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

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME													
			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	TOTAL MARKS
173MA31e	Mathematics III	A	3	1		4	3	80	32	20	100	40					25@	10	125
173EX32	Network Analysis	C	3	1	2	6	3	80	32	20	100	40	25**	10			25@	10	150
173EX33	Electronics I	C	3		2	5	3	80	32	20	100	40	50**	20			25@	10	175
173EX34	Measuring Instruments	C	3		2	5	3	80	32	20	100	40			25**	10	25@	10	150
173EX35	Integrated Circuits	C	3		2	5	3	80	32	20	100	40	25**	10			25@	10	150
173EX36	Electronics Workshop	C	1		2	3							25**	10			25@	10	50
173EX37	Development of Life Skill	A			2	2											25@	10	25
173EX38	Development of Professional practice	B			2	2											25@	10	25
	TOTAL		16	02	14	32		400		100	500		125		25		200		850

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 ELECTRONICS ENGINEERING
PROGRAMME CODE	: DElnE
SEMESTER	: III
COURSE TITLE	: MATHEMATICS III
COURSE CODE	: 173MA31e

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	-	4	3	80	32	20	100	40	-	-	-	-	25@	10	125

Course Objectives:

1. To make students well versed in various methods of integration for solving problems.

2. To expose students to the techniques of solving differential equations.

3. To impart knowledge of Laplace Transform

Course Outcomes:

Student should be able to

CO1	Apply formulae and different methods of integration in engineering concepts.
CO2	Apply definite integral to find area under curve and volume of solid of revolution.
CO3	Use different methods to solve differential equations.
CO4	Apply formulae of Laplace Transform to solve engineering problems.

Course Content:

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
		SECTION-1						
1		Integration	14	24	1	40%	40%	20%
	1.1	Definition of integration. Integration of standard functions.						
	1.2	Theorems of integration.						
	1.3	Methods of Integration						
		1.3.1 Integration by substitution						
		1.3.2. Integration by trigonometric transformation.						
		1.3.3 Integration of rational functions.						
		1.3.4 Rules of partial fractions, Integration by partial fractions.						
		1.3.5 Integration by parts.						
2		Definite Integral	10	16	2	30%	30%	40%
	2.1	Definition of definite integral.						
	2.2	Properties of definite integral with simple problems.						
	2.3	Reduction formulae.						
	2.4	Applications of definite integral						
		2.4.1 Introduction to curves- circle, parabola, ellipse, loop of the curve.						
		2.4.2 Area under the curve.						
		4.2.5 Laplace Transform of derivatives						

SECTION-II								
Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
3		**Differential Equations:**	12	20	3	30%	30%	40%
	3.1	Order and degree of differential equations.						
	3.2	Formation of differential equations.						
	3.3	Solution of differential equations of first order and first degree.						
		3.3.1 Variable separable method.						
		3.3.2 Reducible to variable separable Method						
		3.3.3 Homogeneous differential equation						
		3.3.4 Exact differential equation.						
		3.3.5 Introduction of integrating factor.						
		3.3.6 Linear differential equation.						
		3.3.7 Bernoulli's differential equation.						
4		**Laplace Transform**	12	20	4	40%	40%	20%
	4.1	Properties of Laplace Transform						
	4.2	4.2.1 Linearity property.						
		4.2.2 First Shifting property.						
		4.2.3 Multiplication by t^n						
		4.2.4 Division by t.						
		4.2.5 Laplace Transform of derivatives						
	4.3	Inverse Laplace Transform						
		4.3.1 Definition						
		4.3.2 Inverse Laplace Transform of standard functions						
		4.3.3 Method of partial fractions.						
	4.4	Solution of differential equations using Laplace Transform.						
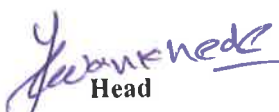
List of Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1	Integration	1	1
2	1	Integration by substitution method	1	1
3	1	Integration by partial fractions.	1	1
4	1	Integration by parts.	1	1
5	2	Definite integral.	1	2
6	2	Applications of definite integrals	1	2
7	3	Order, degree and formation of the differential equation.	1	3
8	3	Solution of differential equation of first order, first degree.	1	3
9	4	Laplace Transform	1	4
10	4	Inverse Laplace Transform	1	4

Reference books:

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

Curriculum Coordinator   Head   Dean – Diploma

Diploma in Electronics
Engg.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: III
COURSE TITLE	:NETWORK ANALYSIS
COURSE CODE	: 173EX32

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	6	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	Explain and analyze different resistive circuit using node & mesh analysis with independent and dependent source and verify results.
CO2	Analyze different Network theorems for dc circuits with independent & dependent sources and verify results.
CO3	Explain the concept transient analysis using differential equation and Laplace transform methods.
CO4	Calculate various parameters of AC. circuits and explain resonance condition.

Course Content:

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level (%)	U Level (%)	A Level (%)
SECTION-I								
1		**Nodal and mesh analysis of resistive circuits using dependent sources:**						
	1.1	Introduction to independent & dependent source						
	1.2	Source Transformation for circuits with independent & dependent sources	4	8	CO1	40	60	40
	1.3	Mesh analysis of circuits with independent & dependent sources						
	1.4	Nodal analysis of circuits with independent & dependent sources						
2		**Network Theorems (For D.C circuits) with Dependent sources:**						
	2.1	Thevenin's Theorem	10	16	CO1 CO2	25	25	50
	2.2	Norton's Theorem						
	2.3	Superposition Theorem						
	2.4	Maximum power Transfer Theorem						
3		**Transient Analysis using differential equation technique:**						
	3.1	Concept of initial condition, final (steady-state) conditions & time constant.						
	3.2	Analysis of transient Response in Series & parallel RL, RC and RLC Circuit with D.C. Excitation,	10	16	CO1 CO3	25	25	50
	3.3	Different Types of Second Order Responses: condition for under-damped, critically damped & over-damped.						
	3.4	Natural and Forced response.						

SECTION-II								
4		**The Laplace Transformation & its application in circuit analysis:**	10	16	CO1 CO3	25	45	30
	4.1	Definition of Laplace transform, Laplace transforms of standard time signals Unit step, Unit Ramp, and Unit Impulse functions						
	4.2	Initial value and final value theorems.						
	4.3	Solving Differential Equations in complex Domain using Laplace transforms.						
	4.4	Step & impulse Response of R-L & R-C Circuit.						
5		**Network Functions; Poles and Zeros:**	8	10	CO4	20	30	50
	5.1	Network functions for one port and two port networks						
	5.2	Driving point impedance and Admittance						
	5.3	concept of transfer functions, poles and zeros of network functions						
	5.4	Restrictions on Pole and zero locations for driving point functions and Transfer functions, time domain behavior from pole - zero plot.						
6		**Two –Port Networks**	6	14	CO1 CO2	25	50	25
	6.1	Introduction to two port network.						
	6.2	Two port impedance & admittance Parameters.						
	6.3	Hybrid parameters (h parameters) & Transmission parameters (ABCD parameters)						
	6.4	Relationship between parameter sets. Various Combinations of Two-Port Network (series, parallel & cascade combinations)						

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	Determine the loop currents in any DC network	1	1
2	2	Determine the node voltages in any DC network	1.5	1,2
3	2	Verification of principle of superposition with DC sources.	2	1,2,3,4
4	2	Verification of Thevenin, theorems in DC circuits	1.5	1,2,3,4
5	2	Verification of Norton theorems in DC circuits	1.5	1,2,3,4
6	2	Verification of Maximum power transfer theorems in DC circuits	1	1,3
7	3	Analysis of single phase circuits using resistor, inductor & capacitor elements.	1	1,2,3
8	3	Study of RLC series resonance.	2	1,2,3,4
9	5	Study of RLC Parallel resonance	1	1
10	3	Determine the loop currents in any DC network	2	1,3
11	5	Determine the node voltages in any DC network	2	1,3

*Note : At least two practical should be conducted using multisim.

Text Books:

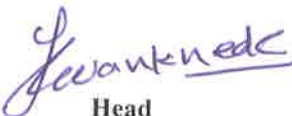| Sr. No.	Author	Title	Publisher and Edition
1	B L Theraja, A K Theraja	Electrical Technology	S Chand and Company Limited. Volume – I
2	D. P. Kothari, I. J. Nagrath	Basic Electrical Engineering	TMH
3	J B Gupta	Basic Electrical Engineering	S K Katariya and sons

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, ShefaliJagwani	Electrical and Electronics Materials	Alpha Science International Limited, 2015

Curriculum Coordinator

Head

Diploma in Electronics Engg.

Dean – Diploma

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DElnE
SEMESTER	:III
COURSE TITLE	:ELECTRONICS – I
COURSE CODE	: 173EX33

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	5	3	80	32	20	100	40	50**	20	-	-	25 @	10	175

Course Objectives:

Today majority of the equipment use electronic circuits. It is therefore necessary for an engineer to study the semiconductor components used in these circuits, particularly their construction, working, characteristics & applications.

Course Outcomes:

Student should be able to

CO1	Explain the constructional and characteristic difference of different types of FET's.
CO2	Identify different diodes on their construction, characteristics and application basis
CO3	Prepare different types of rectifier and filter circuits.
CO4	Analyze different configurations of Transistor circuits.
CO5	Build small signal amplifier and switch applications of Transistor.
CO6	Identify different types of optoelectronic devices on basis of their construction, characteristics and applications.

Course Content:

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level (%)	U Level (%)	A Level (%)
SECTION-1								
1		**Semiconductor Diode Applications**						
	1.1	**Diode Applications**: Diode as a switch.						
	1.2	**Rectifiers & Filters**: Half Wave Rectifier (HWR), Full Wave Rectifier (FWR) - center tap transformer and bridge type. Their comparison on the basis of circuit operation, waveforms, average (dc) value of current and voltage, transformer utilization factor, rectification efficiency, peak inverse voltage, advantages and disadvantages.	09	20	CO1, CO2 ,CO3	33	33	34
	1.3	**Filter types** – C, L, LC, CLC (π). Comparison, merits & demerits						
2		**Wave Shaping Circuit using Diode**						
	2.1	Clipper Circuits and its types:-Basic Clippers, Biased Clipper circuits, Combinational Clippers						
	2.2	Clamper Circuits: Basic Clamper (Positive and negative Clamper Circuit), Biased Clamper Circuits: (Positive and Negative Biased Clamper)	06	14	CO1, CO2, CO3	40	40	20
	2.3	**Voltage Multiplier Circuits:** Voltage Doubler, Voltage Tripler circuits.						
3		**Special Purpose Diodes**	05	06	CO1, CO2,	25	25	50

					CO3, CO6			
	3.1	Varactor Diode, Shockley Diode, Tunnel diodes and their VI characteristics, Applications, advantages and disadvantages.						

		SECTION-II						
4		**Bipolar Junction Transistor (BJT)**						
	4.1	Construction, working principle of PNP and NPN transistors and their symbols						
	4.2	Mode of operation i.e. active, cutoff, saturation Reverse active and application. Concept of DC load line, operating point (Q), stabilization, thermal runaway						
	4.3	Characteristics of CB, CE and CC configurations DC and AC current gains α, β, γ. Requirement of biasing, different types of biasing circuits i.e. fixed, bias circuit with emitter resistor, collector to base biasing circuit, voltage divider biasing circuit and emitter bias circuit.	12	20	CO4	30	50	20
	4.4	Thermal stability factor. Comparison of each on the basis of thermal stability. Transistor Specifications. Transistor Testing. Advantage and Drawback of different transistor biasing circuit.						
5		**Applications of BJT**						
	5.1	a) **Small Signal Amplifier**: Approximate hybrid model for Common Emitter Amplifier .Analysis of CE single stage Small Signal Amplifier **(with un-bypassed & By passed emitter resistor)**, using approximate hybrid equivalent circuit (amplifier input, output impedance, current& voltage gain).	10	13	CO5	15	45	40
	5.2	Emitter-Follower Configuration , Common-Base Configuration, comparison of CE, CC and CB amplifier						

6		**Unijunction Transistor (UJT):**						
	6.1	Construction, principle of operation, characteristic and Symbol of UJT	6	7	CO4 CO5	15	45	40
	6.2	Application of UJT in Relaxation Oscillator circuit.						

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 semiconductor diode and Transistor

CO2   Identify different diodes on their construction, characteristics and application basis

CO3   Analyze different types of rectifier and filter circuits.

CO4   Analysis of characteristics of transistor

CO5   Understand the use of MULTISIM for circuit analysis.

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	1,2
3	4	Characteristics of Light Emitting Diode (Red, Green, Yellow and Blue color)	2	1,2,
4	4	Diode rectifier circuits (HWR and FWR), without and with C – type filter.	2	1,2,3
5	2	Diode Clipping and Clamping circuits	2	1,2,3
6	1	Input and Output characteristics of Common Emitter BJT configuration.	1	1,4,5
7	1	BJT CE switch application.	1	1,4,5
8	3	UJT characteristics and UJT Relaxation Oscillator circuit	2	1,4,5

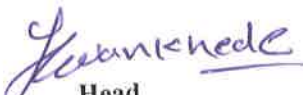*Note : At least some practical should be conducted using multisim.

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	Boylestead&Nashelsky	Electronic devices and Circuits Theory	9th edition, PHI.
2	V.K .Mehta	Principles of Electronics	S.Chand Publication
3	Millman&Halkies	Electronic Device and Circuits	Second Edition, Tata McGraw Hill.

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	David Bell	Electrical and Electronics Materials	Oxford University Press
2.	Bhargava, Kulshrestha and Gupta	Basic Electronics and Linear Circuits	4th Edition,Tata McGraw - Hill Publishing Company Limited

Curriculum Coordinator

Head

Diploma in Electronics Engg.

Dean – Diploma

75

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: III
COURSE TITLE	: MEASURING INSTRUMENTS
COURSE CODE	: 173EX34

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	25@	10	150

Course Objectives:

After studying this subject, students will be able to

1. Know the construction of the instruments.
2. Understand the principles and operation of different measuring instruments.
3. Select the appropriate instrument for measurement.
4. Observe reading and interpret the values from different meters.
5. Give the applications of the instruments.

Course Outcomes:

Student should be able to

CO1	Understand the underlying principles of all analogue instruments
CO2	Learn how to extend the range of AC and DC meters.
CO3	Learn to use AC and Dc bridges to find out the value of electrical parameters.
CO4	Become aware of the basic principle of operation of specific digital instruments

Course Content:

SECTION-I								

Unit & Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level (%)	U Level (%)	A Level (%)
1		**Fundamentals of Measuring Instruments**						
	1.1	Error classification, Desirable characteristics of measuring instruments: accuracy, sensitivity, selectivity, reproducibility, precision, errors, drift	8	10	CO1	80%	10%	10%-
	1.2	Classification of measuring instruments						
	1.3	Different torques in analog instruments: Deflecting, controlling and damping torque. Methods of developing these torques						
2		**Basics of CRO**			CO1 & CO4	0%	50%	50%
	2.1	Block diagram, function of each block, front panel diagram, application, observation of waveform, Digital storage Oscilloscope (Block Diagram only)	3	6				
3		**Extensions of Range of Ammeter and voltmeter**						
	3.1	Construction and principle of operation of PMMC instrument and Moving Iron instrument						
	3.2	Ammeter and voltmeter(DC), multi-range ammeters, multi-range voltmeters. Loading effect of voltmeter and solid state voltmeter, extension of range of voltmeter and ammeter and problems based on the same.	7	14	CO2	80%	10%	10%
	3.3	Extension of range of A. C. Ammeters: Using Current transformers: Construction and principle of operation, precautions						
	3.4	Extension of range of A. C. Voltmeters: Using Potential Transformers Construction and principle of operation, precautions.						

4		**Indicating Devices**						
	4.1	Classification of Displays			CO1			
	4.2	Light emitting diodes, liquid crystal displays and other displays	6	10		0%	50%	50%
		SECTION-II						
5		**DC and AC Bridges**						
	5.1	Principal of Wheatstone bridge, limitations of Wheatstone bridge measurement of medium resistance by ammeter, voltmeter method. Kelvin's double bridge for measurement of low resistance	7	12	CO3	80%	10%	10%
	5.2	Meggar and analog multimeter						
	5.3	A.C. bridges, Maxwell Inductance bridge, Schering bridge and Wien Bridge.						
6		**Digital Instruments**						
	6.1	Digital Multimeters, Digital Frequency Meter (basic circuit) Digital Measurement of Time (periodic measurement), Universal Counter.	7	12	CO4	75%	20%	5%
7		**Recorders**						
	7.1	Strip chart recorder, XY recorder	5	8	CO1	80%	10%	10%
	7.2	Comparison between strip chart recorder and XY recorder						
8		**Digital Phase meter**	5	8				
	8.1	Block diagram and working of digital phase meter			CO1	10%	80%	10%
	8.2	Requirement of signal generator and theory of signal generator, Function generator						

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	1	Errors in measurements: Resistance, Series and parallel connected resistances.	2	1
2	3	Measurement of medium resistance using V-I method.	2	1
3	5	Measurement of Inductance using A.C. Bridge	2	3
4	5	Measurement of capacitance using A.C. Bridge	2	3
5	3	Extension of range of voltmeter	2	2
6	3	Extension of range of ammeters.	2	2
7	5	Measurement of high resistance using Meggar	2	3
8	3	Study of Front panel of DSO	2	1

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

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	H. S. Kalsi	Electronic Instrumentation	2nd Edition (Tata McGraw - Hill Publishing Company Limited).

Reference books and Websites:

Sr..No.	Author	Title	Publisher and Edition
1	A K Sawhney	A Course in Electrical and Electronics Measurements	18th Edition , DhanpatRai& Company Private Limited
2	Albert D Helfrick and William D Cooper	Modern Electronic Instrumentation and measurement techniques	3rd Edition, Prentice Hall India Private Limited.

Curriculum Coordinator   Head   Dean – Diploma

Diploma in Electronics Engg.

DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: III
COURSE TITLE	: INTEGRATED CIRCUITS
COURSE CODE	: 173EX35

TEACHING AND EXAMINATION SCHEME:

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

Course Objectives:

The students should learn to:

1. Analyze and compare logic families.
2. Simplify a logical expression and get simplified circuit using Karnaugh Map techniques.
3. Analyze working of various combinational logic circuits and understand their applications.
4. Analyze working of various Sequential logic circuits and understand their applications.
5. Understand working of shift registers and concept of universal register.
6. Understand principles of timing circuits and working of timer ICs.

Course Outcomes:

Student will be able to:

CO1	Develop Various digital circuits of combinational and sequential logic.
CO2	Design applications of digital circuits and obtain optimum cost effective solution.
CO3	Identify various timing problems in a digital design.
CO4	Use different timer circuits in various applications.
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		**Review of combinational logic circuits**	10	20	1,2, 5	-	50	50
	1.1	Review of Karnaugh maps, Reduction of Boolean expressions using K map. SOP, POS Minterm, Maxterm						
	1.2	Design of arithmetic circuits, Half adder, Full adder Half & Full Adders, Subtractors, Parallel adder, BCD adder Comparators, Encoders, Decoders,Multiplexers, Demultiplexers, Parity Generators/Checkers.Troubleshooting.						
	1.3	Comparators, Parity generators and checkers						
	1.4	Decoders: BCD to seven segment, BCD to decimal Encoders: Priority Encoders, Decimal to BCD, Octal to binary decoder						
	1.5	Multiplexers: 2 input,4 input 8 input,16 input Demultiplexers:1:4,1:8,1:16 line Implementation of Boolean expressions using MUX and DEMUX						
2		**Logic Families :**	05	10	1	50	50	-
	2.1	Study of TTL & CMOS family, their characteristics & parameterscomparison						
	2.2	Propagation delay time, power dissipation, fan-out, input/output logiclevels, dc supply voltage, speed-power product).						
3		**Special ICs**	05	10	4,5	20	50	30
	3.1	Internal Block diagram and working of Timer 555						
	3.2	IC 555 applications as Astable, Monostable and Bistablemultivibrator,						
	3.3	IC 555 as Schmitt trigger, ramp generator						
	3.4	Comparison of IC 555, with IC 7555 and IC 556						

SECTION-II

Unit & Sub-Unit		Topics/Sub-topics						
4		**Flip Flops and sequential circuits**	10	10	1,3,5	50	50	–
	4.1	Comparison between combination logic circuits and sequential logic circuits						
	4.2	S-R Flip flop, D latches, Clocked (Level & Edge Triggered),JK& T flip flops. Flip flops with Preset& Clear inputs.						
	4.3	Master Slave Flip Flops						
	4.4	Conversion of flip flops from one to other, application of flip flops.						
5		**Counters**	10	20	3,5	25	25	50
	5.1	Concept of counters						
	5.2	Asynchronous counters: 2 bit ripple Up counter, Down counter, UP/Down counter Using positive and negative edge trigger flip flops, Design of asynchronous counters						
	5.3	Synchronous counters: 4 Bit Up counter, Down counter, Up/Down Counter, Ring counter, Design of synchronous counter						
6		**Registers**	04	10	1,3,5	–	50	50
	6.1	Introduction to registers						
	6.2	Buffer registers, controlled buffer register						
	6.3	SISO,SIPO,PIPO,PISO shift registers						
	6.4	Bidirection and universal shift registers						

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
I.	1	Study 4bit Parallel Adder using IC 7483.	2	1,2,5
II.	1	Study Parity generator/Checker Using IC 74180/74280.	2	1,2,5
III.	1	Study of 4, 5 and 8 bit magnitude comparator using IC 7485.	2	1,2,5
IV.	1	Study of Encoder & Decoder (Using TTL and/or CMOS IC's) : 74147, 74148, 7442,7446, 74154 .	2	1,5
V.	1	Preparing multiplexer & de-multiplexer circuits using IC's (74150, 74151, 74157, 74154).	2	1,5
VI.	1	Study of Arithmetic Logic Units / Function Generator IC 74181.	2	1,2,5
VII.	3	Assemble different multivibrators circuits using IC 555.	2	4,5
VIII.	3	Assemble Schmitt trigger circuit using IC 555. Plot the output waveform and determine UTP and LTP.	2	4,5
IX.	4	To built S-R latch using TTL 7400 NAND & 7402 NOR gate IC's.	2	1,3,5
X.	4	To store a 2 bit and a 4 bit word using D transparent latches IC 7475.	2	1,3,5
XI.	4	Toggle & frequency divider application of J K flip flop IC 7476A.	2	1,3,5 .
XII.	5	Study of binary counter IC 7493.	2	1,3,5
XIII.	5	Use of CD 4017B Decade Counter IC in LED Sequencer (chaser) application. Getting mod-2 till mod-10 conditions from it.	2	1,3,5
XIV.	6	Study of 4 bit Bi-directional universal shift register IC (74194/ CD 40194).	2	1,5

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

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	A. Anand Kumar.	Fundamentals of Digital Circuits.	3rd Edition, Prentice Hall India Private Limited.
2	Ramakant Gaikwad.	Integrated Circuits	4th edition, DhanpatRai Publication Delhi.

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1)	Thomas L. Floyd	Digital Fundamentals	8th Edition, Pearson Education Inc
2)	Malvino	Digital Principles & Applications	5th Edition (Tata McGraw – Hill Publishing Company Limited).
3)	R.J. Tocci	Digital Systems: Principles & Applications	8th Edition, Prentice HallIndia.
4)	R.P. Jain	Modern Digital Electronics	Tata McGraw - Hill Publishing Company Limited) 4th Edition
5)	K.R. Botkar	Integrated Circuit	Khanna

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Diploma in Electronics Engg.

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DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: III
COURSE TITLE	:ELECTRONICS WORKSHOP
COURSE CODE	: 173EX36

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	
1	-	2	3	-	-	-	-	-	-	25**	10	-	-	25@	10	50

Course Objectives.

1 To gain practical skill of arranging components and soldering them on the Printed Circuit Board.

2 Design circuits and systems for particular applications.

3 To locate faults in circuit (troubleshooting).

Course Outcomes:

Student should be able to

CO1	Explain the function of relay.
CO2	Explain the use of clock signal in digital circuits.
CO3	Explain counter application used in digital system.
CO4	Explain IC 555 along with its applications.
CO5	Identify various types of cables.
CO6	Hardware Implementation.

Course Content:

Unit & Sub-Unit		Topics/Sub-topics	Hours	CO
1		**BJT SWITCH CIRCUIT WITH RELAY LOAD**	02	CO1
	1.1	Common Emitter BJT switch circuit with LED indicator and relay as load.		
2		**SIGNAL GENERATOR**	02	CO2 CO4
	2.1	Square Wave Generator (Clock Signal) circuit (Astable Multivibrator) using IC555		
3		**LED CHASER CIRCUIT**	02	CO3
	3.1	Decade counter LED chaser circuit using CD4017B IC.		
4		**ASTABLE MULTIVIBRATOR AND ITS APPLICATION.**	03	CO4
	4.1	Study of IC 555 Astable Multivibrator circuit. Use in LED flasher application & Modulated Tone Generator.		
5		**MONOSTABLE TIMER**	02	CO4
	5.1	Study of monostable timer using IC555		
6		**RIPPLE COUNTER IC 7493**	01	CO3
	6.1	Study of four bit binary ripple counter IC 7493.		
7		**CABLES/WIRES:**	02	CO5
	7.1	Types: flexible, hook-up, coaxial and fiber optic. Multi-core Power and Control cables. Their construction and applications.		
8		**RELAYS :**	01	CO1
	8.1	Construction, rating & working principle of general purpose relay, Reed relay.		
9	9.1	**AUDIO AMPLIFIER :** Hardware implementation of Audio Amplifiers using ics TB810,TDA 2020, LM386, etc.	01	CO6

Practical Course Outcomes:

Student should be able to

CO1	Arrange and solder the components on Printed Circuit Board (PCB).
CO2	Design circuits using IC555, IC CD4017B.
CO3	Understand the function of relay and identify various types of cables.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1, 8	To construct a CE BJT switch with LED and relay as a load.	02	CO1 CO3
2	2	To construct a clock signal (Square Waveform Generator) using IC 555.	02	CO1 CO2
3	3	To prepare 10 LED's chaser (Sequencer) circuit using decade counter IC CD4017B.	02	CO1 CO2
4	4	To construct LED Flasher circuit using IC 555 Astable Multivibrator.	02	CO1 CO2
5	4	To construct a Frequency Modulated Tone Generator circuit using IC 555 & speaker.	02	CO1 CO2
6	5	To construct monostable timer circuit using IC 555.	02	CO1 CO2
7	7	Study of different types of cables/wires.	02	CO3
8		To prepare one mini project (Group of 6 students), give seminar on it and submit a report of the project in the journal	02	

*Note: **Each group should bring a soldering iron of 25Watts during practical.**

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Electronics For You Group	Electronic Project, Volume 1 to Volume 27, Edition onwards	BPB Publications.
2	Michael H Tooley	Electronic Circuits Handbook, 3rd Edition	BPB Publications.
3	Michael H Tooley	Practical Digital Electronics Handbook, 1st Edition	BPB Publications.
4	Paul Horowitz and Winfield Hill	The Art of Electronics, 2nd Edition	Cambridge University Press.

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Diploma in Electronics Engg.

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DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	: DEInE
SEMESTER	: III
COURSE TITLE	: DEVELOPMENT OF LIFE SKILLS
COURSE CODE	: 173EX37

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	2											25@	10	25

Course Objectives:

1. To train students in overcoming stage fright, to attain composure, to organize thought process and develop voice modulation and body language.

2. To develop students' interpersonal skills and leadership quality, to improve their listening and persuasive skills, and train them in the ways of identifying the source of information, collecting and planning.

3. To prepare students for interview, make them aware of personal grooming and concept of time, to teach students positive thinking as an ongoing process, to have optimistic approach, to cultivate right values and attitude.

Course Outcomes:

CO1	Understand and appreciate importance of life skills
CO2	Use self-analysis and apply techniques to develop personality
CO3	Improve the presentation skills.
CO4	To improve reading, listening and notes taking skills

Course Content:

SECTION-I								
Unit &Sub-Unit		Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1		**Oral Skills and Writing Skills**			1& 4			
	1.1	**SELF ANALYISIS**- Need of Self Analysis, Attitude and types (positive, negative, optimistic and pessimistic) Guidelines for developing positive attitude.	08					
	1.2	Group Discussion						
2		**SELF DEVELOPMENT**						
	2.1	Goal setting and its importance	8		2			
	2.2	Characteristics of Goal setting (**SMART**- **S**pecific, **M**easurable, **A**ttainable, **R**ealistic, **T**ime bound)						
	2.3	Time Management - Importance, prioritization of work, time matrix, time savers, and time wasters.						
SECTION-II								
Unit &Sub-Unit		Topics/Sub-topics						
3		**PRESENTATION TECHNIQUES**						
	3.1	Importance of presentation	08		3			
	3.2	Components of effective presentation (Body language, voice culture , rehearsal,etc)						
	3.3	Preparing for presentation						
	3.4	Use of audio/video aids. (audio, video, transparency's, PowerPoint presentations, etc)						
	3.5	Performing presentation (Seminars, paper						

		presentations, compering, etc)						
4		**Managerial Skills**	08		3			
	4.1	Resume writing						
	4.2	Interview Techniques						

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

List of Practical/Assignments/Tutorials:

Sr. No.	Practicals	CO
1	Students deliver a prepared speech.	1
2	Group discussions conducted in class	4
3	Group of 6-7 students make a power point presentation	2&3
4	Assignments on resume writing and summarization	3
5	Mock interviews in class	3

Reference Books: -

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	- Raman Meenakshi	Business Communication-	Oxford, India,First edition, 2008

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	T. KalayaniChakravarti and Dr.LathaChakravarti	Soft Skills for Managers	biztantra
2	Ros Jay and Antony Jay	Effective Presentation	Pearson – Prentice Hall
3.	SekaranUma,	OrganisationalBehaviour,	New Delhi, Second edition,2008 Tata Mcgraw Hill

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Diploma in Electronics

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DIPLOMA PROGRAMME	: DIPLOMA IN ELECTRONICS ENGINEERING
PROGRAMME CODE	:DElnE
SEMESTER	: THIRD
COURSE TITLE	: DEVELOPMENT OF PROFESSIONAL PRACTICE
COURSE CODE	: 173EX38

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	2											25 @	10	25

Course Objectives:

1. Acquire information from different sources
2. Prepare notes for given topic
3. Present given topic in a seminar
4. Interact with peers to share thoughts
5. Take the advantages of E-learning sources

Course Outcomes:

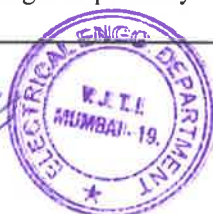| CO1	Student should be able to acquire information from different sources.
CO2	Students should be able to develop their interpersonal skills.
CO3	To improve ownership of professional growth and learning.
CO4	To conduct and manage various events.

Course Content

	Activity	Hours	Marks	CO	R Level	U Level	A Level
1	**Department Library**	04					
	Form the library committee.						
	Decide the policy for update.						
	Maintain the exam question papers & question banks.			1			
	Book distribution & new book purchase.						
	Student co-ordination / discipline.						
	Financial assistance (Sponsorship).						
2	**Guest Lecture**	04					
	Form committee.						
	Decide the policy lecture plan.						
	Communicate to guest & publicity of lecture.						
	Arrangement of Hall & student co-ordination / discipline.			2			
	Financial assistance from College.						
	Summary Report writing						
3	**Quiz Competitions**	04					
	Form committee.						
	Decide the policy competition plan.						
	Inter class compilation & department competition.						
	Questionnaire preparation.			2			
	Communicate to judges & publicity of competition.						
	Arrangement of hall & student co-ordination/ discipline.						
	Financial assistance from College.						
	Summary Report writing						
4	**Project & Poster/Paper Competitions**	04					
	Form committee.						
	Decide the policy competition plan.						
	Inter class compilation & department competition.			4			
	Communicate to judges & publicity of competition.						

	Arrangement of Hall & student co-ordination/ discipline.									
	Financial assistance from College.									
	Summary Report writing									
5	**Department News Paper**	04								
	Form committee.									
	Decide the different groups for news section.				1					
	Publicity of paper & financial assistance from College.									
6	**Departmental Cultural Activities**	04								
	Form committee.									
	Decide the plan for cultural activities.									
	Inter class compilation & department competition.									
	Communicate to guest & publicity of activities.				4					
	Arrangement of Hall & student co-ordination/ discipline.									
	Financial assistance from College.									
	Summary Report writing									
7	**Industry Association**	04								
	Form committee.									
	Decide the plan for Industrial Meet.									
	Communicate with the alumni from Industry for a meet / lecture.				3,4					
	Communication to guest & publicity of meet / lecture.									
	Arrangement of Hall & student co-ordination / discipline.									
	Financial assistance from College.									
	Summary Report writing									
8	**Indoor Games**	04								
	Form committee.									
	Decide the plan for indoor games (Chess & Carom).									
	Inter class compilation & department competition.				2					
	Communication to judges & publicity of competition.									

Arrangement of Hall & student co-ordination/ discipline.							
Financial assistance from College.							
Summary Report writing							

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