



Veermata Jijabai Technological Institute (V.J.T.I)

(Central Technological Institute, Maharashtra State, INDIA)

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Programme: Diploma in Electrical Engineering (DEE)

Semester: II

Implemented from: 2017-18

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME													
			L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS	
								Max	Min		Max	Min	Max	Min	Max	Min				
172MA21	Mathematics II	B	3	2		5	3	80	32	20	100	40					25@	10	125	
172CH22	Chemistry	B	3		2	5	3	80	32	20	100	40	25**	10			25@	10	150	
172EE23	Electrical Circuits	C	3	1	2	6	3	80	32	20	100	40	50**	20			25@	10	175	
172EE24	Basics Of Electronics	B	3		3	6	3	80	32	20	100	40	50**	20			25@	10	175	
172ME25	Mechanical Workshop Practice	C	1		3	4											50@	20	50	
172EE26	Environmental Studies	B	2			2											50@	20	50	
172HM27	Technical Communication & Presentation Skill	A		2		2											25@	10	25	
172EE28	Extra Co-curricular Activity	M			2	2														
TOTAL			15	5	12	32		320		80	400		125				225		750	

Abbreviations: B – Basic; C – Core; A – Applied; M – Management; L – Theory Lecture; T – Tutorial; P – Practical; TH – Theory Paper; IST – In-Semester Test; PR – Practical Exam; OR – Oral Exam; TW- Term Work. * Assessment by Internal Examiner ** Assessment by External And Internal Examiner @ : TW assessment by Internal Examiner Extra co curriculum activity –Activity is coordinated by teacher as per the activity mentioned in curriculum.

Curriculum Coordinator

Diploma in Electrical Engineering

Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRICAL ENGINEERING
PROGRAMME CODE	: DEE
SEMESTER	: SECOND
COURSE TITLE	: MATHEMATICS II
COURSE CODE	: 172MA21b

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	2		5	3	80	32	20	100	40					25	10	125

Course Objectives:

1. To lay a strong foundation in study of calculus which is the backbone for study in Engineering.
2. To make students well versed in the prerequisites for further studies in Mathematics and Engineering.

Course Outcomes:

Student should be able to

CO1	Apply elementary operations and properties of vectors in engineering problems.
CO2	Use definition and formulae of function, limit, derivative and partial derivatives to solve the problems.
CO3	Use derivatives in engineering applications.

Course Content:

SECTION-I								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
1	Function	5	10	2	1	1	8	
	1.1	Definition of function.						
	1.2	Types of Functions: Polynomial, constant, explicit function, implicit function, periodic function, even and odd functions, inverse function, exponential function, logarithmic function, composite function						
	1.3	Simple problems based on function.						



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2		Limit	10	10	2	2	3	5
	2.1	Concept of limit of a function.						
	2.2	Theorems on limits (Without proof)						
	2.3	Limits of algebraic, trigonometric functions.						
	2.4	Standard limits						
3		Derivatives	11	20	2	2	2	16
	3.1	Derivatives of standard functions by first principle.						
	3.2	Rules of differentiation.						
	3.3	Derivative of composite function. (chain rule).						
	3.4	Derivative of implicit function, parametric function.						
	3.5	Logarithmic differentiation.						
SECTION-II								
Unit & Sub-Unit	Topics/Sub-topics							
4		Second ordered derivative.	02	04	2	1	1	2
5		Applications of derivatives	10	16	3	1	2	13
	5.1	Equation of tangent and normal to the given curve.						
	5.2	Maxima and minima of function.						
	5.3	Rate problems						
6		Partial derivatives of first order of functions of two variables.	02	06	2	1	1	4
7		Vector Algebra	08	14	1	2	2	10
	7.1	Definition of vector, types of vector, vector addition, subtraction, multiplication by scalar.						
	7.2	Dot product, cross product and their properties.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								



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List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	7	Vector	2	1
2	1	Function	2	2
3	2	Limits of algebraic functions.	2	2
4	2	Limits of trigonometric functions.	2	2
5	3	Derivative of composite function.	2	2
6	4	Second ordered derivative. Equation of tangent	2	3
7	5	Maxima and minima of function. Rate problems	2	3
8	6	Partial derivatives	2	2

Reference books :

Sr. No.	Author	Title	Publisher and Edition
1	B.M.Patel, J.M.Rawal and others	Basic Mathematics	Nirali Prakashan
2	S. P. Deshpande	Mathematics for Polytechnic	Pune Vidyarthi Griha Prakashan,



Curriculum Coordinator

Head
Diploma in _____
Dean - Diploma

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRICAL ENGINEERING
PROGRAMME CODE	: DEE
SEMESTER	: FIRST
COURSE TITLE	: CHEMISTRY
COURSE CODE	: 173CH12

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3		2	5	3	80	32	20	100	40	25	10	-	-	25	10	150

Course Objectives:

1. To understand mole concept and volumetric analysis.
2. To represent the formation of bonds in molecules.
3. Generalize different factors which affect atmospheric as well as electrochemical Corrosion.
4. Know various insulating or dielectric materials used for electronic equipments and computers.
5. To identify the properties of metal, alloys and other chemical compounds related to engineering applications

Course Outcomes:

Student should be able to:

CO1	Use the basic principles of chemistry to predict the electronic configuration, chemical reactions and describe the chemical bonding in molecules.
CO2	Define and explain various concepts of acids and bases, define pH and correlate it with the nature of aqueous solutions- neutral, acidic or basic.
CO3	Solve the quantitative problems involving moles and concentrations of solution.
CO4	Calculate oxidation number & balance the redox reaction.
CO5	Apply the knowledge of electrolysis in engineering applications.
CO6	Know various insulating or dielectric materials used for electronic equipments and computers.
CO7	Apply knowledge to enhance operative life span of engineering material & structure by various corrosion protective methods.
CO8	Understand the concept of conductivity & calculate solubility product.
CO9	Perform laboratory experiment demonstrating safe and proper use of standard chemistry glassware and equipments.
CO10	Record and interpret the data obtained from experimentation.



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Course Content:

SECTION-I								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
1	Atomic Structure and Chemical Bonding	8	13	1	40%	40%	20%	
1.1	Definitions of Elements, atom, Molecules, Fundamental particles of atom, their mass, charge, location, Definition of atomic number, atomic mass number, Isotopes and Isobars, Electronic configuration based on Hunds Rule, Aufbau's principle, (n+l) Rule, Pauli's exclusion principle (up to Atomic no. 30).							
1.2	Definitions: atomic weight, equivalent weights of an element, Molecular weight, Mole in terms of number, mass, volume, Definitions of equivalent weight and, Molecular weight of molecule,							
1.3	Determination of percentage composition of an element in a given molecule,							
1.4	Chemical bond, octet rule, formation of various types of chemical bonds: Covalent, Ionic, Coordinate covalent bonds along with examples CH ₄ , H ₂ , O ₂ , N ₂ , NaCl, MgCl ₂ , H ₃ O ⁺ , NH ₄ ⁺ , BF ₃ -NH ₃ .							
2	Solution	06	10	3	40%	40%	20%	
2.1	Solution, Concentrations of solution: Grams per litre, Percentage by weight or volume, Normality, Molarity, Molality.							
2.2	Volumetric analysis, Titrations, Acid base titration, Acidimetry, Alkalimetry, Redox titration, Iodometric titrations, Complexometric titration, Precipitation titration.							
3	Acid, Base and Salt	04	07	2	40%	40%	20%	
3.1	Definitions & theories of acids & bases: Classical theory, Arrhenius theory, Lowry-Bronsted theory, Lewis theory,							
3.2	pH, pOH, pH scale, Numericals, Basicity of an acid and acidity of a base, Numericals of Equivalent weight of acids, bases,							
3.3	Definition of salts & types of salts: Normal, Acidic, Basic, Mixed, Double salts, complex salts,							
4	Ionic Equilibrium	06	10	8	40%	40%	20%	
4.1	Electrolytes, Types of Electrolytes, Degree of dissociation & Ostwald's dilution law.							



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	4.2	Conductivity of Electrolytes – Concept of Ohms Law, Specific Conductivity, Specific Resistance, Equivalent Conductivity & Molar Conductivity,						
	4.3	Variation of Specific & Equivalent conductance with dilution, Cell Constant: Definition & Derivation.						
	4.4	solubility product and their application						
SECTION-II								
Unit & Sub-Unit	Topics/Sub-topics							
5		Redox Reactions	5	8	4	40%	40%	20%
	5.1	Introduction, Oxidation, Reduction, Electron transfer concept, Oxidising & reducing agents,						
	5.2	Oxidation number & rules for assigning oxidation number, Balancing of the chemical reaction.						
6		Electrochemistry	07	12	6	40%	40%	20%
	6.1	Electrochemistry, Electrochemical reactions, Construction and working of electrochemical cell & electrolytic cell,						
		Faradays I & II laws of electrolysis, Applications of electrolysis: electroplating & refining						
	6.2	Electrochemical cells and batteries, Construction, working and applications of dry cells, Lead acid storage batteries, fuel cells.						
7		Corrosion	06	10	7	40%	40%	20%
	7.1	Definition, Types of corrosion Atmospheric corrosion, oxide films, factors affecting Atmospheric corrosion,						
	7.2	electrochemical corrosion, mechanism of electrochemical corrosion, galvanic corrosion,						
	7.3	protective measures against corrosion: electrochemical protection by sacrificial anodic protection and impressed current, cathodic protection coatings (galvanic and zinc, organic coating agents Electroplating, metal cladding,).						
8		Lubricants and Insulators	06	10	6	40%	40%	20%
	8.1	Lubricant, Functions of lubricant, Types of lubricants with examples, Ideal lubricant: Characteristics, Graphite & MoS ₂ .						
		Properties of lubricants: Viscosity, Viscosity index, fire point, flash point, pour point, cloud point, Saponification value, Acid value						

	Insulators: Definition of Dielectrics and Insulators, Classifications of Insulating Materials, Properties & Applications of Inert Gases, Silicone Fluids, Mineral Oil, Teflon, Epoxy Resin and Ceramics.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Practical/Assignment	Approx. Hours	CO
1	To study the use of indicators, pH papers and litmus papers for identification of acid, base and neutral solutions from the given set of solutions.	2	7,8
2	To standardize HCl solution using N/10 Na ₂ CO ₃ .	2	7,8
3	To standardize KMnO ₄ solution using N/10 C ₂ H ₂ O ₄ solution.	2	7,8
4	To determine strength of the mixture of H ₂ SO ₄ + C ₂ H ₂ O ₄ using NaOH and KMnO ₄ solution.	2	7,8
5	To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using KMnO ₄ solution.	2	7,8
6	To standardize K ₂ Cr ₂ O ₇ solution using N/10 Na ₂ S ₂ O ₃ solution.	2	7,8
7	To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using K ₂ Cr ₂ O ₇ solution.	2	7,8
8	To determine the amount of copper sulphate in the given solution using Na ₂ S ₂ O ₃ solution.	2	7,8
9	To standardize EDTA solution using N/10 ZnSO ₄ solution.	2	7,8
10	To standardize AgNO ₃ solution using NaCl solution.	2	7,8
* Minimum 8 and maximum 12 practicals/experiment sessions to be included in a course in a term			

Text Books:

Sr. No.	Title	Publisher and Edition
1	XI th standard Chemistry book	HSC Board, M.S. / NCERT
2	XII th standard Chemistry book	HSC Board, M.S. / NCERT



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Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Jain & Jain	Engineering Chemistry	Dhanpat Rai & Co. (Pvt.) Delhi – 110006 Ltd Edition: Fifteenth (2008)
2	Shashi Chawla	A Text Book of Engineering Chemistry	Educational & Technica Publishers Dhanpat Rai & Co (Pvt.) Ltd, Edition: Third (2005)



Curriculum Coordinator



**Head
Diploma in Technical
Chemistry**



Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRICAL ENGINEERING
PROGRAMME CODE	: DEE
SEMESTER	: SECOND
COURSE TITLE	: ELECTRICAL CIRCUITS
COURSE CODE	: 172EE23

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	1	2	6	3	80	32	20	100	40	50	20			25	10	175

Course Objectives:

The students should be able to:

- 1) Explain and Understand different types of Circuit Elements and Energy Sources.
- 2) Analysis of Circuit Networks by Kirchhoff's Laws using Nodal and Mesh Analysis.
- 3) Analyze single phase AC circuits using resistor, inductor & capacitor elements.
- 4) Explain and analyze series and parallel resonant behavior of a circuit.
- 5) Analyze different theorems for dc and ac circuits using independent sources.
- 6) Analysis of three phase balanced networks.

Course Outcomes:

At the end of Course Students will be able to:

CO1	Explain and analyze different Circuit Elements and Energy Sources.
CO2	Analyze different Networks using Kirchhoff's Laws with independent sources.
CO3	Analyze different Network theorems for dc circuits with independent sources.
CO4	Explain the phasor diagrams of current, voltage and power in AC circuits.
CO5	Understand properties of resonance in series and parallel RLC circuit.
CO6	Analyze currents and voltages in three phase balanced networks.

Course Content:



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SECTION-I

Unit	Topics	Hou rs	Mark s	C O	R Leve l	U Leve l	A Leve l
1	Circuit Elements and Sources: E.M.F, Potential and Potential Difference, Current and Current Density. Concept of Active and passive, Linear and non-linear, Unilateral and bilateral, Lumped and distributed circuit elements-. Ideal and Practical Voltage and Current Sources. Conversion from one source into other. Internal Impedance of voltage and current source relative to load. Independent and Dependent Electrical Sources –Power and Energy Relations for Two-terminal Elements.	06	10	1	02	03	05
2	Nodal Analysis and Mesh Analysis of resistive Circuits Using Independent sources: Kirchhoff's Voltage Law (KVL), Kirchhoff's Current Law(KCL), Nodal Analysis of Circuits Containing Resistors and Independent Sources, Mesh Analysis of Circuits with Resistors and Independent Sources.	09	15	2	01	04	10
3	Circuit Theorems and Their Application in Electric Networks Using Independent sources: Linearity of a Circuit and Superposition Theorem, limitation of Superposition Theorem, Thevenin's Theorem and Norton's Theorem, Determination of Equivalents for Circuits with Independent Sources, Maximum Power Transfer Theorem	09	15	3	01	04	10



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SECTION-II

Unit	Topics						
4.	A.C Fundamentals: Frequency, Time Period, Phase Angle , R.M.S & Average value calculation of A.C waveforms, Phasor representation of alternating quantities. Inductor & capacitor phase relationships. Rectangular and polar forms of A.C quantities. impedance, phasor diagram and Power triangle calculation in Series and parallel combination of R-L, R-C and R-L-C circuit, Power Relations in AC Circuits.	10	15	4	05	05	05
5.	Series & Parallel Resonance: Resonance in series & parallel RLC circuit, Impedance, resonance frequency, Power Factor & Quality factor calculation in series & parallel resonance network	06	10	6	02	03	05
6.	Three phase AC Circuits : Importance of three phase circuits , Star, Delta connections , Phase sequence, Balanced load , line and phase quantities, solution of three phase circuits, Measurement of 3 phase power using two wattmeter method.	08	15	5	04	03	08

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxanomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.



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List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1.	2	Determine the loop currents in any DC network	2	1, 2
2.	2	Determine the node voltages in any DC network	2	1, 2
3.	3	Verification of principle of superposition with DC sources.	2	2, 3
4.	3	Verification of Thevenin, theorems in DC circuits	2	2, 3
5.	3	Verification of Norton theorems in DC circuits	2	2, 3
6.	3	Verification of Maximum power transfer theorems in DC circuits	2	2, 3
7.	4	Analysis of single phase circuits using resistor, inductor & capacitor elements.	2	4
8.	5	Study of RLC series resonance	1	5
9.	5	Study of RLC Parallel resonance	1	5
* Minimum 8 and maximum 12 practicals/experiment sessions to be included in a course in a term				

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	M. E. Van Valkenburg	Network Analysis	3rd Edition, PHI Learning.
2	W H Hayt, S M Durbin, J E Kemmerly	Engineering Circuit Analysis	7th Edition Tata McGraw-Hill Education.



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3.	D. Roy Choudhury	Networks and Systems	2nd Edition, New Age International.
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Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	F. F. Kuo, John Wiley and sons.	Network Analysis and synthesis	
2	N Balabanian and T.A. Bickart,	Linear Network Theory: Analysis, Properties, Design and Synthesis'	Matrix Publishers, Inc.
3	C. L. Wadhwa	Network Analysis and synthesis	New Age international.
4	B. Somanathan Nair	Network Analysis and Synthesis	Elsevier Publications



Curriculum Coordinator



**Head
Diploma in Electrical
Engineering**



Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRICAL ENGINEERING
PROGRAMME CODE	: DEE
SEMESTER	: SECOND
COURSE TITLE	: BASICS OF ELECTRONICS
COURSE CODE	: 172EE24

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3		3	6	3	80	32	20	100	40	50	20	-	-	25	10	175

Course Objectives:

- 1) To identify different diodes on their construction, characteristics and application basis
- 2) To familiarize with number systems having different base.
- 3) To introduce working of logic gates.
- 4) Simplify a logical expression and get simplified circuit using different techniques.

Course Outcomes:

Student should be able to

CO1	Analyze the structure of different types of semiconductor crystal structures. Know the intrinsic property of semiconductor materials.
CO2	Understand the theory of operation and characteristics of pn junction diode and Zener diode.
CO3	Explain the construction working and application of optoelectronic devices
CO4	Apply various number systems in digital design.
CO5	Develop skill to build, and troubleshoot digital circuits.



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Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Semiconductor Physics :	03	07	1	5	2	-
1.1	Germanium & Silicon Intrinsic semiconductor.						
1.2	Extrinsic P type & N type semiconductor,						
1.3	Effect of temperature on semiconductor.						
2	PN Junction Diode:	13	25	2	10	10	5
2.1	Germanium Diode, Silicon Diode, their construction.						
2.2	Working under no bias Forward bias & reverse bias condition.						
2.3	Forward & Reverse Characteristics.						
2.4	Piecewise linear equivalent circuit						
2.5	Important specifications (ratings) of a PN junction diode.						
2.6	Zener diode: Construction, Characteristics, Various Specifications (Ratings).						
2.7	Zener diode application in a simple voltage regulator circuit with examples.						
3	Optoelectronic Devices :	04	08	3	5	3	-
3.1	Construction, working, characteristics and applications of photoconductive cell, photovoltaic cell.						
3.2	Construction, working, characteristics and applications of Light Emitting Diode, Infra Red Light Emitting Diode.						
3.3	Construction, working, characteristics and applications of Liquid Crystal Display.						
3.4	Construction, working, characteristics and applications of Optocouplers.						
SECTION-II							
Unit & Sub-Unit	Topics/Sub-topics						
4	Introduction, Number Systems, Codes:	10	13	4	3	10	-
4.1	Introduction to digital system, Conversion between decimal, binary, octal & Hexadecimal numbers.						
4.2	Binary arithmetic. 1's & 2's complements of binary numbers.						
4.3	Signed numbers, arithmetic operations with signed numbers.						

	4.4	BCD 8421 code, 9's & 10's complement, BCD arithmetic, Excess – 3, Gray.						
5		Logic Gates :	05	15	4,5	5	5	5
	5.1	AND, OR, NOT, NAND, NOR, EX –OR, EX-NOR Gates.						
	5.2	Boolean Algebra: Operations, Expressions, Laws & Rules. DeMorgan's Theorems.						
	5.3	NAND & NOR used as universal gates. Simplification of Logic Expression by using Boolean Algebra.						
6		Combinational Logic Circuits :	12	12	5	2	2	8
	6.1	Sum -Of-Products (SOP) & Product-Of-Sums (POS) forms of logic expression, their conversion to standard forms.						
	6.2	Karnaugh map reduction technique for 2 to 4 input variables function.						
	6.3	Karnaugh map reduction by Don't Care Condition. Troubleshooting of logic circuits.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	2	Characteristics of Germanium and Silicon Diode.	2	2
2	2	Characteristics of Zener Diode.	2	2
3	3	Characteristics of Light Emitting Diode (Red, Green, Yellow and Blue color).	2	3
4	5	To verify the truth table of TTL logic gate IC's 7432, 7486.	2	4,5
5	5	To verify the truth table of TTL logic gate IC's 7408,7400, 7402.	2	4,5
6	5	To verify the NAND and Nor Gate as universal Gate.	2	5
7	6	To verify the design of Half adder and Full adder using Karnaugh map reduction.	2	5
8	6	To verify the design of Half subtractor and Full subtractor using Karnaugh map reduction.	2	5
9	6	To verify the design of 4 bit Parallel adder subtractor using Karnaugh map reduction.	2	5
10	6	To verify the design of BCD adder subtractor using Karnaugh map reduction.	2	5
* Minimum 8 and maximum 12 practicals/experiment sessions to be included in a course in a term				

NOTE : The students must also perform above/or other related experiments on MULTISIM Electronic Work Bench software.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Robert Boylestad & Louis Nashelsky,	Electronic Devices and Circuit Theory,9 th Edition	Prentice Hall India Private Limited
2	A. Anand Kumar	Fundamentals of Digital Circuits,3 rd Edition	Prentice Hall India Private Limited

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Albert Paul Malvino.	Electronic Principles,7 th Edition.	Tata McGraw - Hill Publishing Company Ltd.
2	David Bell.	Electronic Devices and Circuits, 5 th Edition.	Oxford University Press.
3	R.P. Jain,	Modern Digital Electronics, 4 th Edition	Tata McGraw - Hill Publishing Company Ltd.
4	Thomas L. Floyd,	Digital Fundamentals by 8 th Edition.	Pearson Education Inc.



**Curriculum Coordinator
Prof. Ami Dapkawala**



**Head
Diploma in _____**



Dean - Diploma



Course Name : Diploma in Electrical Engineering
Course Code : DEE
Semester : First
Subject Title : Mechanical Workshop Practice
Subject Code : 172ME25

Teaching & Examination Scheme:-

Teaching Scheme				Paper Hours	Examination Scheme										Total Marks	
L	T	P	CR		Theory		Test	Total		P		O		TW		
					Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
1	-	3	4		-	-	-	-	-	-	-	-	-	50	20	50

Rationale:-

Electrical and Electronics diploma student is expected to know basic workshop practice like Wood working and hot working processes. The students are required to identify, operate and control various machines. The students are required to select and use various tools and equipments related to Wood working and smithy processes.

Course Objectives:

1. To lay a strong foundation in study and practice of basic workshop processes which is the backbone in Engineering.
2. To make students well versed to identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.

Course Outcomes:

Student should be able to

CO1	Learn types of engineering material and their properties.
CO2	Operate, control different machines and equipments.
CO3	Inspect and produce the job as per specified dimensions.
CO4	Adopt safety practices while working on various machines.

Course Content:

Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	ENGINEERING MATERIALS:	2	8	1	2	2	8
	1.1 Introduction.						
	1.2 Different types of ferrous and non-ferrous materials.						
	1.3 Properties of Engineering materials.						
2	CARPENTRY SHOP:	3	8	3	1	1	6

	2.1	Introduction.						
	2.2	Various types of woods.						
	2.3	Different types of tools, machines and accessories.						
3		FITTING SHOP:	3	8	3	2	2	4
	3.1	Introduction						
	3.2	Various marking, measuring, cutting, holding and striking tools.						
	3.3	Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc.						
	3.4	Working Principle of Drilling machine, Tapping dies, its use.						
	3.5	Safety precautions and safety equipments.						
4		WELDING SHOP:	3	9	4	1	2	6
	4.1	Introduction.						
	4.2	Types of welding, ARC welding, Gas welding, Gas Cutting.						
	4.3	Welding of dissimilar materials, Selection of welding rod material, Size of welding rod and work piece.						
	4.4	Different types of flame.						
	4.5	Elementary symbolic representation.						
	4.6	Safety precautions in welding, safety equipments and its use in welding processes.						
5		SHEET METAL WORKING	3	9	2	2	2	6
	5.1	Introduction.						
	5.2	Various types of tools, equipments and accessories						
	5.3	Different types of operations in sheet metal shop.						
	5.4	Soldering and riveting.						
	5.5	Safety precautions.						
6		LATHE:	2	8	4	1	1	5
	6.1	Introduction.						
	6.2	Various operations performed on Lathe machine.						
	6.3	Main parts of Lathe machine.						
<p>Legends: R- Remember, U – Understand, A – Apply</p>								



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List of Practicals:

Sr. No.	Practical	Approx. Hours	CO
1	CARPENTRY SHOP: Demonstration of different wood working tools / machines. Demonstration of different wood working processes, like planing, marking, chiseling, grooving, turning of wood etc. One simple job involving any one joint like mortise and tenon, dovetail, bridle, half lap etc.	12	1
2	FITTING SHOP: Demonstration of different fitting tools and drilling machines and power tools. Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc. One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc.	15	2
3	WELDING SHOP: Demonstration of different welding tools / machines. Demonstration of Arc Welding, Gas Welding, Gas Cutting and rebuilding of broken parts with welding. One simple job involving butt and lap joint.	9	4
4	SHEET METAL SHOP: Demonstration of different sheet metal tools / machines. Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing, soldering and riveting. One simple job involving sheet metal operations and soldering and riveting.	9	3

Reference books :

Sr. No.	Author	Title	Publisher and Edition
1	K.C. John	Mechanical Workshop Practice	PHI Learning Pvt Ltd. EEE 2010
2	B.S. Raghuwanshi	Workshop Technology	Dhanpat Rai and sons, New Delhi, 9 th Edition, 2002
3	S.K. Hajra Chaudhary	Workshop Technology Vol I & II	Media Promoters and Publisher, New Delhi. 8 th edition, 1986



Curriculum Coordinator

Head
Diploma in _____

(Signature)
Dean - Diploma

(Signature)

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRICAL ENGG
PROGRAMME CODE	: DEE
SEMESTER	: SECOND
COURSE TITLE	: ENVIRONMENTAL STUDIES
COURSE CODE	: 172EE26

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
2	-	-	2											50	20	50

Course Objectives:

- To impart knowledge about renewable and non-renewable natural resources.
- To understand and appreciate the concept of ecosystems, biodiversity and conservation.
- To increase the awareness regarding environmental pollution, climate change, water conservation and environmental legislations.

Course Outcomes:

Student should be able to

CO1	Identify and classify different natural resources and use them prudently.
CO2	Recognize and categorize the different ecosystems.
CO3	Discuss and estimate the importance of biodiversity and its conservation.
CO4	Judge the type of pollution, identify the pollutants and propose and design methods to reduce the same.
CO5	Use the information regarding environmental legislation to improve upon their surroundings for the betterment of the community.



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Course Content:

SECTION-I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	1	2		05			
	<p>Nature of Environmental Studies Definition, Scope and Importance of the environmental studies Importance of the studies irrespective of course. Need for creating public awareness about environmental issues ----</p>						
2	<p>Natural Resources and Associated Problems</p> <ul style="list-style-type: none"> • Forest resources: Use and over-exploitation, deforestation, dams and their effects on forests and tribal people. • Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. • Minral resources: Usage and explolitation. Environmental effects of extracting and using mineral resources. • Food resources: World food problem, changes caused by agriculture effect of modern agriculture, fertilizer-pesticide problems. • Energy resources: Growing energy needs, renewable and nonrenewable energy resources, use of alternate energy sources. Solar energy , Biomass energy, Nuclear energy, • Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individuals in conservation of natural resources. <p>Energy resources : Renewable Energy Resources – Biogas, Solar energy, Wind energy, Energy from falling water, Energy from wastes and tidal energy. Non-Renewable Energy Resources – Coal, Oil, Natural gas Issue of economic viability and ability to meet demands.</p>	9		01			

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		Inequitable use of energy in urban and rural areas.						
3		Ecosystems <ul style="list-style-type: none"> • Concept of an ecosystem • Structure and function of an ecosystem Introduction, types, characteristic features, structure and function of the following ecosystem: <ol style="list-style-type: none"> Forest ecosystem Grassland ecosystem Desert ecosystem Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries) 	4		02			
SECTION-II								
	Unit & Sub-Unit	Topics/Sub-topics						
4	6.1	Environmental Pollution: Definition Cause, effects and control measures of <ul style="list-style-type: none"> • Air pollution • Water pollution • Soil pollution • Noise pollution • Nuclear hazards Types of wastes – generation, characteristics, treatment and disposal of: <ul style="list-style-type: none"> • Solid waste • e- waste • Biomedical waste 	7		04			
5	6.2	Environmental Protection From unsustainable to sustainable development Environmental protection act. Air (prevention and control of pollution) act. Water (prevention and control of pollution) act Wildlife protection act Forest conservation act Population growth and human health, human rights.	5		03 05			
6		Social Issues And The Environment Disaster management: floods, earthquake, cyclone, tsunami and landslides Urban problems related to energy. Water conservation, rain water harvesting, watershed management.	5		04 03			

	Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: issue and possible solutions. Global warming, acid rain, ozone layer depletion, nuclear accidents and Holocaust.						
		32					
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1		Visit to a local area to document environmental assetsriver/ forest/grassland/hill/mountain		4, 5
2		Visit to a local polluted site – Urban / Rural / Industrial / Agricultural		4, 5
3		Study of common plants, insects, birds		1,3
4		Study of simple ecosystems-pond, river, hill slopes, etc		3, 2

* Minimum 8 and maximum 12 practicals/experiment sessions to be included in a course in a term

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	Erach Bharucha	Text book of Environmental studies	UGC Press

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Anandita Basak	Environmental studies	Driling Kindersley(India)Pvt. Ltd Pearson
2.	D.D. Mishra	Fundamental concepts in Environmental studies	S. Chand & Co. Ltd.
3.	Jain and Jain	Role of Tech. in Environment and Health	Dhanpat Rai Publishing Co. New Delhi

Curriculum Coordinator

Diploma in _____



Dean - Diploma

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRICAL ENGINEERING
PROGRAMME CODE	: DEE
SEMESTER	: SECOND
COURSE TITLE	: TECHNICAL COMMUNICATION AND PRESENTATION SKILLS
COURSE CODE	: 171HM27x

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
-	2	-	2											25	10	25

Course Objectives:

Making students proficient in oral skills through various activities that will enable them to perform efficiently during interviews, meetings, seminars, conferences, group discussions and in negotiations and conflict resolutions. Improving the technical communication through critical analysis of a situation, drawing appropriate conclusions, presenting them precisely. Developing the personality of the future technologists by inculcating proper interactive skills in them and improving their power of expression required for efficacious communication in verbal and non-verbal form to achieve success in professional world.

Course Outcomes:

Student should be able to

CO1	To develop oral skills and self confidence
CO2	To develop analytical ability and technical communication skills
CO3	To develop interactive skills and power of expression

Course Content :

Unit & Sub-Unit	Topics/Sub-topics		Hours	Marks	CO	R Level	U Level	A Level
UNIT I	I. ORAL SKILLS a) Dialogue And Role Play b) Group Discussion	<ul style="list-style-type: none"> To improve interactive skills & conversational skills 	12	09	CO 1	30%	30%	40%

	c) Elocution d) Extempore	<ul style="list-style-type: none"> Leadership qualities and Team spirit To boost self-confidence, Power of expression, 						
UNIT 2	II. TECHNICAL COMMUNICATION a) Editing b) Critical-Analysis of articles /write up. c) Report Writing /Drafting proposals	<ul style="list-style-type: none"> Writing Sills To develop critical thinking and analytical ability. Developing technical communication and conciseness in writing 	10	07	CO 2	20%	20%	60%
UNIT 3	III. GROOMING AND INTERACTIVE SKILLS a) Audio-visual Communication <ul style="list-style-type: none"> ➤ Language Laboratory ➤ Power Point Presentation ➤ Videos b) Communication and Body language <ul style="list-style-type: none"> ➤ Kinesics ➤ Haptics ➤ Proxemics ➤ Vocalics ➤ Chronemics c) Manners and Etiquette <ul style="list-style-type: none"> ➤ Table Manners 	<ul style="list-style-type: none"> Acquiring refined language and self-learning techniques. Using technologies to collect, compile, analyse and present data precisely in an appealing manner. Developing ability to communicate efficiently and effectively. 	10	09	CO 3	20%	30%	50%



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	<ul style="list-style-type: none"> ➤ Telephone Etiquettes ➤ Personal Grooming ➤ Voice Culture 	<ul style="list-style-type: none"> • Moulding and enhancing one's personality. 						
	Total =		32	25				
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms's Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments:

1. Writing a dialogue based on the given situation.
2. Dialogue delivery through Role Play
3. Conducting group discussion on a given topic
4. Writing critical analysis of an article
5. Writing short reports pertaining to industry
6. Drafting applications as per industry situations
7. Drafting proposals
8. Delivering a speech in public
9. Presentation skills through power point presentation on a given topic
10. Phonetics exercises in language laboratory

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	Board of Editors L.V Shende, T.K Tytus, N.S Pathan, R.G Munghate, Azizul Hugue, Sambhaji Warkad	The Communicator	Orient Blackswan,2008
2.	L.V Shende, T.K Tytus, N.S Pathan, R.G Munghate, Azizul Hugue, Sambhaji Warkad	Vibrant English	Orient Blackswan,2013



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Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Gupta C. B.	Contemporary Management	APH, New Delhi, First edition, 1992
2.	Sekaran Uma	Organisational Behaviour	Tata Mcgraw Hill, New Delhi, Second edition, 2008
3.	Raman Meenakshi, Sharma Sangeeta	Technical Communication	OUP, India, Second impression, 2004
4.	K. Purushotham	English for Fluency	Orient Blackswan, 2013



Curriculum Coordinators

1. Vandana Mishra
2. Tanvi Joshi

Head
(R.Thomas)
H&M Dept.


Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA
PROGRAMME CODE	: DEE
SEMESTER	: SECOND
COURSE TITLE	: Extra Co-curricular activity
COURSE CODE	:

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
-	-	2	-	-												

Teaching and Examination Scheme:-

Course Content:

Part-I: Syllabus

Unit & Sub-Unit	List of Activity	Hou rs	CO	R Level	U Level	A Level
1.	Understanding of Departmental Library Working					
2.	Participation in Gymkhana Activity					
3.	Participation in sports activity					
4.	Use of internet laboratory					
5.	Introduction to Counselor					
6.	Use of e-library					
7.	Participation in Departmental activity					

[Signature]
Curriculum
Co-ordinator



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