



Veermata Jijabai Technological Institute (V.J.T.I)
(Central Technological Institute, Maharashtra State, INDIA)
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Website: www.vjti.ac.in

Programme: Diploma in Electronics Engineering (DEInE)

Semester: II

Implemented from: 2017

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME												
			L	T	P	C R	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
								Max	Min		Max	Min	Max	Min	Max	Min			
173MA21b	Mathematics II	B	3	2		5	3	80	32	20	100	40					25@	10	125
173PH22	Physics	B	3		2	5	3	80	32	20	100	40	25*	10			25@	10	150
173EX23	Electrical Circuits	C	3	1	2	6	3	80	32	20	100	40	50**	20			25@	10	175
173EX24	Basics of Electronics	B	3		3	6	3	80	32	20	100	40	50**	20			25@	10	175
173ME25	Mechanical workshop practice	C	1		3	4											50@	20	50
173EX26	Environmental Studies	B	2			2											5@	20	50
173HM27z	Technical Communication and Presentation Skills	A		2		2											25@	10	25
	Extra co curricular activity	B			2														
	TOTAL		15	5	12	30		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 Examiner @ : TW assessment by Internal Examiner

Curriculum Coordinator

Head

Diploma in Electronics Engg.

Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN ELCTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: SECOND
COURSE TITLE	: MATHEMATICS II
COURSE CODE	: 173MA21b

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 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	40%	40%	20%
	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.					
2	Limit	10	12	2	40%	40%	20%
	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	18	2	40%	40%	20%
	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.					

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SECTION-II							
Unit & Sub-Unit	Topics/Sub-topics						
4	Second ordered derivative.	2	6	2	40%	40%	20%
5	Applications of derivatives	10	16	3	30%	30%	40%
	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.	2	6	2	40%	40%	20%
7	Vector Algebra	8	12	1	40%	40%	20%
	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 Taxanomy).							



List of Practicals/Assignments/Tutorials:

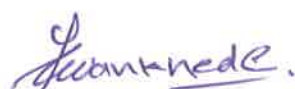
Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	7	Vector	2	1
2	1	Function	2	2
3	2	Limits of algebraic functions.	2	2
4	2	Limits of trigonometric functions.	2	2
5	3	Derivative of composite function.	2	2
6	3	Derivative of implicit and parametric function.	2	2
7	4	Second ordered derivative. Equation of tangent	2	3
8	5	Maxima and minima of function. Rate problems	2	3
9	6	Partial derivatives	2	2


Reference books :

Sr. No.	Author	Title	Publisher and Edition
1	S. P. Deshpande	Mathematics for Polytechnic	Pune Vidyarthi Griha Prakashan,
2	H.K.Dass	Advanced Engineering Mathematics	S.Chand & Company Ltd. Delhi
3	Dr.B.S.Grewal	Higher Engineering Mathematics	Khanna Publishers Delhi


Curriculum Coordinator




Head, Diploma in Electronics Engineering


Dean (Diploma)
V. J. Technological Institute,
Matunga, Mumbai - 400019.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: II
COURSE TITLE	: Physics
COURSE CODE	: I73PH22

TEACHING AND EXAMINATION SCHEME:

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

*Practical examination will be conducted by internal faculty.

Rationale:-

Physics is the foundation of any engineering discipline. Its principles, laws, rules, results and conclusions drawn from observations and predictions of various phenomena occurring in nature; play important role in solving field problems in engineering and technology.

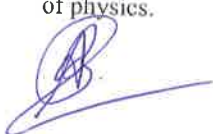
Though the span of physics is from quark to galaxy or particle physics to astrophysics; here certain topics are carefully selected for particular discipline. These topics will provide sufficient fundamental as well as background knowledge for the particular branch. Proper attention is given to the selection of sub-topics and their depth so that student will be able to cope up with innovations and new technologies in his field.

Various phenomena, principles, laws, rules discovered and invented by physics are used for industrial, engineering and technological applications. The overall growth of various engineering disciplines, namely, mechanical, electrical, electronics, civil and environmental and so on depends upon the development of physics and its detail understanding.

Objectives:-

Students should be able to;

- Identify different systems of units and convert units from one system to other as well as conversant with practical units.
- Understand properties of matter such as elasticity, surface tension and viscosity, principles of heat and thermodynamics and modern physics.
- Analyze and use it for solving engineering problems.
- Identify the phenomena of interference, diffraction and polarization of light and its industrial applications.
- Identify, analyze, discriminate and interpret logical sequence of field problems with the study of physics.





Course Outcomes:

Student should be able to

CO1	Use various systems for measurements and measuring instruments.
CO2	Understand properties of matter, elasticity, viscosity and surface tension, along with relevant formulae, applications and problem solving based on it.
CO3	Understand concepts of modern physics used in X-rays and photoelectric effect, with their applications and problems based on it.
CO4	Understand principles of heat and thermodynamics, their applications and numerical based on it.
CO5	Understand concepts used in various phenomena of optics, such as wave theory, interference, diffraction, polarization etc., along with their applications and problems based on it.

Course Content:

SECTION-I								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
1	Measurements							
	1.1	Need of measurements, requirements of standard unit, CGS, MKS, FPS and SI systems, fundamental and derived quantities/units, dimensions and dimensional analysis, problems	8	12	1	40%	40%	20%
	1.2	Vernier caliper, screw gauge, spherometer. Least counts and range of voltmeter, ammeter and thermometer.						
2	Properties of matter							
	2.1	Elasticity – elasticity, plasticity, Hooke's law, Young's, Bulk and rigidity modulus, problems, relation between them, Searle's method of determination of Y, ultimate and breaking stress, factor of safety, wire under continuously increasing load.	10	16	2	40%	40%	20%
	2.2	Surface tension – cohesive and adhesive forces, sphere of influence, molecular theory of surface tension, angle of contact, capillarity (formula with derivation), problems						
	2.3	Viscosity – velocity gradient, Newton's law of						



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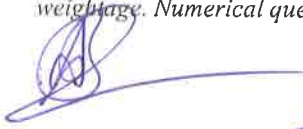
		viscosity, coefficient of viscosity, Stokes' law of viscosity, Stokes' method of viscosity, problems, laminar and turbulent flow, critical velocity, Reynold's number						
3	Modern physics							
	3.1	X-rays – Coolidge X-ray tube, continuous characteristic and X-rays, problems, properties and applications, Moseley's law.	8	12	3	40%	40%	20%
	3.2	Photoelectric effect – Planck's theory of radiation, Einstein's photoelectric equation, problems, photocells – photo-emissive, photovoltaic and photoconductive (construction, working and applications)						
SECTION-II								
Unit & Sub-Unit	Topics/Sub-topics							
4	Heat and Thermodynamics							
	4.1	Gas laws – Boyle's law, Charle's law, Gay-Lussac's law, absolute zero, Kelvin scale, work done at constant pressure, Cp, Cv and Mayer's relation, problems, isothermal, adiabatic, isobaric and isochoric processes.	10	16	4	40%	40%	20%
	4.2	Expansion and transmission of heat – coefficients of linear, areal and cubical expansion, modes of transmission of heat, laws of thermal conductivity, coefficient of thermal conductivity, Lee's and Searle's methods, laws of thermodynamics, Heat engine its efficiency, Carnot cycle, problems.						
5	Optics							
	5.1	Wave theory – wavefront, wave normal, laws of reflection and refraction, problems, Huygen's principle, dispersion, total internal reflection.	12	24	5	40%	40%	20%
	5.2	Interference – principle of superposition, constructive and destructive interference, conditions to obtain interference pattern, Young's double slit experiment, derivation of bandwidth, problems.						
	5.3	Diffraction – definition, types of diffraction,						



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	single slit diffraction pattern, diffraction grating, grating element, grating formula, problems, determination of wavelength of light.						
5.4	Polarization – polarized and unpolarized light, polarizer, analyzer, optical activity, optical rotation, specific rotation, polarimeter (principle, construction, working and applications)						
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

Sr. No.	Practicals	Approx. Hours	CO
1	Study of vernier caliper and travelling microscope	2	1
2	Study of screw gauge	2	1
3	Determination of Young's modulus by Searle's method	2	2
4	Determination of surface tension of liquid by capillary method	2	2
5	Determination of viscosity of liquid by Stokes' method	2	2
6	Thermal conductivity of good conductor by Searle's method	2	4
7	Thermal conductivity of bad conductor by Lee's method	2	4
8	Determination of wavelength of light using diffraction.	2	5
9	Determination of grating element.	2	5
10	Determination of specific rotation of liquid using polarimeter.	2	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		XIth standard physics book	HSC Board, M.S. / NCERT
2		XIIth standard physics book	HSC Board, M.S. / NCERT


Reference books and Websites:

Sr. No	Author	Title	Publisher and Edition
1	Halliday D., Resnik R. and Walker	Fundamentals of physics extended	Wiley India, New Delhi, 8 th edition
2	Serway R A and Jewett, Jr. J W	Physics for scientists and Engineers	Cengage learning, New Delhi, 6 th edition
3	Verma H C	Concepts of Physics – Part I and II	Bharti Bhavan, New Delhi


Curriculum Coordinator




Head, Diploma in Electronics Engineering


Dean (Diploma)
V. J. Technological Institute,
Matunga, Mumbai - 400019.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: SECOND
COURSE TITLE	: Electrical Circuits
COURSE CODE	: 173EX23

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	Max	Min	
3	1	2		3	80	32	20	100	40	50	20			25	10	175

Course Objectives:

The students should be able to:

- 1) Explain and analyze different Circuit Elements and Energy Sources.
- 2) Analysis of Network by Kirchhoff's Laws, Node and Mesh Analysis.
- 3) Analyze single phase 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 dependent sources.
- 6) Study network topology.

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 Network by Kirchhoff's Law with independent Supply verify results.
CO3	Analyze different Network theorems for dc circuits with independent sources and verify results.
CO4	Explain the concept of AC fundamental , phasor diagram and 3 phase supply.
CO5	Analyze resonant behavior in series and parallel RLC circuit with calculation of resonant frequency.
CO6	Simplify electrical networks and solve by graph theory.



Course Content:

SECTION-I							
Unit	Topics	Hours	Marks	CO	R Level	U Level	A Level
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	20 %	30%	50%
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	06 %	24 %	40 %
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	06 %	24 %	40 %
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	10	15	4	35 %	35 %	30 %

	combination of R-L, R-C and R-L-C circuit, Power Relations in AC Circuits.						
5.	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	30 %	20 %	50 %
6.	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	20 %	30%	50%
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.

Practical Outcomes:

- 1) Analyze different Network Theorems and verify results.
- 2) Verify resonant behavior of in series and parallel RLC circuit.

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	Determine the node voltages in any DC network	2	1
3.	3	Verification of principle of superposition with DC sources.	2	1
4.	3	Verification of Thevenin, theorems in DC circuits	2	1
5.	3	Verification of Norton theorems in DC circuits	2	1
6.	3	Verification of Maximum power transfer theorems in DC circuits	2	1
7.	4	Analysis of single phase circuits using resistor, inductor & capacitor elements.	2	2
8.	5	Study of RLC series resonance	1	2
9.	5	Study of RLC Parallel resonance	1	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	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.
3.	D. Roy Choudhury	Networks and Systems	2nd Edition, New Age International.

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 Electronics Engineering



Dean (Diploma)
V. J. Technological Institute,
Matunga, Mumbai - 400019.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECETRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: SECOND
COURSE TITLE	: BASICS OF ELECTRONICS
COURSE CODE	: 176EX24

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		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.





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	70 %	30 %	-
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	40 %	40 %	20 %
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	60 %	40 %	-
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	20 %	80 %	-
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	30 %	30 %	40%
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	20%	20 %	60 %
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.						

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.



Practical Outcomes:

1	Verify Characteristics of PN junction diode and Zener diode.
2	Verify Characteristics of optoelectronic devices.
3	Verify and design different digital circuits using TTL IC.

List of Practicals/Assignments/Tutorials:

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

* 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



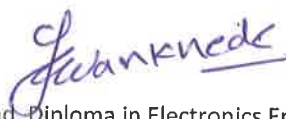
Reference books and Websites:

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





Head, Diploma in Electronics Engineering



Dean (Diploma)
V. J. Technological Institute,
Matunga, Mumbai - 400019.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: SECOND
COURSE TITLE	: MECHANICAL WORKSHOP PRACTICE
COURSE CODE	: 173ME25

Teaching & Examination Scheme:-

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

Rationale:-

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			
	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			
	2.1 Introduction.						
	2.2 Various types of woods.						
	2.3 Different types of tools, machines and accessories.						
3	FITTING SHOP:	3	8	3			
	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			
	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			
	5.1 Introduction.						
	5.2 Various types of tools, equipments and accessories						
	5.3 Different types of operations in sheet metal shop.						



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	5.4	Soldering and riveting.						
	5.5	Safety precautions.						
6		LATHE:	2	8	4			
	6.1	Introduction.						
	6.2	Various operations performed on Lathe machine.						
	6.3	Main parts of Lathe machine.						

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.	16	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 Promotors and Publisher, New Delhi. 8 th edition , 1986



Curriculum Coordinator



Head, Diploma in Electronics Engineering



Dean (Diploma)
V. J. Technological Institute,
Matunga, Mumbai - 400019.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: SECOND
COURSE TITLE	: ENVIRONMENTAL STUDIES
COURSE CODE	: 173EX26

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														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

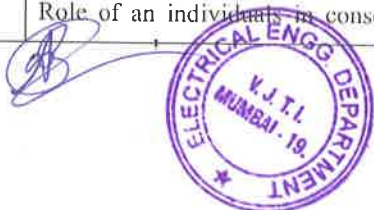
CO1	Identify and classify different natural resources and use them prudently.
CO2	Recognize and categorize the different ecosystems.
CO3	Discuss and estimate the importance of biodiversity and its conservation.
CO4	Judge the type of pollution, identify the pollutants and propose and design methods to 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	<p>Nature of Environmental Studies</p> <p>Definition, Scope and Importance of the environmental studies</p> <p>Importance of the studies irrespective of course.</p> <p>Need for creating public awareness about environmental issues ----</p>	02		05			
2	<p>Natural Resources and Associated Problems</p> <p>Forest resources: Use and over-exploitation, deforestation, dams and their effects on forests and tribal people.</p> <p>Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.</p> <p>Minral resources: Usage and exploitation. Environmental effects of extracting and using mineral resources.</p> <p>Food resources: World food problem, changes catised by agriculture effect of modern agriculture. fertilizer-pesticide problems.</p> <p>Energy resources: Growing energy needs, renewable and nonrenewable energy resources, use of alternate energy sources. Solar energy , Biomass energy, Nuclear energy.</p> <p>Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.</p> <p>Role of an individuals in conservation of</p>	09		01			



	<p>natural resources.</p> <p>Energy resources :</p> <p>Renewable Energy Resources – Biogas, Solar energy, Wind energy, Energy from falling water, Energy from wastes and tidal energy.</p> <p>Non-Renewable Energy Resources – Coal, Oil, Natural gas</p> <p>Issue of economic viability and ability to meet demands.</p> <p>Inequitable use of energy in urban and rural areas.</p>						
3	<p>Ecosystems</p> <p>□□□□ Concept of an ecosystem</p> <p>□□□□ Structure and function of an ecosystem</p> <p>Introduction, types, characteristic features, structure and function of the following ecosystem:</p> <p>a. Forest ecosystem</p> <p>b. Grassland ecosystem</p> <p>c. Desert ecosystem</p> <p>d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)</p>	04		02			
SECTION-II							
Unit & Sub-Unit	Topics/Sub-topics						
4	<p>Environmental Pollution:</p> <p>Definition Cause, effects and control measures of</p> <p>Air pollution</p> <p>Water pollution</p> <p>Soil pollution</p> <p>Noise pollution</p> <p>Nuclear hazards</p> <p>Types of wastes – generation, characteristics, treatment and disposal of:</p> <p>Solid waste</p> <p>e- waste</p>	07		04			



	Biomedical waste					
5	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.	05		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. 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.	05		04 03		
		32				

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 assets river/ 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	Dring 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



Head, Diploma in Electronics Engineering

Dean (Diploma)
V. J. Technological Institute,
Mumbai - 400 010.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: SECOND
COURSE TITLE	: TECHNICAL COMMUNICATION AND PRESENTATION SKILLS
COURSE CODE	: 173HM27z

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													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
1	I. ORAL SKILLS a) Dialogue And Role Play b) Group Discussion c) Elocution d) Extempore	<ul style="list-style-type: none"> To improve interactive skills & conversational skills Leadership qualities and Team spirit To boost self-confidence, Power of expression, 	12	09	CO 1	30%	30%	40%
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%
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 Telephone Etiquettes Personal Grooming Voice Culture 	<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. Moulding and enhancing one's personality. 	10	09	CO 3	20%	30%	50%
Total			32	25				

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

V.J.T.A.
ELECTRICAL ENGG. DEPARTMENT
MUMBAI - 19

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


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	Organizational 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


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