| M.S. RAMAIAH COLLEGE OF ARTS,SCIENCE AND COMMERCE | | | | | |
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| **Course Outcomes for Bsc(Cs/Elec/Maths) Program** | | | | | |
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| 5273 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Programming Concepts using C | CO3 | Identify in details with examples Arrays: Declaring and Initializing, One Dimensional Arrays, Two Dimensional Arrays, Multi Dimensional Strings: Operations on strings, Arrays of strings, Storage Classes - Automatic, External, Static and Register Variables. |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Programming Concepts using C | CO4 | Write down the characteristics of Structures - Declaring and Initializing, Nested structure, Array of Structure, Unions, typedef, enum, Bit fields. Pointers and functions, Call by value, Call by reference, Arrays of Pointers, Pointers and Structures, static and dynamic memory allocation, Memory allocation functions. |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Programming Concepts using C | CO5 | Learn in details with examples Files - File modes, File operations, Text and Binary files, Command Line arguments. C Preprocessor directives, Macros ,Creating and implementing user defined header files |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Programming Concepts using C | CO1 | Learn in details with application, if applicable, Introduction to Programming Concepts: Classification of Software, Modular Programming, Structured Programming, Algorithms and Flowcharts. Overview of C, C basis |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Programming Concepts using C | CO2 | Specify the characteristics of Managing Input and Output Operation-Formatted and Unformatted I/O Functions , Decision Making Statements - if Statement, switch statement, ?: operator, Looping - while, do-while, for loop, Nested loop, break, continue, and goto statements. Functions in C |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C1S | Mathematics I | CO3 | Write down the characteristics of Matrices and Determinents |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C1S | Mathematics I | CO1 | Understand the characteristics of Differential Calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C1S | Mathematics I | CO2 | Identify in details with application, if applicable, Analytical Geometry |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C1S | Mathematics I | CO4 | Understand in depth Integral Calculus |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Basic Electronics | CO1 | Understand in depth Identification of Electronic components and equipments |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Basic Electronics | CO2 | Identify the details of Construct and verify the Thevinins, Maximum power transform theorem |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Basic Electronics | CO3 | Write down the characteristics of semiconductor diode and its application |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Basic Electronics | CO4 | Understand in details with application, if applicable, BJT and FET transistor working and its application |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C1S | Basic Electronics | CO5 | Deliberate the details of Number system and coding |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | S2CC1S | Data Structures | CO1 | Introduction and Overview: Definition, Elementary data organization, Data Structures, data structures operations, Abstract data types, algorithms complexity, time-space tradeoff. Preliminaries: Mathematical notations and functions, Algorithmic notations, control structures, Complexity of algorithms, asymptotic notations for complexity of algorithms. String Processing: Definition, Storing Stings, String as ADT, |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | S2CC1S | Data Structures | CO2 | Learn the classification and characteristics of IntroArrays: Definition, Linear arrays, arrays as ADT, Representation of Linear Arrays in Memory, Traversing Linear arrays, Inserting and deleting, Sorting: Bubble sort, Insertion sort, Selection sort, Searching: Linear Search, Binary search, Multidimensional arrays, Matrices and Sparse matrices.duction and Overview |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | S2CC1S | Data Structures | CO3 | Learn the characteristics of Linked list: Definition, Representation of Singly linked list in memory, Traversing a Singly linked list, Garbage collection, Header liked list, Circular linked list.: Definition, Linear arrays, arrays as ADT, Representation of Linear Arrays in Memory, Traversing Linear arrays, Inserting and deleting, Sorting: Bubble sort, Insertion sort, Selection sort, Searching: Linear Search, Binary search, Multidimensional arrays, Matrices and Sparse matrices.duction and Overview |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | S2CC1S | Data Structures | CO4 | Stacks – Definition, Array representation of stacksStack as ADT, Arithmetic Expressions: Polish Notation, Application of Stacks, Recursion, Towers of Hanoi, recursive procedures by stack. Queues – Definition, Array representation of queue, Types of queue: Simple queue, Circular queue, Double ended queue , Priority queue |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | S2CC1S | Data Structures | CO5 | Write down the characteristics of Graphs: Graph theory terminology, Sequential representation of Graphs: Adjacency matrix, traversing a Graph. Tree – Definitions, Binary trees, Representing binary trees in memory, Traversing binary trees |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C2S | Mathematics II | CO1 | Specify the classification and characteristics of Differential calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C2S | Mathematics II | CO2 | Identify the characteristics of integral calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C2S | Mathematics II | CO4 | Understand in details with examples Group Theory |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C2S | Mathematics II | CO4 | Write down in details with examples Differential Equations -I |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C2S | Electronic Circuits & Special Purpose devices | CO1 | Deliberate in details with examples small signal amplifiers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C2S | Electronic Circuits & Special Purpose devices | CO2 | Deliberate the characteristics of Power and tuned amplifier |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C2S | Electronic Circuits & Special Purpose devices | CO3 | Specify in depth Differential amplifier |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C2S | Electronic Circuits & Special Purpose devices | CO4 | Understand in depth Feedback and oscillators |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C2S | Electronic Circuits & Special Purpose devices | CO5 | Identify in depth special purpose devices |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C3S | Linear Integrated Circuits & C Programming | CO1 | Learn the details of Integrted circuit and operational amplifier |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C3S | Linear Integrated Circuits & C Programming | CO2 | Write down in depth Application of OP-AMP and IC 555 Timer |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C3S | Linear Integrated Circuits & C Programming | CO3 | Write down in details with application, if applicable, Introduction to C programming |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C3S | Linear Integrated Circuits & C Programming | CO4 | Specify in details with application, if applicable, Decision making, branching & looping |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C3S | Linear Integrated Circuits & C Programming | CO5 | Learn the characteristics of structure and unions in C |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SCSC3S | Database Management System and Software Engineering | CO1 | Specify in details with application, if applicable, software and software engineering ,process model,agile development,extreme programming |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SCSC3S | Database Management System and Software Engineering | CO2 | Deliberate the classification and characteristics of Requirement modeling,data modeling,component level design |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SCSC3S | Database Management System and Software Engineering | CO3 | Specify in depth Quality concepts,software testing strategies. |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SCSC3S | Database Management System and Software Engineering | CO4 | Learn the details of Relational database concepts |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SCSC3S | Database Management System and Software Engineering | CO5 | learn the different SQL Commands |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C3S | Mathematics III | CO1 | Sequences of Real Numbers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C3S | Mathematics III | CO2 | Series of Real Numbers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C3S | Mathematics III | CO3 | Differential Calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C3S | Mathematics III | CO4 | Learn the characteristics of cosets in group theory |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P3S | Linear Integrated Circuits & C Programming | CO1 | Understand in details with examples integrated circuit and operational amplifiers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P3S | Linear Integrated Circuits & C Programming | CO2 | Specify in details with examples applications of operational amplifier and IC 555 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P3S | Mathematics practicals III | CO3 | Specify in depth series of real numbers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P3S | Mathematics practicals III | CO4 | Specify in details with application, if applicable, differential calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P3S | Mathematics practicals III | CO1 | Specify the characteristics of basics in group theory |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P3S | Mathematics practicals III | CO2 | Identify in details with application, if applicable, sequences of real numbers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C4S | Mathematics IV | CO1 | Deliberate the characteristics of groups, normal subgroups |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C4S | Mathematics IV | CO2 | Write down the classification and characteristics of fourier series |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C4S | Mathematics IV | CO3 | Understand in details with examples differential calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C4S | Mathematics IV | CO4 | Write down in depth laplace transforms |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C4S | Mathematics IV | CO5 | Deliberate in depth differential equations-II |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE104S | Digital Electronics & Verilog | CO2 | Understand in details with application, if applicable, Combinational logic circuits |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE104S | Digital Electronics & Verilog | CO3 | Write down the details of sequential logic circuits |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE104S | Digital Electronics & Verilog | CO4 | Deliberate the characteristics of Introduction to Verilog |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE104S | Digital Electronics & Verilog | CO5 | Understand the classification of verilog modeling and the characteristics of Dataflow and behavioural modeling |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE104S | Digital Electronics & Verilog | CO1 | Learn the characteristics of Boolean algebra and logic gates |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P4S | Mathematics practicals IV | CO1 | Learn in depth groups, normal subgroups |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P4S | Mathematics practicals IV | CO2 | Specify the details of differential equations |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P4S | Mathematics practicals IV | CO3 | Understand the classification and characteristics of fourier series |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P4S | Mathematics practicals IV | CO4 | Learn in details with examples differential calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1P4S | Mathematics practicals IV | CO5 | Deliberate the characteristics of laplace transforms |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C51 | Communication I | CO1 | Learn in details with examples noise and transmission lines |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C51 | Communication I | CO2 | Write down the characteristics of analog modulation techniques |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C51 | Communication I | CO3 | Write down in details with examples radio receivers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C51 | Communication I | CO4 | Deliberate in depth antennas |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C51 | Communication I | CO5 | Learn the details of television |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C52 | Microprocessors & Instrumentation | CO1 | Specify the characteristics of microprocessor and its classifications |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C52 | Microprocessors & Instrumentation | CO2 | Understand the detailed architecture and pin configuaration of 8085 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C52 | Microprocessors & Instrumentation | CO3 | Deliberate the characteristics of instruction set in 8085 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C52 | Microprocessors & Instrumentation | CO4 | The detail study of stack operation, microprograming, IO operation and interfacing in 8085 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C52 | Microprocessors & Instrumentation | CO5 | Understand the details of Measurment systems and Transducers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C52 | Microprocessors & Instrumentation | CO6 | Deliberate the classification and characteristics of charectaristics of Biomedical instruments |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C51 | Object Oriented Programming using JAVA | CO1 | Understand in depth Introduction to java |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C51 | Object Oriented Programming using JAVA | CO2 | Learn in details with examples Classes, Arrays, Strings, Vectors and Interfaces |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C51 | Object Oriented Programming using JAVA | CO3 | Deliberate in details with examples Packages, and Multithreaded Programming |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C51 | Object Oriented Programming using JAVA | CO4 | Understand the details of Applet Programming, Graphics Programming, Input/Output |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C52 | Visual Programming | CO5 | Specify in details with application, if applicable, Interfacing other application,MDI,splitter windows,exception handling |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C52 | Visual Programming | CO1 | Understand in depth Visual Programming,Events,methods,properties,controls |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C52 | Visual Programming | CO2 | Understand in depth Data types,functions,procedures,arrays |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C52 | Visual Programming | CO3 | Identify in depth OOPs methods and properties,class modules,DLL's |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C52 | Visual Programming | CO4 | Write down the characteristics of Visual C++ programming,vc++ components,resources,MFC file handling |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C51 | Mathematics V | CO1 | Understand the classification and characteristics of Rings,Integral Domain,Fields |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C51 | Mathematics V | CO3 | Learn in depth Numerical Methods |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C51 | Mathematics V | CO2 | Understand the characteristics of vector differential calculus |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C52 | Mathematics VI | CO3 | Specify the characteristics of calculus of variation |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C52 | Mathematics VI | CO1 | Specify the details of line and multiple integrals |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C52 | Mathematics VI | CO2 | Write down in depth Integral Theorems |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P51 | Communication I | CO1 | Introduction to noise and transmission line |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P51 | Communication I | CO2 | Analog modulation techniques |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P51 | Communication I | CO3 | Structural study of Radio recievers and its Applications |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P51 | Communication I | CO4 | Deliberating the functioning of Antennas and its charectaristics |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P51 | Communication I | CO5 | Identify in depth of Television |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P52 | Microprocessors & Instrumentation | CO1 | Write down in depth Introduction to minmax kit 8085 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P52 | Microprocessors & Instrumentation | CO2 | Understand in details with examples Write a assembly language programm to transfer a data from one location to another location |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P52 | Microprocessors & Instrumentation | CO3 | Write down in depth Write a assembly language programm to Perform Addition, subtraction, multiplication and division operation in 8085 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P52 | Microprocessors & Instrumentation | CO4 | Identify the characteristics of Program to find number of ones and zeroes, factorial of numbers |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1P52 | Microprocessors & Instrumentation | CO5 | Identify the classification and characteristics of Programm to interface 8085 with stepper motor and DAC |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C61 | Communication II | CO1 | Deliberate the details of Digital communication |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C61 | Communication II | CO2 | Specify in details with examples RADAR system |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C61 | Communication II | CO3 | Understand the classification and characteristics of Satellite communication |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C61 | Communication II | CO4 | Learn the characteristics of Optical fiber communication |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SE1C61 | Communication II | CO5 | Learn the characteristics of Cellular communication and wireless LANs |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SW1C62 | Microcontrollers | CO1 | Introduction to Microcontroller, stuctural study of 8051 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SW1C62 | Microcontrollers | CO2 | Addressing mode, Instruction set and Interrupts in 8051 |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SW1C62 | Microcontrollers | CO3 | 8051 programming in C |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SW1C62 | Microcontrollers | CO4 | Configuring the Timer/Counter and interfacing of pheripheral devices with 8051 |

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| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SW1C62 | Microcontrollers | CO5 | Introduction to PIC microcontrollers and its interfacing with LCD |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C61 | Web Programming | CO1 | Learn the characteristics and Fundamentals of web |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C61 | Web Programming | CO2 | Identify in details with application, if applicable, Java Script |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C61 | Web Programming | CO3 | Identify in depth Java Script and HTML documents |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C61 | Web Programming | CO4 | Learn in details with examples about CSS and XML |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C62 | Computer Networks | CO4 | Learn the characteristics of Internetworking |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C62 | Computer Networks | CO2 | Understand the characteristics of Packets, frames and error detection, hardware identification |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C62 | Computer Networks | CO3 | Understand in details with application, if applicable, Extending LANs, WAN technology and routing |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SC2C62 | Computer Networks | CO1 | Learn in depth Introduction to computer networks,Transmission media,long distance communication |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C61 | Mathematics VII | CO1 | Write down the characteristics of Linear Algebra |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C61 | Mathematics VII | CO2 | Understand in details with application, if applicable, Orthogonal Curvilinear coordinates |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C61 | Mathematics VII | CO3 | Learn in details with application, if applicable, Partial Differential Equations |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C62 | Mathematics VII | CO1 | Understand the classification and characteristics of Complex Analysis |
| 5274 | B.Sc (Computer science/ Electronics/ Mathematics) | SM1C62 | Mathematics VII | CO2 | Understand in details with examples Numerical Methods-II |