	P		Theory	Pract.	T. W.	Oral	Total
0	0	5		—	—	50	—	

CARPENTRY

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

Description and use of tools used in carpentry.

Important joints and their use. Simple exercise as below :

1. On wood turning - 1 job

2. Important wooden joints - 1 job

SMITHY

Nature of work in Smithy, smiths tools and their uses.

Safety and precuations in smithy. Excercise involving simple hand forging operations as below :

1. Simple hand forging - 1 job

2. Hardening and Tempering - Demonstration

3. Use of Power Hammer - Demonstration.

FITTING

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

1. Exercise involving filing, fitting, drilling and tapping operations - 1 job

2. One simple exercise involving pipe threading/pipe fitting - 1 job

3. Demonstration of various pipe fittings.

For F. E. (Semester I and II)

Semester II (Civil, Mechanical, Electrical, Electronics
& Tele-Comm. and Computer Engg.)

Sr No.	Subject	Deptartment to teach	Teaching Schedule			Dur-ati-on	Examination Scheme				
			L	T	P		Theory	Practical	TW eorrmk	Oral	TOTAL
1.	Applied Maths II	Mathematics	3	1	—	3	100	—	—	—	100
2.	Engg. Mechanics	Civil	3	1	2	3	100	—	25	—	125
3.	Intr. to Computer Programming & Problem Solving	Computer	3	1	3	3	100	—	25	—	125
4.	Basic Mechanical Engg.	Mechanical	3	1	2	3	100	—	25	—	125
5.	Basic Electronics	Electronics & Telecomm.	3	1	2	3	100	—	25	—	125
6.	Engineering Graphics II	Mechanical	2	0	6	4	100	—	50	—	150
7.	Work shop Practice	Mech. workshop	—	0	6	—	—	—	50	—	50
		Total	17	5	21		600	—	200	—	800

F. E. (SEMESTER II) APPLIED MATHEMATICS II

1. Integral calculus : Rectification of plane curves. Double and triple integrals - Geometrical interpretation - evaluation. Applications to areas, surfaces and volumes.

2. Ordinary Differential Equations : Standard methods of solutions. First order and first degree equations. Bernoulli's equation - Linear equations with constant coefficiants. complimentary functions. Particular integral when the r.h.s. is of the form $e^{ax} \sin(ax)$, $\cos(ax)$, $e^{ax} \cos(bx)$, $e^{ax} \sin(bx)$, $x\,f(x)$, $e^{ax} f(x)$ Linear equations with homogeneous coefficients.

3. Vector analysis : Line integral and it's properties - Green's theorem for plane. Scalar and vector fields. Conservative fields Potentials, gradient, divergence and curl I. Divergence theorem stoke's theorem.

4. Complex Variables : Continuity and differentiability. analytic functions - c.r. equations - Harmonic functions - Conjugate harmonic functions. Elementary conformal mapping examples.

Books

1. Applied Mathematics - P. N. Wartikar and J. N. Wartikar

2. Higher Mathematics for Engineers and Physicists - I. S. Sokoinikaff and E. S. Sokoinikoff

3. Theory of functions of complex variables - Shantinarayan

4. Advanced Engineering Mathematics - Krysig.

2. ENGINEERING MECHANICS

Lectures - 3/week, Tutorial - 1/week and Practical - 2/week. Paper - 3 hours - 100 marks, Term work - 25 marks.

1. Coplanar Forces - General system of coplanar system - resultant & equilibriant - couples - equilibrium of system of coplanar forces - determination of support reactions.

2. Analysis of pin jointed frames - By method of joints and sections.

3. Friction - Laws of friction - equilibrium of bodies on inclined plane and wedges.

4. Graphics Station - Bow's notrations, force polygons & funnicular polygon - solution of pin jointed truss.

5. Centroid centres of gravity & movement of Inertia - Centroid of plane figures - centre of gravity of regular solids - moment of intertia of plane figures.

6. Principle of virtual work - Application to beam reactions.

7. Shear Force & Bending Moment - Beams & cantilevers carrying concentrated and uniformly distributed loads.

Term work

1. Laboratory work shall cover a minimum of five experiments based on the above syllabus.

2. A minimum of four problems solved graphically on two half imperial size sheets.

Books Recommended

1. Engineering Mechanics Vol I by Beer & Johnson

2. Engineering Mechanics by B. N. Thadani

3. Engineering Mechanics by hingdon & Styles

4. Engineering Mechanics by Timesheske & Young.

II - 3 Introduction to Computer Programming and Problem Solving

(Lectures - 3 periods/week, Theory paper - 100 marks, Duration 3 hrs)

(Practical - 3 periods/week, Tutorial 1 period/week, Term work - 25 marks)

— Introduction to Computer and their applications, identifying different Components of a Computer system and their functions, Machine language and higher level language, introduction to editors and compilers.

— Design of a computer program : Specifying a problem, problem solving strategies, algorithms, flow charting, pseudo codes and abstract programs, structured programs, programming errors, stepwise refinement, verification of correctness of a program.

— Programming with Fortran : Introduction to Fortran, constants and variables, arithmetic expressions, input output statements, control structures, branching and loops, arrays and subscripted variables, format specifications, functions and subprograms, salient features of Fortran '77.

Simple examples illustrating the features of designing a program and Fortran language.

Term Work

The term work shall consists of a report of programming exercises (minimum six) based on the above syllabus.

Reference Books

1. 'Programming in fortran' by P. V. S. Rao, Tata McGraw Hill.

2. 'Principles of Computer Programming' by V. Rajaram, Prentice Hall of India.

3. 'How to solve it by Computer's, by Dromy, Prentice Hall of India.

4. 'Introduction to Computer Sceince', by C W Gear, INSAT Books, ND.

5. 'Computers and Common Sence' by Hunt and Shelley, Prentice Hall of India.

6. 'Introduction to Programming and Problem Solving with Pascal' by G. M. Schneider, S. W. Weingart and D. M. Perlman, Wiley.

BASIC MECHANICAL ENGINEERING

L	T	P	Theory	Pract.	T. W.	Oral	Total
3	1	2	100	—	25	—	125

(A) Thermal Engg. :—

1. Definations :— System, surrounding, boundary, properties, path and point functions, equilibrium, process. Zeroth Law Measurements and units of thermodynamics variables.

2. First Law : Statement, corollaries, (including PMM1) First law applied to various processes. (isochoric, isobaric, isothermal, iscentropic and polytropic), control volume (definition), steady-state steady-flow equation, various open system Devices. (Description & examples only)

3. Second Law :— Statements, PMM2 (description), carnot Theorem, Factors causing irreversibility, Kelvin Temp Scale, Entropy - Definition, Entropy as property.

4. Cycles:— Power cycle (Air standard - Carnot, Otto, and diesel only) Vapor power cycle - Rankine cycle (Description only) Refrigeration cycle (Schematic diagram only). Applications : 2/4 stroke diesel/petrol engine (working principles only). Boilers (Types, description and uses), working principles and descriptions of domestic refrigerator and window air conditioner, air - compressors - types, description and uses.

(B) Production Engg.:

1. Mechanical working of metals : Elementary treatment of rolling, drawing, spinning, extrusion and forging.

2. Sheet metal working : Elementary treatment of press working-shearing, blanking, punching, forming, notching, bending, and drawing on press tools.

3. Joining Process :— Revetting. Soldering, brazing, gas welding, are welding, resistance welding - process, equipment and application.

4. Pattern making and casting process : Types of pattern, pattern materials, pattern making allowances, cores, coreprints, core boxes, tools and methods of making moulds, properties of moulding sand, machine moulding, furnaces for ferrous and non-ferrous metals, defects in casting.

5. Surface finishing processes : — Lapping, honing, superfinishing, electroplating, galvanizing, metal spraying anodizing, plastic coating.

6. Lathe - Centre lateh - Studys operations - turning, facing, chamfering drilling, boring, reaming, thread cutting, knurling-tools, standard attachement and accessories.

7. Shaper:— Study, applications and limitations.

8. Drilling machine :— types — sensitive, upright, and radial, applications and limitations.

9. Grinding machine :— Types - cylindrical, surface, centreless, Grinding wheels - selection, mounting, dressing.

10. Milling machine :— Study, applications and limitations.

(C) **Design Engineering** (I) Definations of kinematic link, joint/pair, chain, mechanism, linkage. Planar and spatial mechanisms, machine. Pairs:— Higher and lower, closed and open, kinematic representation and DOF.

Mobility of mechanism :— Kutzbach's criterian. Inversions of four bar chain and slider - crank chain. Plane translation, plane rotation, combined translation and rotation, helical motion, spherical motion.

II. **Mechanisma with lower pairs :** Exact straight-line motion mechanisms, Approx - Straight line motion mechanisms, steering mechanisms, Quick-return mechanisms, parallel -

motion mechanisms, (Pantograph), Intermittent motion mechanisms, Toggle mechanisms.

III. **Power Transmission Drives :—** Open and crossed belt drives, Rope drives, chain drives, variable speed drives.

IV. **Gears and Gear Trains :** Types of Gear nomenclature of spur gears fundamental law of gearing, parameters of gears and relationship. properties of all types of gears, simple, compound, reverted and Epicyclic Gear trains.

V. Basic concepts of static and dynamic balancing.

VI. **Machine coponents :—** Shafts, couplings, fasteners, springs, bearings, cams, clutches, brakes.

BASIC ELECTRONICS

Teaching schedule :   L   T   P
                       3   1   2

Examination: 1 paper - 3 hours - 100 marks, Term work - 25 marks

Semiconductors :

Intrinsic and extrinsic semiconductors : Energy - band diagrams: Carrier transport by drift and diffusion.

Junction - Diode :

The p-n junction; Volt-ampere characteristics of a p-n diode; Zener diode.

Bipolar - Junction Transistor (BJT)

Common - base (CB) configuration; volt-ampere characteristic; Transistor parameters (and g_m)

Junction - Field - Effect Transistor

Common-source (CS) configuration; Drain characteristics; Transfer characteristics; The JFET parameters (H and g_m)

Metal - Oxide Semiconductor FET (MOSFET)

Drain characteristics; Transfer characteristics.

Diode Applications

Rectification : Half - wave and full-wave rectifier; Choke-input filter Diode clamper and limiter; Voltage-doubler.

Transistor Small-Signal Models

Linear equivalent circuit for BJT in terms of h-parameters; Linear equivalent circuit of FET.

Transistor Amplifier (Single-Stage)

Common emitter (CE) configuration; Graphical analysis; concept of load line and the quiscent operating point; Determination of voltage gain current gain and the power gain.
Common-source (CS) configuration; Graphical analysis.

Oscillators

Basic principle; tuned -LG Oscillators; Phase-shift oscillators.

Modulation

Modulation and de-modulation (Detection); Square-low diode modulator Transistor modulator; Diode detector; Transistor-detector.

Integrated Circuit (IC)

Fabrication; IC components (R, C, diodes and Transistors)

Transistor Logic Circuits

OR, AND NOT NAND and NOR gates.

Cathode - Ray- Oscilloscope

working principle and applications.

Text Books

1. V. Del Toro, "Principles of Electrical Engg. 2nd Edn, PHI, New Delhi".

Reference Books

1. A. E. Fitzgerald, D. E. Higginbotham and D. Grabel, "Basic Electrical Engg; McGraw Hill Book Co.

2. J. D. Ryder, "Electronic Fundamentals and applications, "P.H.I. New Delhi.

Term Work

Laboratory work shall cover a minimum of six experiments based on the above. The laboratory work as recorded in the journal shall constitute term work and shall be submitted to the examiners and allotted marks upto a maximum of 25.

ENGINEERING GRAPHICS II

L	T	P	Theory	Pract.	T. W.	Oral	Total
2	0	6	100	—	250	—	150

Chapter : 1 - Isometric, Oblique, views and auxillary Projections.

Chapter : 2 - Orthographic Reading

Chapter : 3 - Developement of surfaces

Chapter : 4
Intersections of Solids

 a) Prism. with prism

 b) Cylinder with cylinder

 c) Cylinder with prism

 d) Cone with cylinder

MACHINE SHOP

Nature of work done is machine shop, construction and use of lathes, drilling, milling and shaping machines and grinding machines. simple exercise involving turning and drilling operations. Use of Verniers, Micrometers and dial gauges.

Exercise as below :

1. Simple job involving turning operations.   1 job

2. Demonstration on milling, shaping and
   grinding machines.

FOUNDRY

Nature of work in foundry shop. Handtools and equipments 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   1 job

2. Considering different pattern allowances.

3. Practice in making sand moulds & cores.

4. Demonstration of a simple ferrous/non ferrous casting.

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30