

Faculty of Engineering & Technology

P.K. University

Shivpuri (M.P.)



Evaluation Scheme & Syllabus for
Department of Electronics & Communication Engg.
(I to II Semester)

(Effective from session 2025-26)

DIPLOMA –ELECTRONICS COMMUNICATION & ENGINEERING

STUDY AND EVALUATION SCHEME FOR DIPLOMA ELECTRONICS COMMUNICATION & ENGINEERING

SEMEST ER-I

SUBJECTCODE	SUBJECTSNAME	STUDY SCHEME			Credits	MARKSINEVALUATIONSCHEME						Total Marks of Internal & External
		Periods/Week				INTERNALASSESSMENT			EXTERNALASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
DCOMMEC101	Communication Skills-1	2	-	-	2	30	-	30	70	-	70	100
DAPPLEC102	Applied Mathematics-1	3	1	-	4	30	-	30	70	-	70	100
DAPPLEC103	AppliedPhysics-1	2	1	-	3	30	-	30	70	-	70	100
DAPPLEC104	Applied Chemistry	2	1	-	3	30	-	30	70	-	70	100
DELECEC105	Electronic Components & Devices	3	0	-	3	30	-	30	70	-	70	100
DTECHEC106	Technical Drawing	3	0	0	3	30	-	30	70	-	70	100
DAPPLEC107	Applied Physics-1 Lab	0	0	2	1	-	25	25	-	25	25	50
DAPPLEC108	Applied Chemistry Lab	0	0	2	1	-	25	25	-	25	25	50
DGENEEC109	General Workshop Practice-1 Lab	-	-	4	2	-	25	25	-	25	25	50
DCOMMEC110	Communication kills-I Lab	0	0	2	1	-	25	25	-	25	25	50
DELECEC111	Electronic Components & Devices Lab	0	0	2	1	-	25	25	-	25	25	50
Total		15	3	12	24	180	125	305	420	125	545	850

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

SEMESTER I
DCOMMCE101
COMMUNICATION SKILLS – I
(Common to all branch of Diploma engineering)

L	T	P
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.
- Communication Techniques and Skills by R. K. Chadha; DhanpatRai Publications, New Delhi.
- High School English Grammar and Composition by Wren & Martin; S. Chand & Company Ltd.Delhi.
- Excellent General English-R.B.Varshnay, R.K. Bansal, Mittal Book Depot, Malhotra
- The Functional aspects of Communication Skills – Dr. P. Prasad, S.K. Katria & Sons, New Delhi
- Q. Skills for success – Level & Margaret Books, Oxford University Press.
- e-books/e-tools/relevant software to be used as recommended by AICTE/ NITTTR, Chandigarh.
- Websites for Reference:
<http://www.mindtools.com/> page 8.html – 99k

<http://www.letstalk.com.in>

<http://www.englishlearning.com>

<http://learnenglish.britishcouncil.org/en/>

<http://swayam.gov.in>

Department of Electronics & Communication Engineering
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I Year I Semester
DAPPLEC102- APPLIED MATHEMATICS-I

L	T	P
3	1	0

1. ALGEBRA-I :

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, Crammer's rule

2. ALGEBRA-II:

2.1 Vector algebra : Dot and Cross product, Scaler and vector triple product.

2.2 Complex number : Complex numbers, Representation, Modulus and amplitud
Demoivre theorem, its application in solving algebraic equations, Mod. function and its properties..

3. TRIGONOMETRY :

3.1 Relation between sides and angles of a triangle : Statement of various formulae showing relationship between sides and angle of a triangle.

3.2 Inverse circular functions : Simple case only

4. DIFFERENTIAL CALCULUS - I :

4.1 Functions, limits, continuity, - functions and their graphs, range and domain, elementary methods of finding limits (right and left), elementary test for continuity and differentiability.

4.2 Methods of finding derivative, - Function of a function, Logarithmic differentiation, Differentiation of implicit functions.

5. DIFFERENTIAL CALCULUS -II :

5.1 Higher order derivatives, Leibnitz theorem.

5.2 Special functions (Exponential, Logarithmic, Inverse circular and function), Definition, Graphs, range and Domain and Derivations of each of these functions.

5.3 Application - Finding Tangants, Normal, Points of Maxima/Minima, Increasing/Decreasing functions, Rate, Measure, velocity, Acceleration, Errors and approximation.

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I Year I Semester
DAPPLEC103 -APPLIED PHYSICS-I

L	T	P
2	1	0

1. UNITS AND DIMENSIONS (4 MARKS)

S.I. Units & Dimensions of physical quantities, Dimensional formula and dimensional equation. Principle of homogeneity of dimensions and applications of homogeneity principle to: (i) Checking the correctness of physical equations, (ii) Deriving relations among various physical quantities, (iii) Conversion of numerical values of physical quantities From one system of units into another. Limitations of dimensional analysis.

2. ERRORS AND MEASUREMENT (4 Marks)

Errors in measurements, accuracy and precision, random and systematic errors, estimation of probable errors in the results of measurement(Combination of errors in addition, subtraction, multiplication and powers). Significant figures, and order of accuracy in respect to instruments,

3. CIRCULAR MOTION (5 MARKS)

Central forces. Uniform Circular motion (Horizontal and Vertical cases), angular velocity, angular acceleration and centripetal acceleration. Relationship between linear and angular velocity and acceleration. Centripetal and centrifugal forces. Practical applications of centripetal forces. Principle of centrifuge.

4. MOTION OF PLANETS AND SATELLITES :(5 Marks)

Gravitational force, Acceleration due to gravity and its variation w.r. to height and depth from earth, Kepler's Law, Escape and orbital velocity, Time period of satellite, Geo- stationary, Polar satellites.

DYNAMICS OF RIGID BODY (ROTATIONAL MOTION) (6 MARKS)

Rigid body, Rotational motion, Moment of inertia, Theorems(Perpendicular and Parallel axis) of moment of inertia (Statement). Expression of M.I. of regular bodies (Lamina, Sphere, Disc, Cylinder), Concept of Radius of gyration, angular momentum, Conservation of angular momentum, Torque, Rotational kinetic energy. Rolling of sphere on the slant plane . Concept of Fly wheel.

6. FLUID MECHANICS :(5 MARKS)

Surface tension, Capillary action and determination of surface tension from capillary rise method, Equation of continuity ($A_1V_1=A_2V_2$), Bernoulli's theorem, and its application stream line and Turbulent flow, Reynold's number.

7. FRICTION :(4 MARKS)

Introduction, Physical significance of friction, Advantage and disadvantage of friction and its role in every day life. Coefficients of static and dynamic friction and their measurements. viscosity, coeff. of viscosity, & its determination by stoke's method.

8. HARMONIC MOTION (6 MARKS)

Periodic Motion , characteristics of simple harmonic motion; equation of S.H.M. and determination of velocity and acceleration. Graphical representation. Spring-mass system. Simple pendulum. Derivation of its periodic time. Energy conservation in S.H.M.. Concept of phase, phase difference, Definition of free, forced, undamped and damped vibrations, Resonance and its sharpness, Q-factor.

9. HEAT & THERMODYNAMICS: (6 MARKS)

Modes of heat transfer (Conduction, Convection and Radiation), coefficient of thermal conductivity Isothermal and adiabatic process. Zeroth First, Second Law of Thermodynamics and Carnot cycle, Heat Engine (Concept Only).

10. ACOUSTICS (5 MARKS)

Definition of pitch, loudness, quality and intensity of sound waves. Echo, reverberation and reverberation time. Sabine's formula without Derivation. Control of reverberation time (problems on reverberation time). Acoustics of building defects and remedy.

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I Year I Semester
DAPPLEC-104 APPLIED CHEMISTRY

L	T	P
2	1	0

1. **ATOMIC STRUCTURE :**

Basic concept of atomic structure, Matter wave concept, Quantum number, Haiseberg's Uncertainty Principle, Shapes of orbitals.

2. **CHEMICAL BONDING :**

Covalent bond, Ionic & Co-ordinate, Hydrogen bonding, Valence bond theory, Hybridisation, VSEPR theory, Molecular orbital theory.

3. **CLASSIFICATION OF ELEMENTS :**

Modern classification of elements (s,p,d and f block elements), Periodic properties : Ionisation potential, Electro negativity, Electron affinity.

4. **ELECTRO CHEMISTRY-I:**

Arrhenius Theory of electrolytic dissociation, Transport number, Electrolytic conductance, Ostwald dilution law. Concept of Acid and bases : Bronsted, Arrhenius and Lewis theory. Concept of pH and numericals. Buffer solutions, Indicators, Solubility product, Common ion effect with their application,

5. **ELECTRO CHEMISTRY-II:**

Redox reactions, Electrode potential(Nernst Equation), Electro-chemical cell (Galvanic and Electrolytic). EMF of a cell and free energy change. Standard electrode potential, Electro chemical series and its application. Chemical and Electrochemical theory of corrosion, Galvanic Series. Prevention of corrosion by various method.

6. **CHEMICAL KINETICS :**

Law of mass action, order and molecularity of reaction. Activation energy, rate constants, 1st order reactions and 2nd order reactions.

7. **CATALYSIS :**

Definition Characteristics of catalytic reactions, Catalytic promoters and poison , Autocatalysis and Negative catalysis, Theory of catalysis, Application.

8. **SOLID STATE :**

Types of solids (Amorphous and Crystalline), Classification (Molecular, Ionic, Covalent, Metallic), Band theory of solids (Conductors, Semiconductors and Insulators), types of Crystals, FCC, BCC, Crystal imperfection.

9. **FUELS :**

Definition, its classification, high & low Calorific value. Determination of calorific value of solid and liquid fuels by Bomb calorimeter.

Liquid fuel - Petroleum and its refining, distillate of petroleum (Kerosene oil, Diesel and Petrol), Benzol and Power alcohol. Knocking, Anti-knocking agents, Octane number and Cetane number.

Cracking and its type, Gasolining from hydrogenation of coal (Bergius process and Fischer tropesch's process)

Gaseous Fuel - Coal gas, Oil gas, Water gas, Producer gas, Bio gas, LPG and CNG.

Numerical Problems based on topics

10. **WATER TREATMENT :**

Hardness of water, Its limits and determination of hardness of water by EDTA method. Softening methods (Only Soda lime, Zeolite and Ion exchange resin process). Disadvantage of hard water in different industries, scale and sludge formation, Corrosion, Caustic embrittlement, primming and foaming in boilers.

Disinfecting of Water By Chloramine-T, Ozone and Chlorine. Advantage and disadvantage of chlorination, Industrial waste and sewage, Municipality waste water treatment, Definition of BOD and COD. Numerical Problems based on topics.

11. **COLLOIDAL STATE OF MATTER :**

Concept of colloidal and its types, Different system of colloids, Dispersed phase and dispersion medium. Methods of preparation of colloidal solutions, Dialysis and electrodialysis. Properties of colloidal solution with special reference to absorption, Brownian Movement, Tyndal effect, Electro phoresis and coagulation. relative stability of hydrophilic and hydrophobic colloids. Protection and protective colloids. Emulsion, Types, preparation, properties and uses. Application of colloids chemistry in different industries.

12. **LUBRICANTS :**

Definition, classification, Necessity and various kinds of lubricants. Function and mechanism of action of lubricants and examples. Properties of lubricants, Importance of additive compounds in lubricants, Synthetic lubricants and cutting fluids. Industrial application, its function in bearing.

13. **HYDROCARBONS:**

A. Classification and IUPAC nomenclature of organic compounds homologous series (Functional Group)

B. Preparation, properties and uses of Ethane, Ethene, Ethyne (Acetylene), Benzene and Toluene.

14. **ORGANIC REACTIONS & MECHANISM:**

1. Fundamental aspects -

A. Electrophiles and nucleophiles, Reaction Intermediates, Free radical, Carbocation, Carbanion

B. Inductive effect, Mesomeric effect, Electromeric effect.

2 .A. Mechanism of addition reaction (Markonikov's Rule, Cyanohydrin and Peroxide effect),

B. Mechanism of Substitution reactions; (Nucleophilic) hydrolysis of alkyl halide, electrophilic substitution halogenation, Sulphonation, Nitration and Friedel-Craft reaction.

C. Mechanism of Elimination reaction - Dehydration of primary alcohol, Dehydrohalogenation of primary alkyl halide.

15. **POLYMERS :**

1. Polymers and their classification. Average degree of polymerisation, Average molecular weight, Free radical polymerisation (Mechanisms)

2. Thermosetting and Thermoplastic resins -

A. Addition polymers and their industrial application- Polystyrene, PVA, PVC, PAN, PMMA, Buna-S, Buna-N, Teflon.

B. Condensation polymer and their industrial application :

Nylon 6, Nylon 6,6, Bakelite, Melamine formaldehyde, Urea formaldehyde, Terylene or Dacron, Polyurethanes.

3. General concept of Bio polymers, Biodegradable polymers and inorganic polymers (Silicon)

16. **SYNTHETIC MATERIALS :**

A. Introduction - Fats and Oils

B. Saponification of fats and oils, Manufacturing of soap.

C. Synthetic detergents, types of detergents and its manufacturing.

3. EXPLOSIVES: TNT, RDX, Dynamite.

4. Paint and Varnish

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I Year I Semester

L	T	P
3	0	0

DAPPLEC105: ELECTRONIC COMPONENTS & DEVICES

1. INTRODUCTION TO ELECTRONICS:

- 1.1.Application of Electronics in different fields.
- 1.2.Brief introduction to active components and devices.

2. PASSIVE COMPONENTS:

Resister- Working characteristics/properties, Resistors- Carbon film, metal-film, carbon composition, wire wound and variable type (presets and potentiometers) constructional details, characteristics (size, voltage, tolerance temperature and frequency dependance and noise consideration, specification Testing, mutual comparison and typical applications, Voltage Dependent Resistor (VDR).

Capacitors- Working characteristics/properties, Capacitors- polyster, Metallized polyster, ceramic paper mica and electrolytic tantalum and solid aluminium types; construction details and testing, specifications, mutual comparison & typical applications.

Inductors, Transformers and RF coils- Working characteristics/properties, Methods of manufacture of inductors, RF coils and small power and AF transformer and their testing. Properties of cores. Needs and type of shielding.

3. VOLTAGE AND CURRENT SOURCES:

- 3.1. Concept of constant voltage sources, symbol and graphical representation, characteristics of ideal and practical voltage sources.
- 3.2. Concept of constant current source, symbol and graphical representation, characteristics of ideal and practical current sources.
- 3.3. Conversion of voltage source into a current source and vice-versa
- 3.4 Concept of floating and grounded D.C. supplies.

4. SEMICONDUCTOR DIODE:

P-N junction diode, Mechanism of current flow in P-N junction drift and diffusion currents, depletion layer, potential barrier, P-N junction diode characteristics, zener & avalanche breakdown, concept of junction capacitance in forward & reverse bias conditions.

Semiconductor diode characteristics, dynamic resistance & their calculation from diode characteristics, dynamic resistance of diode in terms of diode current. Variation of leakage current and forward voltage with temperature (No devariation).

Diode (P-N junction) as rectifier, Half wave rectifier full wave rectifier including bridge rectifier, relationship between D.C. output voltage and A.C. input voltage rectification efficiency and ripple factor for rectifier circuits, filter circuits shunt capacitor, series inductor, capacitor input filter, bleeder resistance, working of the filters and typical applications of each type.

Different types of diodes, characteristics and typical application of power diodes, zener diodes, varactor diodes, point contact diodes, tunnel diodes, LED's and photo diodes.

Important specifications of rectifier diode and zener diode.

5. INTRODUCTION TO BIPOLAR TRANSISTOR:

5.1. Concept to bipolar transistor as a two junction three terminal device having two kinds of charge carriers, PNP and NPN transistors, their symbols and mechanisms of current flow, explanation of fundamental current relations.

Concept of leakage current (I_{CBO}) effect of temperature on leakage current.

Standard notation for current and voltage polarity. CB, CE and CC configurations.

Common base configuration (CB): inputs and output characteristics, determination of transistor parameters (input and output) dynamic resistance, current amplification factor.

Common emitter configuration: current relations in CE configuration, collector current in terms of base current and leakage current (I_{CEO}), relationship between the leakage current in CB and CE configuration, input and output characteristics, determination of dynamic input and output resistance and current amplification factor β from the characteristics. Common collector configuration:

Expression for emitter current in terms of base current and leakage current in CC configuration.

Comparison of CB and CE configuration with regards to dynamic input and output resistance, current gain and leakage current performance of CE configuration for low frequency voltage amplification. Typical application of CB configuration in amplification.

Transistor as an amplifier in CE configuration, DC load line, Its equation and drawing it on collector characteristics. Determination of small signal voltage and current gain of a basic transistor amplifier using CE output characteristic and DC load line, Concept of power gain as a product of voltage gain and current gain.

6 TRANSISTOR BIASING AND STABILIZATION OF OPERATING POINT:

Different transistor biasing circuits for fixing the operating points, effect of temperature on operating point. Need and method for stabilization of operating point. Effect of fixing operating point in cut-off or saturation region on performance of amplifier.

Calculation of operating point for different biasing circuits, use of Thevenin's theorem in analyzing potential divider biasing circuit. Simple design problems on potential divider biasing circuit.

7 SINGLE STAGE TRANSISTOR AMPLIFIER:

7.1 Analysis of Single Stage CE, CB and CC amplifier.

7.2 Single stage CE amplifier circuits with proper biasing components.

7.3 AC load line and its use in :

- (a) Calculation of current and voltage gain of a single- stage amplifier circuit.
- (b) Explanation of phase reversal of the output voltage with respect to input voltage.

8. FIELD EFFECT TRANSISTOR (FET)

8.1 Construction, operation, characteristics and Biasing of Junction FET.

8.2 Analysis of Single Stage CS, CG and CD amplifiers. (Only Brief Idea)

9. MOSFET :

9.1 Construction, operation, Characteristics and Biasing of MOSFET in both depletion and enhancement modes.

9.2 Analysis of Single Stage CS, CG and CD amplifiers. (Only Brief Idea)

10. CMOS :

10.1 Construction, operation and Characteristics of CMOS in both depletion and enhancement modes.

10.2 Use of CMOS as Inverter, Different application of CMOS, CMOS IC.

10.3 Comparison of JFET, MOSFET and Bipolar transistor.

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I Year I Semester
DTECHEC106
TECHNICAL DRAWING

L	T	P
3	0	0

INSTRUCTIONAL OBJECTIVES :

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) From 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 chasis & 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 :

- 1. Whenever possible drawing work should involve examples relevant to electronics discipline.
- 2. 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 IS; 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.)

1.3. Telephone components :

(a). Telephone Instrument/Components : Transmitter, Receiver, Filters & Hybrid transformer.

1.4. 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 air line.
- Exercise on reading & interpreting of wiring diagrams.
4. Graphical Representation of Data : General concept, selection of variables & curve fitting, curve identification zero point location. Use of various graph paper and preparation of diagram from given data. Bar charts, pie graph, pictorial graph.
5. Given the block diagram of a radio receiver on A-4 size, enlarge the same to A-2 size.
6. Given the block diagram of a TV receiver in A-1/A-2 size, reduce it to A-3 size.
7. Convert a rough block diagram sketch on A-4 size to a finished block diagram on A-2 size.
8. P.C.B layout of a single electronic circuit on a graph sheet.
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. (Only For Instrumentation & Control Engineering)

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)

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I Year I Semester
DAPPLCE107

APPLIED PHYSICS LAB

[Common to All Diploma Engineering Courses]

L	T	P
0	0	2

List of Experiments-: (Any eight)

Vernier Calipers: To determine the volume of a spherical / cylindrical body and a test tube by measuring its dimensions using vernier calipers.

Screw gauge: To determine diameter of a wire, a solid ball and thickness of glass plate using screw gauge.

Spherometer: To determine radius of curvature of a spherical surface using a spherometer

Mercury thermometer: To measure room temperature and temperature of a hot bath using mercury thermometer and convert it into different scales.

5 To find the time period of a simple pendulum and determine acceleration due to gravity

6. Stoke's law: To find the coefficient of viscosity of a given liquid by measuring the terminal velocity of a spherical body.

7. Parallelogram law of forces: To verify parallelogram law of forces and find the mass of the given body.

8. Moment bar: To determine the mass of the given body using moment bar.

9. U-tube apparatus: To determine the relative density of liquid using U-tube apparatus.

10. Flywheel: To find the moment of inertia of a flywheel.

11. Simple pendulum: To determine acceleration due to gravity at a place by measuring the time period of a simple pendulum

12. Resonance column: To determine the velocity of sound in air at room temperature using resonance column apparatus

13. Cantilever: To find the time period of oscillations of a cantilever

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I Year I Semester

DAPPLEC108

APPLIED CHEMISTRY LAB

L	T	P
0	0	2

LIST OF PRACTICALS:

1. To analyse inorganic mixture for two acid and basic radicals from following radicals

A. Basic Radicals :

NH₄⁺, Pb⁺⁺, Cu⁺⁺, Bi⁺⁺⁺, Cd⁺⁺, As⁺⁺⁺, Sb⁺⁺⁺, Sn⁺⁺, Al⁺⁺⁺, Fe⁺⁺⁺, Cr⁺⁺⁺, Mn⁺⁺,
Zn⁺⁺, Co⁺⁺ Ni⁺⁺, Ba⁺⁺, Sr⁺⁺, Ca⁺⁺, Mg⁺⁺

B. Acid Radicals :

CO₃⁻⁻, S⁻⁻, SO₃⁻⁻, CH₃COO⁻, NO₂⁻, NO₃⁻, Cl⁻, Br⁻, I⁻, So₄⁻⁻

2. To determine the percentage of available Chlorine in the supplied sample of Bleaching powder.
3. To determine the total hardness of water sample in terms of CaCO₃ by EDTA titration method using Eriochroma black-T indicator.
4. To determine the strength of given HCl solution by titration against NaOH solution using Phenolphthalein as indicator.
5. To determine the Chloride content in supplied water sample by using Mohr's methods.
6. Determination of temporary hardness of water sample by O-Henry's method.

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I Year I Semester

DAPPLCE109

General Workshop Practice -1 Lab

L	T	P
0	0	4

1. Carpentry Shop :

- EX-1 Introduction & demonstration of tools used in carpentry shop and different types of joints, types of wood, seasoning and preservation of wood
- EX-2 Planing and sawing practice
- EX-3 Making of lap joint
- EX-4 Making of mortise and tenon joint
- Ex-5 Making of any one utility article such as wooden- picture frame, hanger, peg, name plate, etc.

2. Painting and Polishing Shop:

- EX-1 Introduction of paints, varnishes, Reason for surface preparation, Advantages of painting, other method of surface coating i.e. electroplating etc.
- EX-2 To prepare a wooden surface for painting apply primer on one side and to paint the same side. To prepare french polish for wooden surface and polish the other side.
- EX-3 To prepare metal surface for painting, apply primer and paint the same.
- EX-4 To prepare a metal surface for spray painting, first spray primer and paint the same by spray painting gun and compressor system.

* The sequence of polishing will be as below:

- i) Abrasive cutting by leather wheel . ii) Polishing with hard cotton wheel and with polishing material.
- iii) Buffing with cotton wheel or buff wheel.

3 Fitting Shop, Plumbing Shop & Fastening Shop:

- EX-1 Study of materials, limits, fits and tolerances.
- EX-2 Introduction & demonstration of tools used in Fitting Shop.
- EX-3 Hacksawing and chipping of M.S. flat. Filing and squaring of chipped M.S. job. Filing on square or rectangular M.S. piece.
- EX-4 Making bolt & nut by tap and die set and make its joints
- Ex-5 To drill a hole in M.S. Plate and tapping the same to create threads as per need.
- EX-6 Utility article-to prepare double open mouth spanner for 18" hexagonal head of a bolt.
- EX-7 Cutting and threading practice for using socket, elbow and tee etc. and to fit it on wooden practice board.
- EX-8 Study of-bib cock, cistern or stop cock, wheel valve and gate valve etc.
- EX-9 Practice of bolted joints
- EX-10 To prepare a rivetted joint
- EX-11 To make a pipe joint
- EX-12 To make a threaded joint
- EX-13 Practice of sleeve joint

Department of Electronics & Communication Engineering
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I Year I Semester

DCOMMCE110
COMMUNICATION SKILLS – I LAB
[Common to All Diploma Engineering Courses]

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LIST OF PRACTICALS

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

INSTRUCTIONAL STRATEGY

Student should be encouraged to participate in role play and other student centred activities in class room and actively participate in listening exercises

MEANS OF ASSESSMENT

Assignments and quiz/class tests, mid-semester and end-semester written tests
Actual practical work, exercises and viva-voce
Presentation and viva-voce.

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L	T	P
0	0	2

DELECEC111: ELECTRONIC COMPONENTS & DEVICES -LAB

LIST OF PRACTICALS

1. Semiconductor diode characteristics :
 - (i) Identifications of types of packages, terminals and noting different ratings using data books for various types of semiconductor diodes (Germanium, point contact, silicon low power and high power and switching diode).
 - (ii) Plotting of forward V-I characteristics for a point contact and junction P-N diode (Silicon & Germanium diode).
2. Rectifier circuits using semiconductor diode, measurement of input and output voltage and plotting of input and output wave shapes
 - (i) Half wave rectifier.
 - (ii) Full wave rectifier (centre tapped and bridge rectifier circuits)
3. To Plot forward and reverse V-I characteristics for a zener diode.
4. To Plot wave shapes of a full wave rectifier with shunt capacitor, series inductor and n filter circuit.
5. To Plot the input and output characteristics and calculation of parameters of a transistor in common base configuration.
6. To Plot input and output characteristics and calculation of parameters of a transistor in common emitter configuration
7. Transistor Biasing circuits
 - (i). Measurement of operating point (I_c & V_{ce}) for a fixed bias circuit.
 - (ii). Potential divider biasing circuits.
(Measurement can be made by changing the transistor in the circuits by another of a same type number.
8. Plot the FET characteristics and determination of its parameters from these characteristics.
9. Measurement of voltage gain and plotting of the frequency response curve of a JFET amplifier circuits.
10. Measurement of voltage gain and plotting of the frequency response curve of a MOSFET amplifier circuits.
11. Single stage Common Emitter Amplifier Circuits
 - (i). Measurement of voltage gain at 1 KHZ for different load resistance.
 - (ii) Plotting of frequency response of a single stage amplifier circuit.
 - (iii) Measurement of input and output impedance of the amplifier circuit.
Familiarization with IAN instrument (Multi meter/CRO)