Course Name: Diploma in Electrical Engineering
Course Code: DEE
Semester   : Third
Subject Title   : Mathematics III
Subject Code: 132MA31

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	**T**	**P**		**Theory**		**Test**	**Total**		**Practical**		**Oral**		**TW**		
				Max	**Min**		**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	
3	1	-	3	80	32	20	100	40	-	-	-	-	25	10	125

Rationale :
        The study of mathematics is necessary to develop the skills essential   for solving engineering problems. Integral calculus is routinely needed by engineers in calculations like mean value, r.m.s. value. Laplace Transform is needed to find solution of differential equations.

 Objective:
 1. To make students well versed in various methods of integration for solving problems.
 2. To impart knowledge of Laplace Transform.
 3. To expose students to techniques of solving differential equations.

No.	Contents	L	M
	Section I		

1	**Integration**
	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 Integration by partial fractions.
	    1.3.5 Integration by parts.
	1.4 Definite Integration
	    1.4.1 Definition of definite integral.
	    1.4.2 Properties of definite integral with simple problems.
	    1.4.3 Reduction formulae.
		22	33

	1.5 **Applications of definite integrals.**
	    1.5.1 Introduction to standard curves.
	    1.5.2 Area under curve.
	    1.5.3 Mean and RMS value
		07	07

	Section II		
2	**Laplace Transform** 2.1 Definition of Laplace Transform, Laplace Transform of Standard functions. 2.2 Properties of Laplace Transform - Linearity, first	11	20

	Shifting property, multiplication by t^n, division by t.
	2.3 Inverse Laplace Transform by definition
	    2.3.1 Properties of Inverse Laplace Transform
	    2.3.2 Method of partial fractions.
	2.4 Laplace Transform of derivatives.
	2.5 Solution of differential equation using Laplace Transform			

3	**Differential Equations**
	3.1 Order and degree of the differential equation.
	3.2 Solution of differential equation of first order, first degree
	    3.2.1 Variable separable method.
	    3.2.2 Homogeneous differential equation.
	    3.2.3 Exact differential equation.
	    3.2.4 Linear differential equation.
		08	20	

	Total	**48**	**80**	

REFERENCE BOOKS :

1) Applied Mathematics III- B.M.Patel, J.M.Rawal and others - Nirali Prakashan (July-2010)

2) Mathematics for Polytechnic students- S. P. Deshpande- Pune Vidyarthi Griha Prakashan (first edition-Aug.2005)

3) Applied Mathematics II (Electrical, Instrumentation and Boimedical) – G.V. Kumbhojkar - C. Jamnadas & Co.(Revised third edition 2010-11)

Course Name : **Diploma in Electrical Engineering**
Course Code : **DEE**
Semester : **Third**
Subject Title : **Electrical Networks - I**
Subject Code : **132EE32**

Teaching and Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme												Total Marks
				Theory		Test	Total		Practical		OR		TW			
L	T	P		Max	Min		Max	Min	Max	Min	Max	Min	Max	Min		
3	1	2	3	80	32	20	100	40	50	20	--	--	25	10		175

Rationale:-

Network analysis is the process of finding the voltages across, and the currents through, every component in the network. There are many different techniques for calculating these values.

This subject is course on the basics of Network Analysis, introduction to network elements and explained all the possible method for finding voltage and current across any network Component.

It aims at making the student conversant with different techniques of solving the problems in the field of Electric circuits and analysis.

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.

Syllabus

Sr. No	Contents	L	M
	Section I		
1	**Network Parameters and Energy Sources** Active and passive, Linear and non-linear, Unilateral and bilateral, Lumped and distributed, Time varying and time invariant parameters, Voltage and current sources (ideal and practical), Dependent and Independent sources, Source Transformation,	05	10
2	**Analysis of Network by Kirchhoff's Laws, Node and Mesh Analysis with Dependent sources** Kirchhoff's Voltage Law (KVL), Kirchhoff's Current Law(KCL), Mesh Analysis, Nodal Analysis, Current division in parallel Circuits, Voltage division in series Circuit.	10	15

3	**A.C Fundamentals:** Alternating Current and Voltage, Sinusoidal, Triangular, Square. (Periodic waveforms), Frequency, Time Period & Phase Angle of A.C waveforms, R.M.S, value, Average value and Phasor representation of alternating quantities. Inductors & capacitors phase relationships & concept of impedance. Introduction to rectangular and polar forms of A.C quantities. Power Measurements in Polyphase Circuits	09	15
	Section II		
4	**Resonance:** Resonance in series RLC circuit, waveforms for voltage, current, Power Factor and Impedance, Quality factor, expression for quality factor, Resonance in parallel RLC circuit.	07	13
5	**Network Theorems (For D.C circuits with Independent & Dependent sources):** Thevenin's Theorem, Norton's Theorem, Superposition Theorem, Maximum power Transfer Theorem. Reciprocity theorem, Tellegen's theorem	10	15
6	**Graph theory and network topology** Introduction, graph of network, tree, co-tree, loop incidence matrix, cut set matrix, tie set matrix and loop current, number of Possible tree of a graph, duality.	07	12
	Total	**48**	**80**

Part II: - Practical's

List of Laboratory Experiments:-.

1. Determine the loop currents in any DC network

2. Determine the node voltages in any DC network

3. Verification of principle of superposition with DC sources.

4. Verification of Thevenin, theorems in DC circuits

5. Verification of Norton theorems in DC circuits

6. Verification of Maximum power transfer theorems in DC circuits

8. Study of RLC series resonance

9. Study of RLC Parallel resonance

Books Recommended:

Text Books:

1. W H Hayt, S M Durbin, J E Kemmerly, 'Engineering Circuit Analysis', 7th Edition Tata McGraw Hill Education.
2. M. E. Van Valkenburg, 'Network Analysis', 3rd Edition, PHI Learning.
3. D. Roy Choudhury, 'Networks and Systems', 2nd Edition, New Age International.

Reference Books:

1. F. F. Kuo,' Network Analysis and synthesis', John Wiley and sons.
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

Course Name : **Diploma in Electrical Engineering**
Course Code : **DEE**
Semester : **Third**
Subject Title : **Basic Electronics**
Subject Code : **132EE33**

Teaching and Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
				Theory		Test	Total		Practical		OR		TW		
L	**T**	**P**		**Max**	**Min**		**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	
4	-	2	3	80	32	20	100	40	50	20	-	-	25	10	175

Rationale:-

   Electronic circuits are found in many equipments and systems which we use in our life. It is therefore necessary for an engineer to study the components (devices), their characteristics and applications used in these equipments and systems.

Objectives:-

   The students should be able to:
   1) Identify different diodes on their characteristics and application basis.
   2) Prepare different types of rectifier and filter circuits.
   3) Analyze different configurations of Bipolar Junction Transistor circuits.
   4) Build small signal amplifier and switch applications of Transistor.
   5) Use Field Effect transistor in voltage amplifier & switching application
   6) Use Unijunction Transistor in relaxation oscillator circuit.

<div align="center">

Syllabus
</div>

Part I:- Theory

Sr. No.	Contents	L	M
	Section I		
1	**Semiconductor Physics :** Germanium & Silicon Intrinsic semiconductor, P & N type Extrinsic Semiconductor. Effect of temperature on semiconductor.	03	08

2	**PN Junction Diode:**
	   a) Germanium & Silicon PN junction diode, their construction, working under unbiased, forward bias & reverse bias conditions, Forward & Reverse Characteristics of Ge & Si diodes..
	   b) **Diode Applications** : Diode as a switch.
	    i) **Rectifiers & Filters**: Half Wave Rectifier (HWR),Full Wave Rectifier (FWR) centre tap transformer and bridge type. Their comparision on the basis of circuit operation, waveforms, average(dc) value of rectifier output,
		26	24

	ripple factor, ripple frequency, transformer utilization factor, rectification efficiency, advantages and disadvantages Filter types – C, L, LC, CLC (π). Comparision, merits & demerits. **ii) Clipping & Clamping circuits :** Types and applications. **iv) Voltage Multiplier circuits.** c) **Zener Diode :** Construction, Characteristics, Various Specifications(Ratings). Application in a simple voltage regulator circuit. **d**) Point Contact diode, Varactor diode e) **Photo diode:** Construction, working principle, characteristics & applications. f) **Photo transistor**: Construction, working principle,characteristics & applications		
3	**Unijunction Transistor (UJT)** : Construction, principle of operation, characteristic and UJT Relaxation Oscillator circuit.	03	08
	Section II		
4	**Bipolar Junction Transistors (BJT) :** Construction, working principle of PNP and NPN transistors, characteristics of CB, CE and CC configurations. DC and AC current gains α, β, γ. Requirement of biasing, different types of biasing circuits fixed, bias circuit with emitter resistor, collector to base biasing circuit, voltage divider biasing circuit. Thermal stability factor, Transistor Specifications. Transistor Testing.	08	10
5	**Applications of BJT.** a) **Small Signal Voltage Amplifier**: Analysis of CE single stage Small Signal Amplifier **(with un-bypassed & bypassed emitter resistor),** using approximate hybrid equivalent circuit. (amplifier input, output impedance, current & voltage gain). RC coupled two stage amplifier. Frequency response of RC coupled Amplifier. b) **Application of BJT CE inverter switch.** c) **Oscillators:** RC Phase Shift, Wien Bridge, Hartley & Colpitt Oscillators**.**	12	15
6	**Field Effect Transistors (FET) :** **a)** Construction, principle of operation of P & N channel type (JFET) Junction Field Effect Transistor & Metal Oxide Semiconductor Field Effect Transistor(MOSFET). Depletion & Enhancement type of MOSFET. Their construction, working. important specifications (parameters) of JFET & MOSFET's. CMOS Inverter. Characteristics, Transfer Curve of above FET's.. b) **Applications of FET:** Common Source JFET Amplifier: Self Biased and Voltage Divider Bias Configuration. Voltage gain equation with source resistor R_S completely Bypassed and unbypassed. (No Derivations).Output Waveform for	12	15

	sinusoidal input signal Use as a Voltage Variable Resistor (VVR), MOSFET switch, CMOS switch.		
	Total	**64**	**80**

Part II:- Practicals

List of Laboratory Experiments:-
1) Characteristics of Germanium and Silicon Diode.
2) Characteristics of Zener Diode
3) Input and Output characteristics of Common Emitter BJT
4) Diode rectifier circuits (HWR and FWR), without and with C – type filter.
5) Diode Clipping and Clamping circuits.
6) Single stage CE Small Signal Amplifier. (With un- bypassed & bypassed R_E)
7) BJT CE switch application.
8) UJT characteristics and UJT Relaxation Oscillator circuit.
9) Zener Diode voltage regulator.

NOTE: Students must perform at least one experiment of above topics on MULTISIM ElectronicWorkbench Software.

Learning Resources:-

Text Book:-

Electronic Devices and Circuit Theory, 9th Edition by Robert Boylestad & Louis Nashelsky, Prentice Hall India Private Limited.

Reference Books:-

1) Electronic Principles,7th Edition by Albert Paul Malvino,
   (Tata McGraw - Hill Publishing Company Ltd).
2) Electronic Devices and Circuits, 5th Edition by David Bell, Oxford University Press.
3) Basic Electronics and Linear Circuits, 4th Edition by Bhargava, Kulshrestha and Gupta (Tata McGraw - Hill Publishing Company Limited).

Course Code :   **DEE**
Semester :   **Third**
Subject Title :   **Measuring Instruments**
Subject Code :   **132EE34**

Teaching and Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
				Theory		Test	Total		Practical		OR		TW		
L	**T**	**P**		**Max**	**Min**		**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	
3	-	2	3	80	32	20	100	40	-	-	25	10	25	10	150

Rationale:-
This subject is meant to familiarize the students with various electrical and electronic instruments. The subject is to be illustrated with block diagrams and circuit diagrams.

Objectives:

The students should 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.

Sr. No.	Contents	L	M
	Section I		
1	Error classification, dimensions of electrical quantities, Standard of resistance and voltage.	04	06
2	CRO block diagram, functions of the various blocks, time-base generators. Synchronization of the sweep, triggered sweep, delay line in triggered sweep. Dual trace and dual beam CRO, measurement of phase and frequency using CRO, Lissajous patterns, Storage oscilloscope	07	12
3	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.	07	12
4	Indicators and Display Devices. Energy meters.	06	10
	Section II		
5	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, meggar and analog multimeter. D.C. potentiometer and principal of A.C. potentiometer, application of potentiometer.A.C. bridges, Maxwell Inductance bridge, Schering bridge and Wien Bridge.	07	12
6	**Digital Instruments** Digital Multimeters, Digital Frequency Meter (basic circuit) Digital Measurement of Time (periodic measurement), Universal Counter.	07	12
7	Recorders: Strip chart recorder, XY recorder.	05	08
8	Phase and frequency meter (digital): Requirement of signal generator and theory of signal generator, Function generator	05	08
	Total	**48**	**80**

List of Laboratory Experiments:-
Errors in measurements: Resistance, Series and parallel connected resistances.
1. Measurement of medium resistance using V-I method.
2. Measurement of Inductance using A.C. Bridge
3. Measurement of capacitance using A.C. Bridge
4. Extension of range of voltmeter and ammeters.
5. Extension of range of an ammeter.
6. Measurement of high resistance using Meggar
7. Measurement of Frequency, Peak-to-peak voltage of different signals using CRO
8. Measurement of Phase shift using Lissajous patterns.
9. Measurement of Frequency using Intensity modulation.

Learning Resources:-

Text Book :-
Electronic Instrumentation, 2nd Edition   by H. S. Kalsi, (Tata McGraw - Hill Publishing Company Limited).

Reference Books :-
1) A Course in Electrical and Electronics Measurements, 18th Edition by A K Sawhney, Dhanpat Rai & Company Private Limited.
2) Modern Electronic Instrumentation and measurement techniques 3rd Edition By Albert D Helfrick and   William D Cooper, Prentice Hall India Private Limited.

Course Name : **Diploma in Electrical Engineering**
Course Code : **DEE**
Semester : **Third**
Subject Title : **Power Plant Engineering**
Subject Code : **132EE35**

Teaching and Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
				Theory		Test	Total		Practical		OR		TW		
L	T	P		Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	2	-	3	80	32	20	100	40	-	-	25	10	25	10	150

Rationale:-

Student of electrical engineering should have knowledge of power generation. Power can be generated by conventional and non conventional sources. This subject deals with above said perspectives of power generation and gives the glimpse of various types of power stations.

Objectives:-

The students should be able to:
1) Explain the working of different power plants.
2) Explain various systems of generating stations.
3) Select suitable sites for different power stations.
4) Define the terms used in economics of power generation and explain their relation.
5) Select alternative energy sources for given conditions.
6) Explain the working of wind mills and solar systems.
7) Selection of Wind Power and solar power plant

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Syllabus

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Part I:- Theory

Sr. No.	Contents	L	M
	Section I		
1	**Introduction to Power Plant Engineering:** • Various sources of energy: conventional and nonconventional. Advantages and disadvantages of these sources. • Method of electrical power generation, General principle (How Energy is generated or working of Generator) • Comparison of Sources of power.	03	5

2	**Size and Economics of power plant:** Types of load, Load requirements of an area, Load estimation Economic forecasting of generation, Load curve, load duration curve & integrated load duration curve (maximum demand calculation.) Average demand (average load) maximum demand, base load, peak load & connected load calculation. Demand factor, load factor, diversity factor, coincidence factor, plant factor & plant use factor, Installed capacity and firm power Size of power plant– choice of size of generators and number of generators		06	10
3	**Conventional Power Plant** a) **Thermal Power Plant**:-Schematic diagram and working of Thermal Power Station. Main parts of Thermal plant in brief (Boiler, Economizer, Air pre-heater, Super-heaters & re-heaters. Steam prime movers, Condensers. Spray ponds & Cooling towers). Selection of site for thermal power stations. List of thermal power stations in Maharashtra state with their capacities. b) **Hydro Power Plant:-** Block diagram and working of Hydro Power Station. Brief introduction about main parts of the Hydro Power Plant Selection of site for hydro power stations. List of hydro power stations in Maharashtra state with their capacities. c) **Nuclear Power Plant:-** Schematic diagram and working of Nuclear Power Station. Brief introduction about main parts of the Nuclear Power Plant. Construction and working of various types of Nuclear Reactor. List of Nuclear power stations in Maharashtra state with their capacities.		15	25
	Section II			
4	**Non-conventional energy sources:** Types of non-conventional energy sources. Solar Energy, Wind Energy, Bio-mass & Bio-gas energy, Geo-thermal Energy, Ocean energy. Schematic and brief working of these power plant		06	10
5	**Solar Power Plant:** Potential of solar energy, Photovoltaic effect for solar energy, Brief introduction of PV material, working & applications of solar energy.		09	15
6	**Wind Power Plant:-** Wind Energy, Selection of site for wind mills, Principle of electricity generation with the help of wind energy, Block diagram and working of Wind energy plant and its applications, List of major wind farms in the Maharashtra state with their approximate capacities.		09	15
		Total	**48**	**80**

Assignments and Tutorials:
1) Four Assignments should be taken on the basis of syllabus
2) A case study should be done on any one of the power stations in Maharashtra. (Thermal and Hydro).
3) Brief report on Design and installation of small Solar/wind Power plant

Visit to one of the power stations during academic session (Thermal or Hydro).

Learning Resources:-

Text Book:-

A Course in Electrical Power, 12th Edition by J B Gupta, S. K. Kataria and Sons.

Reference Books:-

1) Electrical Power, 13th Edition by S L Uppal, Khanna Publishers.
2) A Course in Electrical Power, 3rd Edition by Soni, Gupta and Bhatnagar,
   Dhanpat Rai and Sons.
3) Power System Analysis and Design, 3rd Edition by B RGupta, S Chand and Company.
4) Generation of Electrical Energy, 2009 Edition by B.R. Gupta, S Chand and Company Ltd.

Course Name :   **Diploma in Electrical Engineering**
Course Code :   **DEE**
Semester :   **Third**
Subject Title :   **Electrical Workshop**
Subject Code :   **132EE36**

Teaching and Examination Scheme:–

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
				Theory		Test	Total		Practical		OR		TW		
L	**T**	**P**		Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
1	-	2	-	-	-	-	-	-	50	20	-	-	50	20	100

Rationale:-

      The students are exposed to practical knowledge in installation of various electrical systems. The subject material helps them to know and learn various stages of technical documentation of electrical projects.

Objectives:-

     The students should be able to:
1) Explain the importance of earthing in electrical equipments.
2) Explain the construction and working principle of different electric indicating instruments.
3) Do calibration of ammeter, voltmeter and wattmeters.
4) Explain common measurements and precautions to be taken in the installation of electrical equipment/gadget.

Syllabus

Part I:- Theory

Sr. No	Contents	L
1	Study of units used for different electrical quantities.	1
2	Principle and methods of Earthing used in high voltage electrical equipments.	1
3	Role of Electrical Contractor, Supervisor, Lineman, Apprentice Engineer in Electric Supply Board.	2
4	Earth and insulation measurement techniques.	1
5	Indian Standards of Electrical wiring.	1
6	House wiring and office wiring diagram, cost estimation of at least 4 companies.	2
7	Tender floating and notices and documentation regarding tender.	1
8	Types of insulation used for cable and motor.	1
9	New trends in electrical wiring.	1
10	Operation /working of digital measuring instruments.	1
11	**CABLES/WIRES:**Types: flexible, hook-up, coaxial and fiber Multi-core Power and Control cables.Their construction and applications.	2
12	**RELAYS :** Construction, rating & working principle of generalpurpose relay, Reed relay.	2
	Total	**16**

Part II:- Practicals

List of Laboratory Experiments:-
1) Units
2) What is Earthing of high voltage equipment? How is it carried out?
3) Magnetic effects of electric current
4) Basic operation of CRO and measurement using CRO
5) Neat sketch of house wiring with all electrical symbol.
6) MCB rating of each circuit (hall, kitchen, bedroom and power point)
7) Technical specification of equipments used in Housewiring
8) Cost estimation of at least 4 companies.
9) Who are electrical contractor, electrical supervisors, lineman, apprentices
   a) What is contract?
   b) Type of engineering contracts and their meaning
   c) What is tender?
   d) Different ways of writing tenders and meaning of each
   e) Tender notice and Tender documents
   f) What is Work Order?
   g) Stages in preparing Tender documents.
10) Testing of Installation (New and extended)
   a) Effectiveness of Earthing:
      1) Measurements of Earth's resistance by fall potential.
      2) Measurement of Earth's resistance by Earth tester.
   b) Measurement of insulation resistance
   c) Circuit Continuity
11) Automation in Housewiring
      a) Smoke detector
      b) Human sensor
12) Study of fire alarm system

Learning Resources:-

Reference Books:-
   1) Electrical Wiring, Estimating and Costing, 5th Edition by Dr. S.L.Uppal, Khanna Publisher
   2) A Handbook of Electrical Wiring Estimating and Costing, 2008 Edition by Arora, R B Publications
   3) Basic Electrical Installation Work, 3rth Edition by Trevor Linsley, Newnes, Butterworth-Heinemann Publishers.
   4) Electrical Design Estimating and costing, 2009 Edition, by K B & Raina and S K Bhattacharya , New Age International(P) Limited.

Course Name :   **Diploma in Electrical Engineering**
Course Code :   **DEE**
Semester :   **Third**
Subject Title :   **Product Study & Analysis**
Subject Code :   **132EE37**

Teaching and Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme												Total Marks
				Theory		Test	Total		Practical		OR		TW			
L	**T**	**P**		**Max**	**Min**		**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**		
-	-	2	-	-	-	-	-	-	-	-	-	-	25	10	25	

Rationale:-

Many times we purchase the product/s without having proper knowledge about its Technical Specifications, Quality, Cost and other important related issues. This subject will help the students in proper selection of product/s purchase from market. Seminars will help the student to gain confidence in presentation skills required in a group talk, interviews and other places.

Objectives:-

    Student will be able to:
1) Acquire information from different sources
2) Prepare notes for given topic
3) Present given topic in a seminar

List of Activities:-

1. **Market Survey: -** The complete classroom strength will be divided into groups of six students each. Each group will select **ONE** electrical product (for eg. Domestic Ceiling Fan, Pump, Geyser (Water Heater), Microwave Oven, Television & Radio Receivers, Personal Computer, LapTop, Home Theatre System, Voltage Stabilizers for monitoring AC supply voltage, Uninterrupted Power Supply (UPS) systems, Spike Guard Suppressors for Computers, Washing Machine, Electric Iron, **etc.**)The group will collect information from market of various brand names manufacturing that product, general and technical specifications of the product, cost of the product, after sales service facility, warranty and other details.

2. **Product Report: -** A report is to be prepared by each group based on the market survey done in **1),** and submitted as term-work.

3. **Seminar: -** Individual student from each group has to give seminar in the classroom on their surveyed product and submit the seminar report as term-work.

4) Study/Calculation of Residential Electricity Bill Charges:To be done of individual house (residence) by each student.

Course Name : Diploma in Electrical Engineering
Course Code : DEE
Semester   : Third
Subject Title : Student Centered Activity/Test

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**		
-	-	2	-	-	-	-	-	-	-	-	-	-	-	-		-

Rationale:–

Most of the diploma holders join industries. Due to globalization and competition in the industrial and service sectors the selection for the job is based on campus interviews or competitive tests.

While selecting candidates a normal practice adopted is to see general confidence, ability to communicate and attitude, in addition to basic technological concepts.

The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Expert lectures, E-learning sources, E-library, Internet, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation of students in learning process.

Objectives:

The Student will be able to:

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