

SCHOOL OF DIPLOMA STUDIES	PROGRAM: DIPLOMA – ELECTRICAL ENGINEERING
ACADEMIC YEAR - 2018-19	SEMESTER – II BATCH YEAR: 2018-21
DEFINITION OF ONE CREDIT: <b>1. Lecture(L):</b> 1 hour / week / semester, <b>2. Practical(P):</b> 2 hour / week / semester <b>3. Tutorial(T):</b> 2 hour / week / semester	

Course Code	Course Name	Teaching Hours			Credits	Audit course	CIE	PSEE
		Theory	Tutorial	Practical				
DGN209	MATHEMATICS-II	4	0	0	4	N	Y	N
DME206	ELEMENTS OF MECHANICAL AND CIVIL ENGINEERING	4	0	2	5	N	Y	Y
DEE202	FUNDAMENTAL OF AC CIRCUITS	3	2	2	5	N	Y	Y
DEC209	BASIC ELECTRONICS	3	0	2	4	N	Y	Y
DGN111	ENVIRONMENTAL STUDIES*	2	0	0	3	N	Y	N
ESL202	ENGLISH AS A SECOND LANGUAGE- BEGINNERS LEVEL - II	3	0	0	3	N	Y	N
	<b>Mentoring</b>	1	0	0	0	N	N	N
	<b>ELECTIVE: II</b>	0	0	1	1	N	N	Y
NSS201	NSS-II*							
YOG201	YOGA-II *							
	<b>Total</b>	<b>20</b>	<b>2</b>	<b>7</b>	<b>25</b>			
	<b>Total Hours</b>	<b>29</b>						

# Students are required to undergo 15 hours training / field visit/ workshop in relevant field during semester.

N- No	CIE – Continuous internal evaluation
Y – Yes	PSEE – Practical semester end examination including ITD, Dissertation, Industrial project, Industrial training etc...

<b>Course Title</b>	<b>BASIC ELECTRONICS</b>
<b>Course Code</b>	DEC209
<b>Course Credit</b>	Lecture : 3
	Practical : 1
	Tutorial : 0
	Total : 4

**Course Learning Outcomes**

At the end of the course students should be able to:

- **Understand** properties of semiconducting material.
- **Understand** how current flows through the p-n junction and relating this phenomena to the characteristics and operation of the diodes as well.
- **Understand** application of the diodes and bipolar junction transistor in electronic circuits.
- **Understand** biasing configurations of bipolar junction transistor.
- **Describe** the operation and i-v characteristics of a diode and a transistor.
- **Understand** single stage transistor amplifier

**Detailed Syllabus**

**SECTION I**

<b>Module No.</b>	<b>Topics</b>	<b>No. of Sessions</b>
<b>1</b>	<p><b><u>SEMICONDUCTORS:</u></b>            1.1.Introduction            1.2.Propertiesofsemiconductors,            1.3.Typesofsemiconductors,                1.3.1.Intrinsic semiconductors,                1.3.2.Generation of electronsand holes,                1.3.3.Extrinsic semiconductors,            1.4 N Type semiconductor,            1.5 P-TypeSemiconductros            1.6.Majority andMinority chargecarriers,            1.7.Effect oftemperature on semiconductors,            1.8.TheHalleffectanditsapplications,</p>	<b>6</b>

<b>2</b>	<p><b><u>PN JUNCTION:</u></b></p> <p>2.1 Introduction</p> <p>2.2 Formation of depletion layer in a PN junction,</p> <p>2.3 Behavior of PN Junction under biasing.</p> <p>2.4 V-I characteristics of a PN Junction diode,</p> <p>2.4.1 Ideal diode and Real diode,</p> <p>2.5 PN diode applications,</p> <p>2.5.1 Diode as a switch</p> <p>2.5.2 Half wave rectifier, Full wave rectifier: center tapped and bridge configuration,</p> <p>2.5.2.1 Rectifier efficiency,</p> <p>2.5.2.2 Comparison of rectifiers,</p> <p>2.5.2.3 Filters</p> <p>2.5.3 Clipper circuits,</p> <p>2.5.4 Clamper circuits.</p> <p>2.5.2 Voltage doublers and multipliers.</p>	08
	<p><b><u>SPECIAL PURPOSE DIODES:</u></b></p> <p>3.1 Introduction,</p> <p>3.2 Zener Diode characteristics and its applications,</p> <p>3.3 Varactor Diode characteristics and its applications,</p> <p>3.4 Light Emitting Diode,</p> <p>3.5 Photo Diode,</p> <p>3.6 Schottky Diode</p> <p>3.7 Tunnel Diode,</p>	7

**SECTION II**

<b>3</b>	<p><b><u>BIPOLAR JUNCTION TRANSISTORS:</u></b></p> <p>4.1 Introduction,</p> <p>4.2 BJT construction,</p> <p>4.3 Unbiased BJT and Biasing of BJT,</p> <p>4.4 Operation of NPN BJT and PNP BJT</p> <p>4.5 Transistor configurations:</p> <p>4.5.1 CB configuration with its input-output characteristics,</p> <p>4.5.2 CE configuration with its input-output characteristics,</p> <p>4.5.3 CC configuration with its input-output characteristics,</p> <p>4.5.4 Current gain of BJT for CB, CE and CC configurations and its interrelationship.</p>	8
<b>4</b>	<p><b><u>BJT BIASING AND STABILIZATION:</u></b></p> <p>5.1 Introduction,</p> <p>5.2 DC operating point and Load line concepts,</p> <p>5.3 Factors affecting stability of Q-point and stability factor,</p> <p>5.4 Stability factor for Common Emitter &amp; Common Base circuits,</p> <p>5.5 Conditions of proper biasing of a transistor,</p>	8

	<p>5.6 Methods of Transistor biasing:</p> <p>5.6.1 Base bias</p> <p>5.6.2 Base bias with emitter feedback</p> <p>5.6.3 Base bias with collector feedback</p> <p>5.6.4 Voltage divider bias</p> <p>5.6.5 Emitter Bias</p> <p>5.6.6 Comparison of stability factors for all the biasing techniques</p> <p>5.7 Bias compensation techniques</p>	
<b>6</b>	<p><b><u>SINGLE STAGE TRANSISTOR AMPLIFIER:</u></b></p> <p>6.1 Introduction,</p> <p>6.2 Classification of Amplifiers,</p> <p>6.3 Transistor as an amplifier,</p> <p>6.4 Common Emitter Amplifier and its parameters,</p> <p>6.5 Common Base Amplifier and its parameters,</p> <p>6.6 Common Collector Amplifier and its parameters,</p> <p>6.7 Comparison of characteristics of CE, CB and CC amplifiers.</p>	5

### Reference Books:

1. Albert Malvino & David Bates, Electronic Principles, 7<sup>th</sup> Edition, Tata McGraw Hill, 2007.
2. J.B. Gupta, Electronic Devices & Circuit, 5<sup>th</sup> Edition, S.K. Kataria & Sons, 2012.
3. R. S. Sedha, A Textbook of Applied Electronics, S. Chand Publication.
4. Millman-Halkias, Electronics Device & Circuit, Tata McGraw Hill.
5. B.L. Theraja, Electronics Device & Circuit, S. Chand publication.
6. V.K. Mehta, Electronics Device & Circuit, S. Chand publication.

### List of Experiments:

1. To understand various functions of D.S.O.
2. To study and perform V-I characteristics of PN Junction diode.
3. To study and perform V-I characteristics of Zener diode.
4. To study and perform half wave rectifier with filter.
5. To study and perform full wave rectifier with filter.
6. To study and perform clipper circuit experiment.
7. To study and perform clamper circuit experiment.
8. To analyze input and output characteristics of CB configuration.
9. To analyze input and output characteristics of CE configuration.
10. To analyze input and output characteristics of CC configuration.
11. To Test CE amplifier and Prepare the frequency response graph.
12. To prepare a mini project related to the subject.

<b>Course Title</b>	<b>ENGLISH AS A SECOND LANGUAGE, BEGINNERS LEVEL - 2</b>
<b>Course Code</b>	ESL202
<b>Course Credit</b>	Lecture : 3
	Practical : 0
	Tutorial : 0
	Total : 3

**Course Learning Outcomes**

At end of the course, students will:

- Understand variety of academic, social and professional conversations.
- Speak on a variety of topics in academic, social and professional contexts.
- Read and understand language in academic, social and professional contexts.
- Write and express ideas in routine academic, social and professional contexts.

**Detailed Syllabus**

Unit No.	Context	Topics	Learning objectives	No. Of hours
<b>SECTION – I</b>				
1	Social/Professional	SELF-INTRODUCTION	Students will be able to talk about their family, friends & community using appropriate words and phrases.	8
2	Academic/Professional	BAY OF SURVEY	Students will learn to draft appropriate questions for a questionnaire relevant to the purpose, audience and the topic of the survey. Students will further derive a conclusion and present it in the form of a report or presentation.	8
3	Social/Professional/Academic	PARAGRAPH & EMAIL WRITING	Students will be able to learn to draft a formal email using appropriate format. Also, they will be able to develop a passage using topic sentence, support sentence with appropriate vocabulary in context to the topic.	7

**SECTION -II**

<b>4</b>	Social/Professional	LET'S TALK ABOUT	Students will be able to use the vocabulary learnt in ESL102 and further express their ideas, opinions and observations.	8
<b>5</b>	Academic/Professional	WATCH YOUR WORDS & MIND YOUR MANNERS	Students will be able to identify and use the phrases to express apology, permission, request, agreeing, disagreeing, offering etc. and use them in role plays related to daily life.	7
<b>6</b>	Academic	READING	Students will be able to develop sub skills of reading like skimming & scanning, reading for detail, global reading etc.	7

<b>Course Title</b>	<b>ENVIRONMENTAL STUDIES</b>
<b>Course Code</b>	DGN111
<b>Course Credit</b>	Lecture : 02 + 01 *
	Practical : 0
	Tutorial : 0
	Total : 3

\* 1 credit for students are required to undergo 15 hours training /field visit/workshop in require field during semester.

**Course Learning Outcomes**

After the completion of course, student should be able to:

- **Interface** the role of environment science in engineering.
- **Secure** their self during natural calamities.
- **Value** of the natural resources, ecosystems, environment pollution.
- **Find** the relation between effects of human population on the environment and other major global problems.
- **Interpret** the population projection method, the basic data of current population as well as future population.

**Detailed Syllabus**

**SECTION-I**

<b>Module No.</b>	<b>Topics</b>	<b>No. of sessions</b>
<b>1</b>	<b>MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES</b> Introduction: Concept of Environment - Definition and components. Physical components, Public awareness.	<b>2</b>
<b>2</b>	<b>NATURAL RESOURCES</b> Brief introduction about natural resources: Biotic and abiotic, Renewable and non-renewable. Water resources: Sources of water, Use and over utilization of surface and ground water, domestic water demand, water conservation. Forest Resources: Forest Deforestation and Afforestation Solar Resources: Introduction, solar water heater, Photovoltaic cell (Solar Cell), solar power generation. Wind resources: Introduction, Advantages, windmill. Brief idea about land resources and mineral resources	<b>6</b>

	Wildlife: Introduction, National park and sanctuaries.	
<b>3</b>	<p><b>ECOSYSTEMS</b></p> <p>Introduction: Concept of an Ecosystem.</p> <p>Types of Ecosystem: Natural and artificial Ecosystems, Factors affecting Eco system, biotic factors, abiotic factors.</p> <p>Food Chains: Grazing food chain and Detritus food chain,</p> <p>Ecological pyramid: Eltonian Pyramid, pyramid of number, pyramids of Energy, pyramid of biomass.</p> <p>Brief idea about Biodiversity and biodiversity index.</p>	<b>6</b>
<b>SECTION-II</b>		
<b>4</b>	<p><b>ENVIRONMENT POLLUTION</b></p> <p>Brief introduction about various types of pollutions and pollutants.</p> <p>Water pollution: Significance of water, Water pollution sources: Natural, Municipal, Industrial and mining. Common water impurities and common effluent water treatment plant.</p> <p>Air pollution: Classification of air pollutants, Sources of air pollutants, Effects of air pollutants on human health, vegetation and material, air pollution control devices introduction.</p> <p>Noise pollution: fundamental of acoustics, Place of noise pollution, Effect noise pollution, Control of noise pollution.</p> <p>Brief idea about soil pollution and radioactive pollution.</p> <p>Disaster Management: Brief idea about floods, earthquake, and landslides, do and not to do during earthquake.</p>	<b>6</b>
<b>5</b>	<p><b>SOCIAL ISSUES AND THE ENVIRONMENT</b></p> <p>Introduction: Need of environmental legislation.</p> <p>Environment protection Act: Environmental act 1986, Air (prevention and control of pollution) Act 1981. Water (prevention and control of pollution) Act 1974. Wildlife protection act.1972.</p> <p>Role of NGO for environmental protection. (case studies)</p>	<b>3</b>
<b>6</b>	<p><b>HUMAN POPULATION AND ENVIRONMENT</b></p> <p>Population Growth, variation among nation, Effects of population on the environment, Population growth calculation by Incremental Method.</p> <p>Major Global Problems:</p> <p>Acid Rain: definition, Causes of Acid rain, Effect of acid rain, remedial measures of acid rain, case studies.</p> <p>Global Warming: Introduction, Definition, Causes of Global warming, Brief idea about effects and remedial measures of Global warming.</p> <p>Ozone layer depletion: Introduction, Causes and remedial measures.</p>	<b>5</b>

**Reference Books:**



**Reference Books:**

1. Environmental Engineering by Pandey & Carney, TMH, New Delhi.
2. Wastewater Engineering - Treatment, Disposal & re-use by Metcalf & Eddy, 2nd Edition, TMH, New Delhi.
3. Environmental Engineering by Peavy, TMH International, New York.
4. Basic of Environmental Studies by N. S. Varamdamo, Book India Publication.
5. Environmental Studies by Shashi Chavla, published by Tata and McGraw, New Delhi.
6. Essential of Environment and Seismic Engineering, by Shah Siddhartha, Mahajan Publication.
7. Environmental Studies by Erach Bharucha published by UGC, New Delhi.

<b>Course Title</b>	<b>FUNDAMENTAL OF AC CIRCUITS</b>	
<b>Course Code</b>	<b>DEE202</b>	
<b>Course Credit</b>	<b>Lecture</b>	<b>: 3</b>
	<b>Practical</b>	<b>: 1</b>
	<b>Tutorial</b>	<b>: 1</b>
	<b>Total</b>	<b>: 5</b>
<b>Course Learning Outcomes</b>		
At the end of the session student will be able:		
<ul style="list-style-type: none"> <li>• <b>Perform</b> basic parameters of A.C. Circuit on C.R.O.</li> <li>• <b>Solve</b> numerical based on AC fundamentals</li> <li>• <b>Distinguish</b> between line and phase voltage, line and phase currents in 3-phase AC circuits</li> <li>• <b>Perform</b> R-L-C Series circuit</li> </ul>		
<b>Detailed Syllabus</b>		
<b>SECTION I</b>		
<b>Module No.</b>	<b>Topics</b>	<b>No. of Sessions</b>
<b>1</b>	<b>AC Fundamentals</b> <ul style="list-style-type: none"> <li>• Principle of generating an alternating voltage, various electrical parameters : Cycle, Time period, Frequency, Amplitude, Phase and Phase difference, Average value, R.M.S. value, Form factor, Peak Factor and Power Factor R.M.S. value of sinusoidal current, Vector representation of alternating quantities, addition, subtraction, multiplication and division, Solve numerical based on AC fundamentals, Phase and phase difference ,Solve numerical based on phase and phase difference</li> </ul>	<b>10</b>
<b>2</b>	<b>AC Series circuits</b> <ul style="list-style-type: none"> <li>• Waveforms, phasor diagram and expression of voltage, current and power in pure: Resistance, Inductance, Capacitance, AC through RL, RC, LC, RLC series circuit Resonant frequency and Resonance condition in RLC series circuit, Numerical on AC series circuit</li> </ul>	<b>11</b>

## SECTION II

<b>3</b>	<b>AC Parallel Circuits</b> <ul style="list-style-type: none"> <li>Behavior of AC voltage, current and power through RL, RC and RLC parallel circuit, Resonant frequency and resonance condition in parallel AC circuits, Numerical based on AC parallel circuits and parallel resonance, Comparison of AC series and AC parallel circuit</li> </ul>	<b>8</b>
<b>4</b>	<b>Poly phase circuits</b> <ul style="list-style-type: none"> <li>Principle of generation of three phase alternating voltage, Line and phase voltage, line and phase current, Differentiate between single and three phase circuits, Phase sequence, Basic connection of star and delta circuit, Star and delta connection and relation of current, voltage</li> </ul>	<b>8</b>
<b>5</b>	<b>Power in AC Circuits</b> <ul style="list-style-type: none"> <li>Power triangle: Active, reactive and apparent power with examples, Lagging, leading power and unity power factor, Effects of poor power factor.</li> </ul>	<b>5</b>

### Reference Books:

1. Fundamentals Of Electrical Engineering And Electronics by S.K.SAHDAV, Dhanpat rai & company publication
2. Electrical technology volume-I by B.L.Thereja, A.K. Thereja, S.Chand publication
3. Principle of electrical engineering & electronics by V.K. Mehta, S.Chand publication

### List of Experiments:

1. To perform basic parameters of AC circuit on C.R.O
2. Measurement of voltage, current and power in 1- phase circuit.
3. Measurement of Inductance & Resistance of A choke
4. Measure voltage, current, power and power factor in a series RL circuit with relevant phasor diagram.
5. Measure voltage, current, power and power factor in a series RC circuit with relevant phasor diagram.
6. Measure voltage, current, power and power factor in a series RLC circuit with relevant phasor diagram.
7. Measure voltage, current, power and power factor in a RC parallel circuit with relevant phasor diagram.
8. Measure voltage, current, power and power factor in a RL parallel circuit with relevant phasor diagram.
9. Measure voltage, current, power and power factor in a RLC parallel circuit with relevant phasor diagram.
10. Measure voltage, current, power and power factor for combined series-parallel circuits
11. Test voltage and current relation for 3 phase star and delta connections.
12. Measure active and reactive power of three phase circuits.

<b>Course Title</b>	<b>ELEMENTS OF MECHANICAL &amp; CIVIL ENGINEERING</b>
<b>Course Code</b>	DME206
<b>Course Credit</b>	Lecture : 4
	Practical : 1
	Tutorial : 0
	Total : 5

### Course Objective

- To **Understand** Fundamentals of Gas & Arc welding Primary concepts of I. C. Engines & Pumps.
- Primary concepts of boilers, prime movers, pumps and their **application**, Boiler application & types
- **Understand** challenging aspect of various civil measurements skills. Importance of building bye laws.
- **Interpret** various civil engineering drawing, survey & leveling.

### Detailed Syllabus

Module No.	Topics	No. of Sessions
<b>Section – A</b>		
1	<b>Gas &amp; Arc welding</b> - Welding, Types of welding. - Basic Gas welding. - Basic Arc welding, Soldering & Brazing. - Suitable Application.	6
2	<b>Boiler &amp; Accessories</b> - Functions & classification. - Working Principles of Boilers & Accessories, Uses.	8
3	<b>I.C. Engines</b> - Types of engines. - Function & classification. - Working Principle, Uses.	9

4	<p><b>Pumps</b></p> <ul style="list-style-type: none"> <li>- Function of pumps</li> <li>- Types of pumps:             <ol style="list-style-type: none"> <li>1.Centrifugal</li> <li>2.Reciprocating</li> </ol> </li> <li>- Faults in Pumps (C &amp; R pumps)</li> </ul>	5
<b>Section B</b>		
5	<p><b>Introduction to surveying:</b></p> <p>Definitions Aims and applications of surveying, Primary division of surveying, Fundamental principles of surveying, Classification of surveying, Plans and Maps, Scale, choice of scale of map, Unit of measurement</p>	4
6	<p><b>Linear measurement</b></p> <p>Different method of linear measurement, Instruments used in chaining, Principles of chain surveying, Operations in chain surveying, Errors in chaining, Conventional symbols</p>	4
7	<p><b>Angular measurement</b></p> <p>Introduction, Instruments used for angular measurement, Principle of compass surveying, Type of compass and its uses, Bearings, types of bearings and its measurement, Computations of angles, Sources of errors and its elimination</p>	4
8	<p><b>Building material</b></p> <p>Introduction, Stone, types and uses, Bricks, basic characteristics, uses, qualities, Lime, classification, properties, uses, Cement, characteristics, uses, types of cement</p>	4
9	<p><b>Building construction</b></p> <p>Introduction, Classification of building</p> <p>Building components, their functions and nominal dimensions</p>	5
10	<p><b>Building planning and drawing</b></p> <p>Introduction, Definition and concept of plan of a simple residential building, Elementary principles of building planning, Basic requirements for building planning ,Building drawing ,Elements of Building Drawing</p>	7
	<b>Total hours</b>	<b>56</b>

**Reference Book**

1. Pumps operation and maintenance by Tyler and Hicks, Tata Mc-Grawhill Publication
2. Elements of Workshop Technology by Hazara chaudhary - MPPPL Publication
3. Heat engine by Shah & Pandya - Charottar Publisher
4. Hydraulic Machines by JagdishLal - Katariya Publication
5. Elements of Mechanical Engineering by R. K. Rajput - Laxmi Publicatio
6. Fundamental of Mechanical Engineering by G.S. Sawhney Prentice Hall of India Publication
7. Elements of Civil Engineering by Prof. R B Khasiya&MsRaha N Shukla, Mahajan Prakashan
8. Elements of Mechanical Engineering by R. K. Rajput, Laxmi Publication
9. Surveying by B C Punamia

**LIST OF EXPERIMENTS:**

1. To Demonstrate an I.C. Engine (Identification of Parts, its function, Classification, Working, etc.
2. To find the faults in a given I.C. Engine and suggest remedial measures.
3. To Study the effect of variation of load on fuel-consumption of an I.C. Engine.
4. To Study & Demonstrate a water-turbine.
5. to study & Demonstration a pump.
6. to study & Perform test on Centrifugal pump.
7. To Find fault and remedies for C.F. Pump.
8. To Study various types of materials handling equipment.
9. To Study power transmission systems.
10. to study & Demonstrate an Air-compressor.
11. To work on Chain Surveying.
12. To work on compass Surveying.
13. to study leveling and work on it.

<b>Course Title</b>	<b>MATHEMATICS -II</b>
<b>Course Code</b>	DGN209
<b>Course Credit</b>	Lecture : 4
	Practical : 0
	Tutorial : 0
	Total : 4

**Course Learning Outcomes**

At end of the course, students will be able to:

- **Understand** the advance concepts and principles of Mathematics such as calculus coordinate geometry.
- **Define** four different types of conic sections- the circle and its center and radius and the ellipse, the hyperbola and the parabola and its foci, latus rectum, and major and minor axis.
- **Use** the standard techniques of multivariable calculus, both differential and integral, and utilize them to **solve** selected applied problems.
- **Compute** the expression for the derivative of a function using the rules of differentiation Including the power rule, product rule, and quotient rule and chain rule.
- **Identify** the extreme of a function on an interval and **classify** them as minima, maxima using the first derivative test.

**Detailed Syllabus**

**SECTION I**

<b>Module No.</b>	<b>Topics</b>	<b>No. Of Sessions</b>
<b>Unit-1</b>	<b>STRAIGHT LINE AND ITS APPLICATION</b> Distance formula for $R^2$ , Circum-centre of a triangle, Area of a triangle, Division of a line segment, Cartesian equation of a straight line, Equation of a straight line in $R^2$ : $ax+by+c=0$ .,Slope of a straight line, Intercepts on axis, angle between two straight line, parallel and perpendicular lines, simple problems.	11
<b>Unit-2</b>	<b>CONICS</b> Definition of a circle, general equation, standard equation, radius and centre of a circle. Standard equation, focus, eccentricity , directrix, latus rectum, major axis, minor axis of Parabola, Ellipse and Hyperbola and their	11



	Characteristic.	
<b>Unit-3</b>	<b>FUNCTIONS &amp; LIMIT</b> Definition of function, examples, concept & rules of limit, evaluation of standard limit of algebraic & trigonometric function.	6
<b>SECTION II</b>		
<b>Unit-4</b>	<b>DIFFERENTIATION</b> Definition, derivative of constant function, formula: $X^n$ , $a^x$ , $\sin x$ , $e^x$ , etc. formula for sum, product and quotient of functions, chain rule, derivative of parametric and Implicit functions, second order differentiation.	10
<b>Unit-5</b>	<b>APPLICATION OF DIFFERENTIATION</b> Application of derivatives, velocity, acceleration, maximum and minimum of function, increasing and decreasing function.	06
<b>Unit-6</b>	<b>INTEGRATION</b> Introduction of integration, formula for standard function as mentioned, simple basic rules of indefinite integration, evaluation of simple indefinite integrals, Integration by substitution, Definite Integrals, lower & upper limit, properties of definite integral.	12
<b>Text Book:</b>		
1. Polytechnic Mathematics by Dr. R. P. Rethaliya, Nirav Prakasan		
<b>Reference books:</b>		
1. Applied Mathematics for polytechnic, by H. K. Dass, CBS Publisher & Distributors Pvt Ltd.		
2. Elementary Engineering Mathematic by Dr. B. S. Grewals, Khanna Publisher.		
3. Applied Mathematics –II by Dr. A. K. Shinha, Satya Prakashan.		