

P.K.UNIVERSITY, SHIVPURI (MP)
(FACULTY OF ENGINEERING & TECHNOLOGY)



EVALUATION SCHEME & SYLLABUS
FOR
Diploma in
Electronics & Instrumentation Engineering
(I Year- I Semester)
ON
CHOICE BASED CREDIT SYSTEM (CBCS)

[Effective from the Session: 2025-26]

EVALUATION SCHEME

STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN ELECTRONICS & INSTRUMENTATION ENGG.

SEMESTER -I

SUBJECT CODE	SUBJECTS NAME	STUDY SCHEME Periods/Week			Credits	MARKS IN EVALUATION SCHEME						Total Marks of Internal & External
						INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
DCOMMEI101	Communication Skills-1	2	0	0	2	30	-	30	70	-	70	100
DAPPLEI102	Applied Mathematics -1	3	1	0	4	30	-	30	70	-	70	100
DAPPLEI103	Applied Physics -1	3	0	0	3	30	-	30	70	-	70	100
DAPPLEI104	Applied Chemistry	3	0	0	3	30	-	30	70	-	70	100
DELECEI105	Electrical & Electronics Engg. Materials.	3	0	0	3	30	-	30	70	-	70	100
DENGIEI106	Technical Drawing	3	0	0	3	30	-	30	70	-	70	100
DCOMMEI107	Communication Skills-1 Lab	0	0	2	1	-	25	25	-	25	25	50
DAPPLEI108	Applied Physics -1 Lab	0	0	2	1	-	25	25	-	25	25	50
DAPPLEI109	Applied Chemistry Lab	0	0	2	1	-	25	25	-	25	25	50
Total		17	1	6	21	180	75	255	420	75	495	750

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
I Year I Semester

	L	T	P
DCOMMEI101: COMMUNICATION SKILLS-I	2	0	0

DETAILED CONTENTS

- | | | |
|----------|---|---------------------|
| 1 | Basics of Communication | (13 periods) |
| | 1.1 Definition and process of communication | |
| | 1.2 Types of communication - formal and informal, oral and written, verbal and non-verbal | |
| | 1.3 Communications barriers and how to overcome them | |
| | 1.4 Barriers to Communication, Tools of Communication | |
| 2 | Application of Grammar | (18 periods) |
| | 2.1 Parts of Speech (Noun, verb, adjective, adverb) and modals | |
| | 2.2 Sentences and its types | |
| | 2.3 Tenses | |
| | 2.4 Active and Passive Voice | |
| | 2.5 Punctuation | |
| | 2.6 Direct and Indirect Speech | |
| 3 | Reading Skill | (10 periods) |
| | Unseen passage for comprehension (one word substitution, prefixes, suffixes, antonyms, synonyms etc. based upon the passage to be covered under this topic) | |
| 4 | Writing Skill | (15 periods) |
| | 4.1 Picture composition | |
| | 4.2 Writing paragraph | |
| | 4.3 Notice writing | |

RECOMMENDED BOOKS

1. Communicating Effectively in English, Book-I by RevathiSrinivas; Abhishek Publications, Chandigarh.
2. Communication Techniques and Skills by R. K. Chadha; DhanpatRai Publications, New Delhi.
3. High School English Grammar and Composition by Wren & Martin; S. Chand & Company Ltd., Delhi.
4. Excellent General English-R.B.Varshnay, R.K. Bansal, Mittal Book Depot, Malhotra
5. The Functional aspects of Communication Skills – Dr. P. Prasad, S.K. Katria & Sons, New Delhi
6. Q. Skills for success – Level & Margaret Books, Oxford University Press.

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
I Year I Semester

DAPPLEI102: APPLIED MATHEMATICS-I
DETAILED CONTENTS

1. Algebra -I (12 Periods)

- 1.1 Series : AP and GP; Sum, nth term, Mean
- 1.2 Binomial theorem for positive, negative and fractional index (without proof).
Application of Binomial theorem.
- 1.3 Determinants : Elementary properties of determinant of order 2 and 3, Multiplication system of algebraic equation, Consistency of equation, Cramer's rule

2. Algebra- II (12 Periods)

- 1.2 Vector algebra: Dot and Cross product, Scalar and vector triple product.
- 2.2 Complex number.
Complex numbers, Representation, Modulus and amplitude Demoire theorem, its application in solving algebraic equations, Mod. Function and its properties.

3. Trigonometry (10 Periods)

- 1.2 Relation between sides and angles of a triangle: Statement of various formulae showing relationship between sides and angle of a triangle.
- 2.2 Inverse circular functions: Simple case only

4. Differential Calculus - I (18 Periods)

- 1.2 Functions, limits, continuity, - functions and their graphs, range and domain, elementary methods of finding limits (right and left), elementary test for continuity and differentiability.
- 2.2 Methods of finding derivative, Trigonometric functions, exponential function, Function of a function, Logarithmic differentiation, Differentiation of Inverse trigonometric function, Differentiation of implicit functions.

5. Differential Calculus - II

(18 Periods)

- 1.2 Higher order derivatives, Leibnitz theorem (without proof). Simple applications.
- 2.2 Application - Finding Tangents, Normal, Points of Maxima/Minima, increasing/Decreasing functions, Rate, Measure, velocity, Acceleration, Errors and approximation.

RECOMMENDED BOOKS

- 1. Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi
- 2. Engineering Mathematics, Vol I & II by SS Sastry, Prentice Hall of India Pvt. Ltd.,
- 3 Applied Mathematics-I by Chauhan and Chauhan, Krishna Publications, Meerut.
- 4 Applied Mathematics-I (A) by Kailash Sinha and Varun Kumar; Aarti Publication, Me

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)

I Year I Semester

DAPPLEI103: APPLIED PHYSICS-I

L	T	P
3	0	0

DETAILED CONTENTS

1. Units and Dimensions (10 Periods)

- 1.1 Need of Measurement in engineering and science, unit of a physical quantities - fundamental and derived units, systems of units (FPS, CGS and SI units)
- 1.2 Dimensions and dimensional formulae of physical quantities.
- 1.3 Principle of homogeneity of dimensions
- 1.4 Dimensional equations and their applications, conversion of numerical values of physical quantities from one system of units into another, checking the correctness of physical equations and deriving relations among various physical quantities
- 1.5 Limitations of dimensional analysis
- 1.6 Error in measurement, accuracy and precision of instruments, random and systematic errors, absolute error, relative error, and percentage error, Estimation of probable errors in the results of measurement (combination of errors in addition, subtraction, multiplication, division and powers), rules for representing significant figures in calculation.
- 1.7 Application of units and dimensions in measuring length, diameter, circumference, volume, surface area etc. of metallic and non-metallic blocks, wires, pipes etc (at least two each).

2. Force and Motion (10 periods)

- 2.1 Scalar and vector quantities – examples, representation of vector, types of vectors
- 2.2 Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only), Scalar and Vector Product.
- 2.3 Resolution of Vectors and its application to lawn roller.
- 2.4 Force, Momentum, Statement and Derivation of Conservation of linear momentum, its applications such as recoil of gun. Impulse and its Applications Circular motion (Uniform and Non-uniform), definition of angular displacement, angular velocity, angular acceleration, frequency, time period.
- 2.5 Relation between linear and angular velocity, linear acceleration and angular

Acceleration (related numerical)

- 2.6 Central force, Expression and Applications of Centripetal and centrifugal forces with examples such as banking of roads and bending of cyclist, Principle of centrifuge.
- 2.7 Application of various forces in lifts, cranes, large steam engines and turbines

3. Work, Power and Energy (10 periods)

- 3.1 Work: and its units, examples of zero work, positive work and negative work, conservative and non-conservative force,
- 3.2 Friction: modern concept, types, laws of limiting friction, Coefficient of friction and its Engineering Applications.
- 3.3 Work done in moving an object on horizontal and inclined plane for rough and plane surfaces with its applications
- 3.4 Energy and its units: Kinetic energy and potential energy with examples and their derivation, work energy theorem.
- 3.5 Principle of conservation of mechanical energy for freely falling bodies, examples of transformation of energy.
- 3.6 Power and its units, calculation of power in numerical problems
- 3.7 Application of Friction in brake system of moving vehicles, bicycle, scooter, car trains etc.

5 Rotational Motion (10 periods)

- 5.1 Concept of translatory and rotatory motions with examples
- 5.2 Definition of torque with examples
- 5.3 Angular momentum, Conservation of angular momentum (quantitative) and its examples
- 5.4 Moment of inertia and its physical significance, radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only), Moment of inertia of rod, disc, ring and sphere (hollow and solid) (Formulae only). Concept of Flywheel.
- 5.5 Rotational kinetic energy, Rolling of sphere on the slant plane
- 5.6 Comparison of linear motion and rotational motion.
- 5.7 Application of rotational motions in transport vehicles, and machines.

6 Motion of planets and satellites (08 periods)

- 6.1 Gravitational force, Kepler's law of planetary motion
- 6.2 Acceleration due gravity and its variation
- 6.3 Gravitational Potential and Gravitational potential energy
- 6.4 Motion of satellite, orbital velocity and time period of satellite, Total energy and Binding energy of a satellite, Escape energy and escape velocity

- 6.5 Types of satellites, Geo-stationary satellite, semi-synchronous, polar satellite (concept only) and their uses in science and technology
- 6.6 Concept of Black Holes

6. Properties of Matter (12 periods)

- 6.1 Elasticity: definition of stress and strain, different types of moduli of elasticity, Hooke's law, significance of stress strain curve
- 6.2 Pressure: definition, its units, atmospheric pressure, gauge pressure, absolute pressure, Fortin's Barometer and its applications
- 6.3 Surface tension: concept, its units, angle of contact, Capillary action and determination of surface tension from capillary rise method, applications of surface tension, effect of temperature and impurity on surface tension
- 6.4 Viscosity and coefficient of viscosity: Terminal velocity, Stoke's law and effect of temperature on viscosity, application in hydraulic systems.
- 6.5 Concept of fluid motion, stream line and turbulent flow, Reynold's number Equation of continuity, Bernoulli's Theorem and their applications.

7. Heat and Thermodynamics (10 periods)

- 7.1 Difference between heat and temperature
- 7.2 Modes of transfer of heat (Conduction, convection and radiation with examples)
- 7.3 Different scales of temperature and their relationship
- 7.4 Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them
- 7.5 Heat conduction in a metal rod, Temperature gradient, Concept of Co-efficient of thermal conductivity, Uses and effects of Heat conduction in Daily life.
- 7.6 Isothermal and Adiabatic process
- 7.7 Zeroth, First and second law of thermodynamics, Heat engine (concept only), Carnot cycle.
- 7.8 Application of various systems of thermometry in refrigeration and air-conditioning etc.

RECOMMENDED BOOKS

- 1 Text Book of Physics for Class XI (Part-I, Part-II); N.C.E.R.T., Delhi
- 2 Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi
- 3 Comprehensive Practical Physics, Vol, I & II, JN Jaiswal, Laxmi Publications (P) Ltd., New Delhi
- 4 B.Sc.Practical Physics by C L Arora, S. Chand Publication..
- 5 Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi
- 6 Engineering Physics by DK Bhattacharya & Poonam Tandan; Oxford University Press, New Delhi
- 7 Modern Engineering Physics by SL Gupta, Sanjeev Gupta, Dhanpat Rai Publications
- 8 V. Rajendran, physics-I, Tata McGraw-Hill raw Hill publication, New Delhi
- 9 Arthur Beiser, Applied Physics, Tata McGraw-Hill raw Hill publication, New Delhi
- 10 Physics Volume 1, 5th edition, Haliday Resnick and Krane, Wiley publication

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)

I Year I Semester

DAPPLEI104: APPLIED CHEMISTRY

L	T	P
3	0	0

DETAILED CONTENTS

1. Atomic Structure, Periodic Table and Chemical Bonding (14 periods)

- 1.1 Fundamental particles- mass and charges of electrons, protons and neutrons with names of the scientists who discovered these fundamental particles.
- 1.2 Bohr's model of atom and successes and limitations of atomic theory (qualitative treatment only).
- 1.3 Atomic number, atomic mass number isotopes and isobars.
- 1.4 Definition of orbit and orbitals, shapes of s and p orbitals only, quantum numbers and their significance,
- 1.5 Aufbau's principle, Pauli's exclusion principle and Hund's rule electronic configuration of elements with atomic number (Z) = 30 only. (Electronic configurations of elements with atomic number greater than 30 are excluded).
- 1.6 Modern periodic law and periodic table, groups and periods, classification of elements into s, p, d and f blocks (periodicity in properties - excluded)
- 1.7 Chemical bonding and cause of bonding and types such as ionic bond in NaCl sigma (σ) and pi (π) covalent bonds in H₂, HCl, Cl₂, elementary idea of hybridization in BeCl₂, BF₃, CH₄, NH₃ and H₂O, VSEPR, Molecular orbital Theory
- 1.8 States of Matter: Solid, Liquid & Gas, Metallic bonding- explanation with the help of electron gas (sea) model.

2. Fuels and Lubricants (18 periods)

- 2.1 Definition of fuel, classification of fuels, characteristics of good fuel, relative merits of gaseous, liquid and solid fuels
- 2.2 Calorific value-higher calorific value, lower calorific value, determination of calorific value of solid or liquid fuel using Bomb calorimeter and numerical examples.
- 2.3 Coal - types of coal and proximate analysis of coal
- 2.4 Fuel rating – Octane number and Cetane number, fuel-structural influence on Octane and Cetane numbers
- 2.5 Gaseous fuels – chemical composition, calorific value and applications of

Natural gas (CNG), LPG, producer gas, water gas and biogas.

- 2.6 Elementary ideal on – hydrogen as future fuels, nuclear fuels.
- 2.7 Lubricants: Definition and properties, mechanism, industrial application and its function in bearings.
- 2.8 Synthetic lubricants and cutting fluids.

3. Water

(14 periods)

- 3.1 Demonstration of water resources on Earth using pie chart.
- 3.2 Classification of water – soft water and hard water, action of soap on hard water, types of hardness, causes of hardness, units of hardness – mg per liter (mgL^{-1}) and part per million (ppm) and simple numerical, pH and buffer solutions and their applications.
- 3.3 Disadvantages caused by the use of hard water in domestic and boiler feed water. Priming and foaming and caustic embrittlement in boilers.
- 3.4 Removal of hardness -Permutit process and Ion-exchange process.
- 3.5 Physico-Chemical methods for Water Quality Testing
 - a) Determination of pH using pH meter, total dissolved solids (TDS)
 - b) Testing and Estimation of- alkalinity, indicator their types and application total hardness by EDTA method and O'Hener's Method. (Chemical reaction of EDTA method are excluded).
 - c) Understanding of Indian Water Quality standards as per WHO
- 3.6 Natural water sterilization by chlorine and UV radiation and reverse osmosis.
- 3.7 Municipality waste water treatment. Definition of B.O.D and C.O.D.

4. Electrochemistry

(4 periods)

Redox Reaction, Electrode Potential, Nernst equation, Electrochemical cell (Galvanic and Electrobytes); Nernst equation.

5. Corrosion and its Control

(10 periods)

- 5.1 Definition of corrosion and factors affecting corrosion rate.
- 5.2 Theories of
 - a) Dry (chemical) corrosion- Pilling Bedworth rule
 - b) Wet corrosion in acidic atmosphere by hydrogen evolution mechanism
- 5.3 Definition of passivity and galvanic series
- 5.4 Corrosion control:
 - a) Metal coatings – Cathodic protection, Cementation on Base Metal Steel –Application of Metal Zn (Sheradizing),Cr (Chromozing) and Al (Calorizing), Sacrificial protection and impressed current voltage

- b) Inorganic coatings – Anodizing and phosphating,
- c) Organic coatings - use of paints varnishes and enamels
- d) Internal corrosion preventive measures- alloying (with reference to passivating, neutralizing and inhibition) and heat treatment (quenching, annealing)

6. Organic compounds, Polymers and Plastics (10 periods)

- 6.1 Classification of organic compounds and IUPAC Nomenclature
- 6.2 Definition of polymer, monomer and degree of polymerization
- 6.3 Brief introduction to addition and condensation polymers with suitable examples (PE, PS, PVC, Teflon, Nylon -66 and Bakelite)
- 6.4 Definition of plastics, thermo plastics and thermo setting plastics with suitable examples, distinctions between thermo and thermo setting plastics
- 6.5 Applications of polymers in industry and daily life

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
I Year I Semester

**DELECEI105: ELECTRICAL AND ELECTRONICS ENGG.
MATERIALS**

L	T	P
3	0	0

DETAILED CONTENTS

1. Classification (10 Periods)

Classification of materials into conducting, semi conducting and insulating materials through a brief reference to their atomic structure and energy bands

2. Conducting Materials (12 Periods)

2.1 Introduction

2.2 Resistance and factors affecting it such as alloying and temperature etc

2.3 Classification of conducting material as low resistivity and high resistivity materials, low resistance materials

2.3.1 Copper:

General properties as conductor: Resistivity, temperature coefficient, density, mechanical properties of hard-drawn and annealed copper, Corrosion, contact resistance. Application in the field of electrical engineering.

2.3.2 Aluminium:

General properties as conductor: resistivity, temperature coefficient, density, mechanical properties of hard and annealed aluminium, solderability, contact resistance. Applications in the field of electrical engineering.

2.3.3 Steel:

Mechanical properties of steel, applications in the field of electrical engineering.

2.3.4 Introduction to bundle conductors and its applications.

2.3.5 Low resistivity copper alloys: Brass, Bronze (cadmium and Beryllium), their practical applications with reasons for the same

2.4 Applications of special metals e.g. Silver, Gold, and Platinum etc.

2.5 High resistivity materials and their applications e.g., manganin, constantan, Nichrome, mercury, platinum, carbon and tungsten

2.6 Superconductors and their applications

3. Review of Semi-conducting Materials (12 Periods)

Semi-conductors and their properties, Materials used for electronic components like resistors, capacitors, diodes, transistors and inductors etc.

4. Insulating materials; General Properties: (10 Periods)

- 4.1 Electrical Properties:
Volume resistivity, surface resistance, dielectric loss, dielectric strength (breakdown voltage) dielectric constant
- 4.2 Physical Properties:
Hygroscopicity, tensile and compressive strength, abrasive resistance, brittleness
- 4.3 Thermal Properties:
Heat resistance, classification according to permissible temperature rise. Effect of overloading on the life of an electrical appliance, increase in rating with the use of insulating materials having higher thermal stability, Thermal conductivity, Electro-thermal breakdown in solid dielectrics
- 4.4 Chemical Properties:
Solubility, chemical resistance, weather ability
- 4.5 Mechanical properties, mechanical structure, tensile structure

5. Insulating Materials and their applications: (10 Periods)

- 5.1 Plastics
 - 5.1.1 Definition and classification
 - 5.1.2 Thermosetting materials:
Phenol-formaldehyde resins (i.e. Bakelite) amino resins (urea formaldehyde and Melamine-formaldehyde), epoxy resins - their important properties and applications
 - 5.1.3 Thermo-plastic materials:
Polyvinyl chloride (PVC), polyethylene, silicones, their important properties and applications
- 5.2 Natural insulating materials, properties and their applications
 - Mica and Mica products
 - Asbestos and asbestos products
 - Ceramic materials (porcelain and steatite)
 - Glass and glass products
 - Cotton
 - Silk
 - Jute

- Paper (dry and impregnated)
- Rubber, Bitumen
- Mineral and insulating oil for transformers switchgear capacitors, high voltage insulated cables, insulating varnishes for coating and impregnation
- Enamels for winding wires
- Glass fibre sleeves

5.3 Gaseous materials; Air, Hydrogen, Nitrogen, SF₆- their properties and applications

6. Magnetic Materials: (10 Periods)

6.1 Introduction - ferromagnetic materials, permeability, B-H curve, magnetic saturation, hysteresis loop including coercive force and residual magnetism, concept of eddy current and hysteresis loss, Curie temperature, magnetostriction effect.

6.2 Soft Magnetic Materials:

6.2.1 Alloyed steels with silicon: High silicon, alloy steel for transformers, low silicon alloy steel for electric rotating machines

6.2.2 Cold rolled grain oriented steels for transformer, Non-oriented steels for rotating machine

6.2.3 Nickel-iron alloys

7. Soft Ferrites (10 Periods)

7.1 Hard magnetic materials

Tungsten steel, chrome steel, hard ferrites and cobalt steel, their applications

8. Special Materials (10 Periods)

Thermocouple, bimetals, leads soldering and fuses material and their applications, thermistor, sensistor, varistors and their practical applications.

9. Materials for Electrical Machines (10 Periods)

Introduction to various engineering materials necessary for fabrication of electrical machines such as motors, generators, transformers etc

RECOMMENDED BOOKS

1. Electrical and Electronic Engineering Materials by SK Bhattacharya, Khanna Publishers, New Delhi
2. Electronic Components and Materials by Grover and Jamwal, Dhanpat Rai and Co., New Delhi
3. Electrical Engineering Materials by Sahdev, Uneek International Publications, Jalandhar
4. Electronic Components and Materials by SM Dhir, Tata Mc Graw Hill, New Delhi

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)

I Year I Semester

DENGIE1106: ENGINEERING DRAWING

L	T	P
3	0	0

DETAILED CONTENTS

At the end of the instruction in the subject, the learner should be able to:-

1. Draw free hand sketches of the schematic diagrams of electronic circuits, using Standard symbols.
2. Prepare drawing from the rough sketches provide and/or enlarge/reduce the given Drawing to the desired scale.
3. Draw exploded views of components & assemblies in preparation of service drawing.
4. Draw wiring diagram & make parts list;
5. Draw various views of the object using orthographic projection.
6. Identify the object when plan, elevation & views of the same are given.
7. Re arrange block representation of the given circuits.

Prat-1 (Mechanical Drawing)

DETAILED CONTENTS.

1. **Free hand sketching:**
 - 1.1 Introduction of Engineering drawing & its significance in the field of engineering.
 - 1.2 Need of standard practices in engineering drawing.
 - 1.3 Standard practice as per IS-696-1972.
 - 1.4 Free hand sketching; different types of lines, free hand lettering of different types
2. **Care, handling & proper use of drawing instruments & materials:**
 - 2.1 Drawing instruments.
 - 2.2 Materials used in drawing work.
 - 2.3 Sheet size, layout & planning of drawing sheet (familiarity sheet size, layout & planning of drawing sheet (familiarity with standard paper sizes, e.g A4, A3 & A2 and their mutual relationship)

3. Lettering techniques and practice

3.1 Free hand drawing of letters & numerals in 3, 5, 8 & 12 mm series, vertical upright and Inclined at 75°.

3.2 Instrumental single stroke lettering in 12 mm.

4. Dimensioning Techniques:

4.1 Necessity of dimensioning, appropriate methods of dimensioning, their merits and Demerits, selection of proper dimension technique.

4.2 Requirements of view for complete dimensioning.

5. Projection:

5.1 Principle of Projection-I

(a) Recognition of objects from the given pictorial view.

(b) Identification of surfaces from different objects & pictorial views.

(c) Exercise on missing surfaces (views).

(d) Sketching practice of pictorial views objects given.

5.2 Principle of Projection-II.

(a) Principle of orthographic projections.

(b) Three views of given object.

(c) Six views of given object.

(d) True shapes of inclined surfaces.

(e) Invisible lines, centre lines, extension & dimensioning lines.

(f) Location & drawing of missing lines.

6. Sections:

6.1 Importance of sectioning.

6.2 Method of representing the section.

6.3 Conventional sections of different materials.

6.4 Types of sections; types of breaks, aligned sections.

6.5 Sectioning of simple objects like brackets, pulleys etc.

7. Details & Assembly drawing:

7.1 Symbols used to show joints in chassis & frames.

7.2 Principles of detail & assembly drawing; part cataloguing.

7.3 Practical exercises of drawing exploded views of machine components & making assembly drawing.

NOTE:

Examples from electronics parts catalogue, views of machine electronic equipment, chassis, consoles,
PCB (Printed Circuit Board) Hi Fi cabinets etc. may be used.

PART-II (ELECTRONICS DRAWING)**1. Draw the standard symbols of the following:**

(Different pages of ISI standard ARE; 2032 may be referred):

1.1 (a) Resistors Capacitors: Fixed, preset, variable, electrolytic and ganged types.

(b) Inductors: Fixed, tapped and variable types, RF & AF chokes, Air cored, Solid Cored & Laminated cored.

(c) Transformers: Step-up, step-down. AF & RF types, Auto-transformer, IF transformer. Antenna, Chassis, Earth, Loudspeaker, Microphone, Fuse Indicating lamp, Coaxial Cable, Switches-double pole single throw (DPST), double pole throw (DPT) and Rotary Types, terminals and connection of conductors.

1.2. Active Devices:

(a). Semiconductor : Rectifier diode, Zener diode, Varactor diode, Tunnel diode, Photo, Light emitting diode (LED), bipolar transistor, junction field effect transistor (JFET), MOSFET, Photo transistor, Uni -junction transistor (UTJ), Silicon control rectifier (SCR), Diac, Triacs outlines (with their types numbers e.g. TO3, TO5, TO18, TO39, TO65 etc) of the different types of semiconductor diodes, Transistors Scrs, Diacs, Triacs And ICs (along with indicators for pin identification etc.)

Draw standard symbols of NOT, AND, NAND, OR, NOR XOR,

Expandable & Tristate gates, Op, Amp, Ic, Flip-flops (Combination of 2,3,4 input gates should be drawn).

2. Draw the following: (With the help of rough sketch/clues given).

2.1 Circuit diagram of a Wein' bridge oscillator.

2.2 Circuit diagram of a Battery eliminator.

2.3 Block diagram of a typical Radio receiver.

2.4 Block diagram of an Electronic multimeter.

2.5 Circuit of Emergency light.

2.6 Circuit diagram of Voltage stabilizers.

2.7 Circuit diagram of Fan regulator.

3. Connection wiring diagrams.

3.1 Point to point pictorial.

3.2 Highway or trunk line.

3.3 Base line or airline.

Keeping in view the actual size of the components.

PART-III (INSTRUMENTATION & CONTROL DRAWING)

Drawing of common symbols use in instrumentation and signal flow graph in control systems.

(INSTRUMENTATION SYMBOLS:

Locally mounted instruments, Instruments at control Centre, Instrument with two services, Transmitter, Pneumatic control valve, Hydraulic control valve, Solenoid valve, Safety valve, Self-operated controller, Process line On-Fire sensor, Point of measurement, Fluid Pressure Line, Electric line, Pneumatic line, Capillary line, Special type of valves, Method to Differentiate various process line using current, Identification table for instrumentation Diagram. Instrumentation diagram of process unit (At least two diagram should be drawn on one sheet)

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
I Year I Semester

L	T	P
0	0	2

DCOMMEI107: COMMUNICATION SKILLS-I LAB

LIST OF PRACTICALS

Note: Teaching Learning Process should be focused on the use of the language in writing reports and making presentations.

Topics such as Effective listening, effective note taking, group discussions and regular presentations by the students need to be taught in a project oriented manner where the learning happens as a byproduct.

Listening and Speaking Exercises

1. Self and peer introduction
2. Newspaper reading
3. Just a minute session-Extempore
4. Greeting and starting a conversation
5. Leave taking
6. Thanking
7. Wishing well
8. Talking about likes and dislikes
9. Group Discussion
10. Listening Exercises.

NOTE-E-books/e-tools/relevant software to be used as recommended by AICTE/UPBTE/NITTTR

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
I Year I Semester

L	T	P
0	0	2

DAPPLEI108: APPLIED PHYSICS-I LAB

LIST OF PRACTICALS

- 1 To find radius of wire and its volume and the maximum permissible error in these quantities by using both vernier calipers and screw gauge.
- 2 To find the value of acceleration due to gravity on the surface of earth by using a simple pendulum.
- 3 To determine the Radius of curvature of (i) convex mirror, (ii) concave mirror by speedometer
- 4 To verify parallelogram law of forces
- 5 To study conservation of energy of a ball or cylinder rolling down an inclined plane.
- 6 To find the Moment of Inertia of a flywheel about its axis of rotation
- 7 To determine the atmospheric pressure at a place using Fortin's Barometer
- 8 To determine the viscosity of glycerin by Stoke's method
- 9 To determine the coefficient of linear expansion of a metal rod
- 10 To determine force constant of spring using Hooks law

Department of Electronics Engineering
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
I Year I Semester

L	T	P
0	0	2

DAPPLEI109: APPLIED CHEMISTRY LAB

LIST OF PRACTICALS

1. Estimation of total hardness of water using standard EDTA solution
Estimation of total alkalinity of given water sample by
titrating it against standard sulphuric acid solution
3. Proximate analysis of solid fuel)
4. Estimation of temporary hardness of water sample by O' Hener's Method.
5. Determination of flash and fire point of given lubricating oil
using Able's flash point apparatus.

RECOMMENDED BOOKS

1. Chemistry in Engineering by J.C. Kuricose & J. Rajaram, Tata McGraw Hill, Publishing Company Limited, New Delhi.
2. Engineering Chemistry by P.C. Jain & Monika Jain, Dhanapat Rai Publishing Company, New Delhi.
3. Eagle's Applied Chemistry - I by S. C. Ahuja & G. H. Hugar, Eagle Prakashan, Jalandhar.
4. Engineering Chemistry – A Text Book by H. K. Chopra & A. Parmar, Narosa Publishing House, New Delhi.
5. Applied Chemistry - I by Dr. P. K Vij & Shiksha Vij, Lords Publications, Jalandhar.
6. Engineering Chemistry by Dr. Himanshu Pandey, Goel Publishing House, Meerut, India

