Programme: Diploma in Electronics Engineering (DEInE)   **Semester: I**   **Implemented from: 2017**

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME													TOTAL MARKS
			L	T	P	CR	PAPER HRS	TH Max	TH Min	IST	TOTAL Max	TOTAL Min	PR Max	PR Min	OR Max	OR Min	TW Max	TW Min	
173MA11a	Mathematics I	B	3	2		5	3	80	32	20	100	40					25@	10	125
173CH12	Chemistry	B	3		2	5	3	80	32	20	100	40	25*	10			25@	10	150
173HM13x	Communication Skill	B	3	2		5	3	80	32	20	100	40					25@	10	125
173EX14	Fundamentals of Electrical and Electronics Engineering	B	3		2	5	3	80	32	20	100	40			25**	10	25@	10	150
173EX15	Electrical components and drawing	B	1		3	4							25**	10			25@	10	50
173ME16	Engineering Graphics	B	2		3	5							50*	20			50@	20	100
173EX17	Computer Application	B			2	2											50@	20	50
	Extra co curricular activity	B			1														
	TOTAL		15	4	13	31		320		80	400		100		25		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**   **Dean – Diploma**

Diploma in Electronics Engg.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: FIRST
COURSE TITLE	: MATHEMATICS I
COURSE CODE	: 173MA11a

TEACHING AND EXAMINATION SCHEME:

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

Course Objectives:

1. To teach students basic facts, concepts and principles of Mathematics as a tool to analyze engineering problems.
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 properties of determinants and matrices to solve simultaneous linear equations.
CO2	Use binomial theorem for expansion and find equation of straight line, under given conditions.
CO3	Use properties and elementary operations of complex numbers to solve the problems.
CO4	Apply basic concepts in trigonometry to solve engineering problems.

Course Content:

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
		SECTION-I						
1		Determinants:	6	12	1	40%	40%	20%
	1.1	Determinant of order three.						
	1.2	Cramer's rule.						
	1.3	Properties of determinants						
2		Binomial Theorem	8	8	2	40%	40%	20%
	2.1	Concepts of Permutations and Combinations and problems based on ^nP_r, ^nC_r						
	2.2	Binomial Theorem with positive integral index, general term, Binomial expansion for negative integral and fractional index. .						
3		Straight line	5	8	2	40%	40%	20%
	3.1	Equations of straight lines in different forms.						
	3.2	Angle between two straight lines, conditions for two parallel and perpendicular straight lines.						
4		Complex Numbers	6	12	3	40%	40%	20%
	4.1	Definition of complex number, Elementary operations.						
	4.2	Argand's Diagram, Modulus, Amplitude, Polar form of a complex number.						

②

SECTION-II								
Unit & Sub-Unit		Topics/Sub-topics						
5		Trigonometry	16	28	4	40%	40%	20%
	5.1	Circular measure of an angle, Conversion from degrees to radians and radians to degrees.						
	5.2	Trigonometric ratios of angle in four quadrants.						
	5.3	Compound angle formulae.						
	5.4	Allied angle formulae.						
	5.5	Product formulae, Sum or difference formulae.						
	5.6	Multiple, submultiples angle formulae.						
	5.7	Inverse trigonometric functions.						
	5.8	Properties of triangle: sine rule, cosine rule. (without proof)						
6		Matrices	8	12	1	40%	40%	20%
	6.1	Matrices of order m x n, types of matrices, equality of matrices						
	6.2	Addition and subtraction of matrices, multiplication of matrices						
	6.3	Transpose of matrix, adjoint of matrix, inverse of matrix						
	6.4	Solution of simultaneous linear equations by adjoint method.						

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

List of Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1	Determinants	2	1
2	5	Circular measure of an angle, Trigonometric ratios	2	4
3	5	Compound angle formulae, Allied angle formulae	2	4
4	5	Product formulae, Sum or difference formulae.	2	4
5	2	Binomial Theorem.	2	2
6	5	Multiple, submultiples angle formulae.	2	4
7	5	Inverse trigonometric functions, Properties of triangle	2	4
8	6	Matrices	2	1
9	3	Straight lines	2	2
10	4	Complex Numbers	2	3

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	: DElnE
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	Max	Min	
3		2		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	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	interpret the data obtained from experimentation.

⑤

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_3O+, $NH_4 +$, 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, Morality, Molality.						
	2.2	Volumetric analysis, Titrations, Acid base titration, Acidimetry, Akalimetry, 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,						

		Topics/Sub-topics						
	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.						
	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,						
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 andCeramics.						

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.

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_2CO_3.	2	7,8
3	To standardize $KMnO_4$ solution using N/10 $C_2H_2O_4$ solution.	2	7,8
4	To determine strength of the mixture of H_2SO_4 + $C_2H_2O_4$ 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 $K_2Cr_2O_7$ solution using N/10 $Na_2S_2O_3$ solution.	2	7,8
7	To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using $K_2Cr_2O_7$ solution.	2	7,8
8	To determine the amount of copper sulphate in the given solution using $Na_2S_2O_3$ 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

Text Books:

Sr. No.	Title	Publisher and Edition
1	XIth standard Chemistry book	HSC Board, M.S. / NCERT
2	XIIth standard Chemistry book	HSC Board, M.S. / NCERT
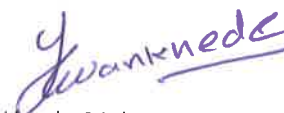
Reference books and Websites:

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 & Technical Publishers Dhanpat Rai & Co. (Pvt.) Ltd, Edition: Third (2005)

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	: FIRST
COURSE TITLE	: COMMUNICATION SKILLS I
COURSE CODE	: 173HM13x

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	2			3	80	32	20	100	40	-	-	-	-	25	10	125

Course Objectives: Cultivating writing skills in students by giving exposure to good language, enhancing the power of expression through vocabulary exercises, improving skills of composition, promoting coherence in thinking, assimilating and reproducing ideas and enabling the students to formulate grammatically correct sentences thereby developing their ability to communicate effectively in industry, professional fields , in academic and social circles .

- In order to develop the writing abilities in students textbooks that give exposure to language have been introduced.
- The tutorials have been incorporated to provide practice to the students to develop writing skills.
- Vocabulary exercises are given to enhance word power while writing .
- Grammar topics are taught by giving sufficient practice material to help them formulate grammatically correct sentences.
- Idioms , phrases and proverbs are introduced in order to acquire fluency and richness to their language while expressing ideas through writing .

Course Outcomes:

Student should be able to

CO1	To acquire the ability to formulate grammatically correct sentences
CO2	To improve power of expression in written communication
CO3	To develop coherence in thinking, comprehending and expressing one's ideas in one's own language

Course Content

SECTION-I								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
I	1	A)Modern Trailblazers- textbook 1 B) Delights in prose- textbook 2 a) Five to six chapters from the prescribed textbooks b) Power point presentation based on texts as well as drawing parallels from industry c) Inviting speakers from the industry to deliver lectures connected with the topics in the text.	14		CO 3	30%	50%	20%
	2	Terminology from the text. a) Use of technical vocabulary b) correct spellings c) synonyms d) powerful expression	3	25	CO 2	20%	20%	60%
	3 A	Short composition a) Paragraph writing - Coherence - Correct grammar - good vocabulary - proper structure b) Description of an object or a product or a situation.	5	8	CO 3	20%	20%	60%

		-use of technical words - development of ideas						
	3 B	**Comprehension passages** a) **Summarization** of passages in one's own words.(Newspaper articles, general articles etc) b) **Identifying the theme** of the passage precisely and enumerating the sub points	4	7	CO 3	30%	50%	20%

<div align="center">SECTION-II</div>

Unit & Sub-Unit		Topics/Sub-topics						
II	1	**Vocabulary Building** a) Synonyms b) Antonyms c) Homophones d) One word substitutes e) Homonyms	5	10	CO 2	20%	40%	40%
	2	A) **Application of grammar** a) Correction of common errors in English b) Sentence structure **B) short official letters** a) leave applications b) seeking permission from authority c) grievance letter (campus situations)	4 6	15	CO 1	30%	50%	20%
	3	**Use of refined language** a) Idioms b) Proverbs c) Phrases	7	15	CO 2	40%	40%	20%

			48	80				
TOT AL								

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.

List of Assignments/Tutorials:

Sr. No.	Practical/Assignment	Approx. Hours	CO
1.	Synonyms	2	CO 2
2.	Antonyms	2	CO 2
3.	Homophones	2	CO2
4.	Homonyms	2	CO 2
5.	One word substitute	2	CO 2
6	Phrases	2	CO2
7	Idioms	2	CO 2
8	Proverbs	2	
9	Sentence structure	2	CO 1
10.	Correction of Errors	2	CO 1
11	Comprehension Summarizing PPT Presentation Recapping the speech delivered	4	CO 3
12	Composition writing a) short letters	4	CO 3

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Board of Editors – Chief Editor- Ajay R. Tengse	Delights in Prose	Orient Black Swan, First edition, 2014
2	Akshay V. Dhote Hitnedra V. Dhote	Modern Trailblazers	Orient Black Swan, First edition, 2013

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Oxford	Dictionary	Oxford University
2	Sanghita sen Alankrita Mahendra Priyadarshi Patnaik	Communication Language and Skills	Cambridge university Press, First publisded, 2015
3	B.V Pathak	English semester I	Nirali Prakashan, Fourth Edition. 2007
4	Green David	Contemporary English Grammar, structure and Composition	Macmillan, India, First edition, 2000
5	Raymond Murphy	Essential English Grammar	Cambridge university Press, third Edition, 2011

Curriculum Coordinator

Head, Diploma in Electronics Engineering

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

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DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DElnE
SEMESTER	: FIRST
COURSE TITLE	:FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING
COURSE CODE	: 1173EX14

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	2			3	80	32	20	100	40	-	-	25	10	25	10	150

Course Objectives:

After studying this subject, students will be able to

1. Understand basic laws and definitions.
2. Analyze the basic electric-circuit.
3. Understand the construction and the working principle of the passive components.
4. Understand the nature of basic electrical and electronics components.

Course Outcomes:

Student should be able to

CO1	Explore the fundamental, mathematical and engineering technological principles for understanding electrical and electronics engineering.
CO2	Understand the capability and limitations of passive components and active devices.
CO3	Able to solve series, parallel and series-parallel circuits.

Course Content:

		SECTION-I						
Unit & Sub-Unit		**Topics/Sub-topics**	**Hours**	**Marks**	**CO**	**R Level**	**U Level**	**A Level**
1		**Electrical terminologies:**						
	1.1	Electricity and Electrical System						
	1.2	Electric charge: Electron charge, Movement of Electrons, electron current and conventional current.	4	8	CO1	35 %	35 %	30 %
	1.3	Potential Difference and EMF: Idea of electric potential.						
	1.4	Work, Power and Energy						
2		**Resistance and ohms law:**						
	2.1	Resistance, unit of resistance, factors affecting resistance and ohms law,						
	2.2	Effect of temperature and Temperature coefficient.(Numerical)			CO1			
	2.3	Types of resistors and resistor color code method.	10	16	CO2	25 %	25 %	50 %
	2.4	Resistive circuits: Series resistive circuit and equivalent resistance derivation and voltage division in series resistive circuit. Parallel resistive circuit and equivalent resistance derivation and current division in series resistive circuit. (Numerical)			CO3			
	2.5	Concepts of conductor and insulator.						
3		**Electrostatics and Capacitance:**						
	3.1	Static Electricity: Absolute and Relative Permittivity, Electrostatic laws and electric field						
	3.2	Electric Flux, Electric Flux Density and Electric field Strength	10	16	CO1 CO2	25 %	25 %	50 %
	3.3	Capacitance, unit of capacitance, dielectric strength, energy stored in capacitor, parallel plate and cylindrical capacitor with working (no derivation). Charging and discharging of			CO3			

						R	U	A
		capacitor and time constant.						
	3.4	Types of Capacitors and different methods to read value of capacitors.						
		SECTION-II						
4		**Magnetism and Electromagnetism :**						
	4.1	Introduction to magnetism and magnetic field						
	4.2	Absolute and Relative Permeability of a Medium, Laws of Magnetic Force, Magnetic field strength, Flux & Flux Density, MMF & Magnetic circuit.						
	4.3	Magnetic field due to electric current, Electromagnetic, magnetic field near straight conductor and at the centre of current carrying coil, Force on current carrying conductor. Flemings Left hand and Right hand rules.	10	16	CO1	35 %	35 %	30%
	4.4	Problems based on calculation of Ampere Turns and magnetic circuits						
5		**Electromagnetic Induction :**						
	5.1	Production of induced EMF and current, Faraday's Laws of Electromagnetic Induction, Lenz's Law.						
	5.2	Statically & Dynamically Induced EMF, self inductance, mutual inductance, coupling coefficient	8	12	CO1	35 %	35 %	30%
	5.3	BH curve, energy stored in a magnetic field,						
6		**Inductors:**						
	6.1	Types of inductor: On basics of core type and shapes. Air core, Iron core, Torridal, solenoid			CO1			
	6.2	Inductor in series and parallel,	6	12	CO2	35 %	35 %	30%
	6.3	Transformer: Principle and types (Step up and Step down).			CO3			

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

Practical Course Outcomes:

Student should be able to

CO1	Get the knowledge of basic measuring instruments and basic components.
CO2	Understand the rules for connecting electrical measuring instruments to electric circuit for measuring equivalent resistance, capacitance, inductance, current and voltage.
CO3	Design and construct simple circuits to accomplish a specific function.
CO4	Understand the use of MULTISIM for circuit analysis.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	2	To study DMM.	1	1
2	2	To measure the value of resistor using color code method and DMM.	1.5	1,2
3	2	To find equivalent resistance of Series-Parallel Circuits.	2	1,2,3,4
4	2	To verify voltage division rule.	1.5	1,2,3,4
5	2	To verify Current division rule.	1.5	1,2,3,4
6	2	To verify ohms law.	1	1,3
7	3	To find value different types of capacitor.	1	1,2,3
8	3	To find equivalent Capacitance of Series-Parallel Circuits.	2	1,2,3,4
9	5	To study different types of inductors.	1	1
10	3	To identify charging and discharging of capacitor and find time constant.	2	1,3
11	5	To find inductance of standard shape (Solenoid and Torrid) coil.	2	1,3

*Note : Atleast some practical should be conducted using multisim.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	B L Theraja, A K Theraja	Electrical Technology	S Chand and Company Limited. Volume – I
2	D. P. Kothari, I. J. Nagrath	Basic Electrical Engineering	TMH
3	J B Gupta	Basic Electrical Engineering	S K Katariya and sons

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Vincent Del Toro	Electrical engineering Fundamentals	PHI
2	D P Kothari, Mahima Jain, Shefali Jagwani	Electrical and Electronics Materials	Alpha Science International Limited, 2015

Curriculum Coordinator

Head, Diploma in Electronics Engineering

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

COURSE NAME :	DIPLOMA IN ELECTRONICS ENGINEERING
COURSE CODE :	DElnE
SEMESTER :	FIRST
SUBJECT TITLE :	ELECTRICAL COMPONENTS & DRAWING
SUBJECT CODE :	173EX15

Teaching and Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
				Theory		Test	Total		P		OR		TW		
L	T	P		Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
1	-	3	-	-	-	-	-	-	25	10			25	10	50

Rationale:-

Students have learned engineering drawing in Semester I course. In industry large numbers of symbols and schemes are used in Electrical & Electronics drawing. It is required to understand and use these symbols in residential and industrial wirings. Also basic knowledge of different types of wires, cables and materials used in conductors, insulators, semiconductors and devices is essential for efficient operation and understanding the impact of the engineering solutions in societal and environmental contexts and demonstrate the knowledge and need for sustainable development.

Course Objectives:

At the end of Diploma Program, student will be able to

1. Understand meaning of different symbols used in electrical & electronics circuits.
2. Understand use of different components, instruments, cables, wires and devices used in wiring and circuit diagrams.
3. Select and draw proper schemes for residential and industrial wiring.

Course Outcomes:

At the end of Diploma Program, student will be able to

CO 1	To distinguish different components and symbols used in electrical & electronics circuits.
CO 2	To interpret and draw electrical wiring and circuit diagrams.
CO 3	To select proper schemes, instruments and materials for sustainable development.

Course Content:

Part-I: Theory

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1		**Industrial Electrical & Electronic Symbols:**						
	1.1	Switches, Relays, Circuit Breaker, Fuses						
	1.2	Pilot Lights, Bells, Buzzer, Horn, Siren, Batteries, Meters.						
	1.3	Resistors, Capacitors, Inductors, Coils, Transformers, AC & DC Motors,	4		1,2			
	1.4	Wiring, Connections						
	1.5	Semiconductor Devices like Diodes, Transistors, SCR, Optoelectronic Devices & Others						
2		**Types of wiring diagrams:**						
	2.1	Circuit (or Schematic) diagram Looping-In Wiring diagram Joint-Box Wiring diagram Single Line diagram.						
	2.2	Residential (House) Wiring of: Hall Kitchen Bedroom	6		1, 2, 3			
	2.3	Use of 2-way, intermediate switches in staircase wiring, Godown wiring.						
	2.4	Office Wiring.						
	2.5	Three-phase to single-phase conversion Industrial wiring						
3		**Components.**						
	3.1	Identifications and colour code of different components: Resistors, Capacitors, Inductors.						
	3.2	Different types of wires and cables, standard wire gauge and current ratings.	6		1, 2,3			
	3.3	Bread Board and its connection.						
	3.4	Measurements using DMM.						

| | 3.5 | Materials used for components: Insulator, Conductors and Semiconductors. | | | | | | | |

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

Part II:- Drawing Term work:

1. **Industrial Electrical & Electronic Symbols.**
2. **Wiring for 3 loads with 3 switches at one location.**
3. **Wiring for 3 loads with 3 switches at different locations.**
4. **Staircase wiring 1 lamp with 2 switches.**
5. **Corridor lighting with 3 switches.**
6. **Residential wiring for Kitchen, Hall, bedroom.**
7. **Distribution wiring of phases for different locations.**
8. **Buzzer wiring diagram.**
9. **Three-phase to singles-phase conversion schemes.**
10. **Types of cables with current ratings.**
11. **Types of wires standard wire gauge and current ratings.**
12. **Types of fans with sizes.**

Reference Books :

1. Electrical & Electronics Drawing by Charles J Baer and J R Ottaway
2. Electronic Engineering Drawing by A K Mittal, Asian Publishers.
3. Electrical & Electronics Drawing by Charles J Baer and J R Ottaway
4. Electronic Engineering Drawing by A K Mittal, Asian Publishers.
5. Electrical Engineering Drawing, by K.L. Narang
6. Electrical Engineering Drawing, by S.K. Bhattacharya
7. Electrical Drawing & Estimating, by C.R.Dargan
8. Electrical Drawing - Part B, by Dr. H.P. Inamdar
9. Electrical Domestic Appliances, by Prof. D.U. Tatpuje
10. Study of Electrical Appliances, by K.B. Bhatia
11. Electrical Drawing & Workshop, by J.A. Rajani & Kale

Curriculum Coordinator

Head, Diploma in Electronics Engineering

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

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DElnE
SEMESTER	: FIRST
COURSE TITLE	: ENGINEERING GRAPHICS
COURSE CODE	: 173ME16

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	
2	-	3			-	-				50	20	-	-	50	20	100

Course Objectives:

| 1.	To understand geometry of shapes, drawing conventions, definitions and drawing procedures.
2.	To imagine shapes of solid objects in three dimensions and draw their different views.
3.	To imagine internal details of solid objects from given views and use of drawing conventions.

Course Outcomes:

Student should be able to

CO1	Understand geometry of shapes, drawing conventions, definitions and drawing procedures.
CO2	Imagine shapes of solid objects in three dimensions and draw their different views.
CO3	Imagine internal details of solid objects from given views and use of drawing conventions
CO4	Understand computer aided drafting tool and capable to draw Sectional as well as non Sectional Orthographic Projections.

Course Content:

SECTION – I								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1		**Drawing Instruments & their uses**				30%	30%	40%
	1.1	Letters & Numbers (Single stroke Vertical)	1		1			
	1.2	Convention of Lines & it's applications	1		1			
	1.3	Geometrical constructions	2	3	2			
2		**Orthographic Projections**				20%	30%	50%
	2.1	Planes of projections – HP, VP & PP Orthographic projections of points.	1		2			
	2.2	Orthographic Projections of simple machine parts.	7	12	2			
3		**Pictorial Views-**				20%	30%	50%
	3.1	Isometric Projections and Isometric Views. (No problems with slots on inclined surfaces)	5	10	2			
SECTION – II								
Unit & Sub-Unit		Topics/Sub-topics						
4		**Sectional Orthographic Projections**				20%	30%	50%
	4.1	Sectional Orthographic Projections of simple machine parts.(Full Section in one view)	13	20	3			
5		**Computer aided Drafting**				30%	30%	40%
	5.1	Demonstration & practice of drafting software to the students.	4	5	4			
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.
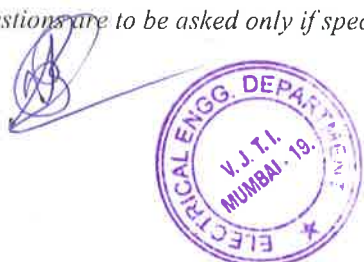
List of Practicals/Assignments/Tutorials:

The students should workout the problems on the following topics preferably on quarter imperial drawing sheets during the practicals.

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1	One sheet on Letters, Numbers, & Convention of Lines & it's applications.		
2	2	Four sheets on Orthographic Projections.		
3	4	Eight sheets on Orthographic Projections.		
4	3	Four sheets on Isometric Projections.		

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	N D Bhatt	Engineering Drawing	Charotar Publishers,49th Edition 2010
2	S.T.Ghan, M.V.Rawalani	Engineering Graphics & Engineering	Nirali Publications-seventh Edition -2009

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	D.A.Jolhe	Engineering Drawing	TATA McGraw Hill- 2008
2	K.R.Mohan	Engineering Graphics	Dhanpatrai publishing co.-Ist edition-2009

Curriculum Coordinator

Head, Diploma in Electronics Engineering

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

DIPLOMA PROGRAM	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAM CODE	: DElnE
SEMESTER	: FIRST
COURSE TITLE	: COMPUTER APPLICATION
COURSE CODE	: 176EX17

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	
-	-	2		-	-	-	-	-	-	-	-	-	-	50	20	50

Course Objectives:

At the end of this course, student will be able to

1. Understand the Components of computer system.
2. Analyze the operating system (windows 8/10).
3. Excel in handling software tools present in operating system.
4. Implement Document, Presentations.

Course Outcomes:

At the end of Diploma Program, student will be able to

CO 1	Realize the local and global impact of computing on individuals, organizations and society.
CO 2	Analyze a problem, and identify and define the computing requirements appropriate to its solution.
CO 3	Use and apply current technical concepts and practices in the core of computer applications.

Course Content:

Syllabus

Unit & Sub-Unit		Topics/Sub-topics	Hours	CO	R Level	U Level	A Level
1		**Introduction to Windows 8/10**	4	1,2			
	1.1	Working with Windows 8/10 desktop, start icon, taskbar.					
	1.2	The Recycle Bin and deleted files. Creating shortcuts on the desktop					
2		**The Windows 8/10 accessories**	4	1, 2, 3			
	2.1	WordPad – editing an existing document					
	2.2	Use of Paint – drawing tools					
	2.3	The Calculator, Clock					
3		**The Windows Explorer**	2	1, 2,3			
	3.1	The Windows Explorer window, concept of drives. Switching drives, Folder creation, Moving or copying files, Renaming, Deleting files, and folders					
	3.2	Installing a printer driver. Setting up a printer Default and installed printers Controlling print queues.					
4		**Working with Microsoft word**	6	1,3			
	4.1	Introduction to Parts of a Word Window (Title bar, Menu bar, Tool bar, the Ruler, Status area)					
	4.2	Creating new document, Opening an existing document To insert a second document into an open document Editing a document, Deleting text, replacing text, moving and copying text Page setup Margins and gutters Changing fonts and front size To make text bold,					

		italic or underline Line spacing Centering, right alignment and left alignment Page breaks					
	4.3	Headers and footers Putting page numbers in headers and footers					
	4.4	Borders and shading Templates and wizards Working the Graphics Drawing objects Using frames, position objects Mail merge Using word and Word documents with other applications					
5		**Preparing worksheet with Excel**	6	2,3			
	5.1	Introduction to worksheets. Creating a simple Worksheet.					
	5.2	Inserting and deleting cells, rows and column Moving between worksheets, saving worksheet, workbook, Formatting and customizing data					
	5.3	Formulas, functions and named ranges creating, manipulating & changing the chart types.					
6		**Preparing presentations with Microsoft Power Point.**	6	1,2			
	6.1	Introduction to Ms Power Point Power Point Elements Templates Wizards Views Color Schemes					
	6.2	Adding text, adding title, moving text area, resizing text boxes, adding art. Starting a new slide Starting a Slide show Saving Presentation ,Printing Slides					

	6.3	Creating Graphs Displaying slide show and adding multi–media					
7		**Using Internet Browsers**	4	1,2,3			
	7.1	Connecting to the Internet The Internet Explorer program window. The on-line web tutorial Using hyperlinks, Responding to an email link on a web page Searching the Internet.					
	7.2	Searching the web via Microsoft Internet Explorer, using Google - Commonly used search engines Favorites, security & customizing Explorer, Organizing Favorite web sites, Customizing options – general, security, contents, connection, programs, advanced					
	7.3	Composing Emails, responding emails, concepts of CC and BCC in mails.					

List of Practicals:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1.	I	Introduction to basic computer system and operating system	2	1
2.	I	Create and manage files and folder tree	2	1,2
3	II	Use accessories utilities of windows OS	2	1,3
4	III	Entering and editing text in document file.	2	2
5	IV	Apply formatting features on Text like Bold, Italics, Underline, font type, colour and size	3	2,3
6	V	Entering and editing data in worksheet, Apply formula and functions in the sheet.	3	1,2,3
7	V	Create Pay bills, Pay slips, Electricity bills using Excel	3	1,2
8	V	Print sheet using print area	2	1,2
9	VI	Basic operations of Power point, Create PPT and inset and delete slides	3	1,3
10	VI	Create Project presentations, Lecture presentations.	3	1,2
11	VII	Basics of writing Emails, Composing, Labeling and forwarding mails.	2	2,3
12	VII	Write official mail to Employees informing their deadlines of project allotted make use of CC and BCC.	2	1,2,3

Reference Books:

Sr. No.	Author	Title	Publisher and Edition
1.	Patt and Patel	Introduction to computing systems	Tata McGraw-Hill Publishing Company, Second Edition, 2007
2.	Shikha Agarwal	Computer Knowledge	Disha Publication
3.	Sanjay Soni	Computer Awareness	Unique Publications
4.	Jigyasa Sharma	A handbook of Computers	Unique Publications

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