ACE
ENGINEERINGCOLLEGE
Ankushapur, Ghatkesar–501 301

B. Tech. in ELECTRICAL AND ELECTRONICS ENGINEERING
COURSE STRUCTURE & SYLLABUS (ACER22 Regulations)

Applicable from AY 2022-23Batch

I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1	MA101BS	Matrices and Calculus	3	1	0	4
2	CH102BS	Engineering Chemistry	3	1	0	4
3	EE103ES	C Programming and Data Structures	3	0	0	3
4	EE105ES	Electrical Circuit Analysis–I	3	0	0	3
5	ME105ES	Computer Aided Engineering Graphics	1	0	4	3
6	EE106ES	Electrical Circuit Analysis– I Laboratory	0	0	2	1
7	CH107BS	Engineering Chemistry Laboratory	0	0	2	1
8	CS109ES	C Programming and Data Structures Laboratory	0	0	2	1
9		Induction Program				
		Total Credits	**13**	**2**	**10**	**20**

MA101BS: MATRICES AND CALCULUS

(Offered in I B.Tech I Sem - CE, EEE, ME, ECE, CSE, IT, CSE (AIML), CSE (DS), CSE (IoT), AIML, AIDS)

B. Tech. I Year I Sem. **L T P C**

3 1 0 4

Pre-requisites: Mathematical Knowledge at pre-university level

Course Objectives: To learn

1. Concept of a rank of the matrix and applying this concept to know the consistency and solvingthe system of linear equations.
2. Concept of eigen values and eigenvectors and to reduce the quadratic form to canonical form
3. Geometrical approach to the mean value theorems and their application to the mathematical problems and Evaluation of improper integrals using Beta and Gamma functions.
4. Partial differentiation, concept of total derivative and finding maxima and minima of function of two and three variables.
5. Evaluation of multiple integrals and their applications

Course outcomes: After learning the contents of this paper the student must be able to

1. Write the matrix representation of a set of linear equations and to analyse the solution of thesystem of equations
2. Find the Eigen values and Eigen vectors. Reduce the quadratic form to canonical form using orthogonal transformations.
3. Solve the applications on the mean value theorems and evaluate the improper integrals using Beta and Gamma functions
4. Find the extreme values of functions of two variables with/ without constraints.
5. Evaluate the multiple integrals and apply the concept to find areas, volumes

UNIT-I: Matrices **10 L**

Rank of a matrix by Echelon form and Normal form, Inverse of Non-singular matrices by Gauss- Jordan method, System of linear equations: Solving system of Homogeneous and Non-Homogeneous equations by Gauss elimination method, Gauss Seidel Iteration Method.

UNIT-II: Eigen values and Eigen vectors **10 L**

Linear Transformation and Orthogonal Transformation: Eigen values, Eigenvectors and their properties, Diagonalization of a matrix, Cayley-Hamilton Theorem (without proof), finding inverse and power of a matrix by Cayley-Hamilton Theorem, Quadratic forms and Nature of the Quadratic Forms, Reduction of Quadratic form to canonical forms by Orthogonal Transformation.

UNIT-III: Calculus **10 L**

Mean value theorems: Rolle's theorem, Lagrange's Mean value theorem with their Geometrical Interpretation and applications, Cauchy's Mean value Theorem, Taylor's Series.

Applications of definite integrals to evaluate surface areas and volumes of revolutions of curves (Only in Cartesian coordinates), Definition of Improper Integral: Beta and Gamma functions and their applications.

UNIT-IV: Multivariable Calculus (Partial Differentiation and applications) 10 L

Definitions of Limit and continuity.

Partial Differentiation: Euler's Theorem, Total derivative, Jacobian, Functional dependence & independence. Applications: Maxima and minima of functions of two variables and three variables using method of Lagrange multipliers.

UNIT-V: Multivariable Calculus (Integration) **10L**

Evaluation of Double Integrals (Cartesian and polar coordinates), change of order of integration (only Cartesian form), Evaluation of Triple Integrals: Change of variables (Cartesian to polar) for double and (Cartesian to Spherical and Cylindrical polar coordinates) for triple integrals.

Applications: Areas (by double integrals) and volumes (by double integrals and triple integrals).

TEXT BOOKS:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
2. R.K. Jain and S.R.K. Iyengar, Advanced Engineering Mathematics, Narosa Publications,5th Editon, 2016.

REFERENCE BOOKS:

1. Erwin kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
2. G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9thEdition, Pearson, Reprint,2002.
3. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications,Reprint, 2008.
4. H. K. Dass and Er. Rajnish Verma, Higher Engineering Mathematics, S Chand and CompanyLimited, New Delhi

CH102BS: ENGINEERING CHEMISTRY

B.Tech. I Year I Sem-CSE,IT,EEE,CSE(DS) **L T P C**
B.Tech. I Year II Sem-CE,ME,ECE,CSE(IoT),CSE(AI&ML),AI&ML,AI&DS **3 1 0 4**

Course Objectives:

1. To bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.
2. To know the importance of water and its treatment in domestic and industrial usage.
3. To acquire fundamental aspects of battery chemistry, significance of corrosion its controlto protect the structures.
4. To gain knowledge in the preparation and engineering applications of materials like polymers, cement, smart materials, Lubricants etc.,
5. To acquire required knowledge the basic concepts of petroleum and its products.

Course Outcomes:

1. They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.
2. The students are able to understand the basic importance of water and its usage in domestic and industrial purposes.
3. Students will acquire the basic knowledge of battery technology and electrochemical procedures related to corrosion and its control.
4. They can learn the fundamentals and general properties of polymers and other engineering materials.
5. Students will be able to understand the mechanism of combustion for solving problems related to combustion.

UNIT - I: Water and its treatment: [10]

Introduction to hardness of water – Estimation of hardness of water by complexometric method and related numerical problems. Potable water and its specifications - Steps involved in the treatment of potable water - Disinfection of potable water by chlorination and break - point chlorination. Defluoridation - Determination of Fion by ion- selective electrode method.

Boiler troubles: Sludge, Scales and Caustic embrittlement. Internal treatment of Boiler feed water - Calgon conditioning - Phosphate conditioning - Colloidal conditioning, External treatment methods - Softening of water by ion- exchange processes. Desalination of water – Reverse osmosis.

UNIT – II Battery Chemistry & Corrosion [10]

Introduction - Classification of batteries- primary, secondary and reserve batteries with examples. Basic requirements for commercial batteries. Construction, working and applications of: Zn-air and Lithium ion battery, Applications of Li-ion battery to electrical vehicles. Fuel Cells- Differences between battery and a fuel cell, Construction and applications of Methanol Oxygen fuel cell and Solid oxide fuel cell. Solar cells - Introduction and applications of Solar cells.

Corrosion: Causes and effects of corrosion – theories of chemical and electrochemical corrosion –

mechanism of electrochemical corrosion, Types of corrosion: Galvanic, water-line and pitting corrosion. Factors affecting rate of corrosion, Corrosion control methods- Cathodic protection – Sacrificial anode and impressed current methods. Electroplating of Cu

UNIT - III: Polymeric materials: [10]

Definition – Classification of polymers with examples – Types of polymerization – addition (free radical addition) and condensation polymerization with examples – Nylon 6:6, Terylene

Plastics: Definition and characteristics- thermoplastic and thermosetting plastics, Preparation, Properties and engineering applications of PVC and Bakelite, Teflon, Fiber reinforced plastics (FRP).

Rubbers: Natural rubber, Processing and its vulcanization.

Elastomers: Characteristics –preparation – properties and applications of Buna-S, Butyl and Thiokol rubber.

Conducting polymers: Characteristics and Classification with examples-mechanism of conduction in trans-polyacetylene and applications of conducting polymers.**Biodegradable polymers:** Concept and advantages - Polylactic acid and poly vinyl alcohol and their applications.

UNIT - IV: Energy Sources: [10]

Introduction, Calorific value of fuel – HCV, LCV- Dulongs formula and Numericals Classification- solid fuels: coal – analysis of coal – proximate and ultimate analysis and their significance. Liquid fuels – petroleum and its refining, cracking types – moving bed catalytic cracking. Knocking – octane and cetane rating, synthetic petrol - Fischer-Tropsch's process; Gaseous fuels – composition and uses of natural gas, LPG and CNG, Biodiesel – Trans esterification, advantages. Combustion –Calculation of air quantities (Numericals).

UNIT - V: **Engineering Materials: [8]**

Cement: Portland cement, its composition, setting and hardening.

Smart materials and their engineering applications

Shape memory materials- Poly L- Lactic acid. Thermoresponse materials- Polyacryl amides, Poly vinyl amides

Lubricants: Classification of lubricants with examples-characteristics of a good lubricants - mechanism of lubrication (thick film, thin film and extreme pressure)- properties of lubricants: viscosity, cloud point, pour point, flash point and fire point.

TEXT BOOKS:

1. Engineering Chemistry by P.C. Jain and M. Jain, Dhanpatrai Publishing Company, 2010
2. Engineering Chemistry by Rama Devi, Venkata Ramana Reddy and Rath, Cengage learning, 2016
3. A text book of Engineering Chemistry by M. Thirumala Chary, E. Laxminarayana and K. Shashikala, Pearson Publications, 2021.
4. Textbook of Engineering Chemistry by Jaya Shree Anireddy, Wiley Publications.

REFERENCE BOOKS:

1. Engineering Chemistry by Shikha Agarwal, Cambridge University Press, Delhi (2015)
2. Engineering Chemistry by Shashi Chawla, Dhanpatrai and Company (P) Ltd. Delhi (2011)

EE103ES: C PROGRAMMING AND DATA STRUCTURES

B.Tech. I Year I Sem.	L	T	P	C
	3	0	0	3

Course Objectives: Introduce the importance of programming, C language constructs, program development, data structures, searching and sorting.

Course Outcomes:

1. Understand the various steps in Program development.
2. Explore the basic concepts in C Programming Language.
3. Develop modular and readable C Programs
4. Understand the basic concepts such as Abstract Data Types, Linear and Non-Linear Data structures.
5. Apply data structures such as stacks, queues in problem solving
6. To understand and analyze various searching and sorting algorithms.

UNIT - I

Introduction to Computers – Computer Systems, Computing Environments, Computer Languages, Creating and running programs, Software Development

Introduction to C Language – Background, Simple C programs, Identifiers, Basic data types, Variables, Constants, Input / Output

Structure of a C Program – Operators, Bit-wise operators, Expressions, Precedence and Associatively, Expression Evaluation, Type conversions, Statements.

UNIT - II

Statements – if and switch statements, Repetition statements – while, for, do-while statements, Loop examples, other statements related to looping – break, continue, go to, Recursion.

Designing Structured Programs- Functions, basics, user defined functions, inter function communication, standard functions.

Arrays – Concepts, using arrays in C, inter function communication, array applications, two – dimensional arrays, multidimensional arrays.

UNIT - III

Pointers – Introduction, Pointers for inter function communication, pointers to pointers, compatibility,

Pointer Applications – Passing an array to a function, Memory allocation functions, array of pointers

Strings – Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions, string / data conversion.

UNIT - IV

Derived types – The Typedef, enumerated types, Structures – Declaration, definition and initialization of structures, accessing structures, operations on structures, complex structures. Unions – Referencing unions, initializers, unions and structures.

Input and Output – Text vs Binary streams, standard library functions for files, converting file types, File programs – copy, merge files.

UNIT – V

Sorting- selection sort, bubble sort, insertion sort,

Searching-linear and binary search methods.

Data Structures – Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks-Operations, array and linked representations of stacks, stack applications, Queues-operations, array and linked representations.

TEXT BOOKS:

1. C Programming & Data Structures, B.A.Forouzan and R.F. Gilberg, Third Edition, Cengage Learning.
2. Problem Solving and Program Design in C, J.R. Hanly and E.B. Koffman, Fifth Edition, Pearson Education.
3. The C Programming Language, B.W. Kernighan and Dennis M.Ritchie, PHI/Pearson Education

REFERENCE BOOKS:

1. C & Data structures – P. Padmanabham, 3rd Edition, B.S. Publications.
2. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
3. Programming in C – Stephen G. Kochan, III Edition, Pearson Education.
4. C for Engineers and Scientists, H. Cheng, McGraw-Hill International Edition
5. Data Structures using C – A. M. Tanenbaum, Y. Langsam, and M.J. Augenstein, Pearson Education / PHI
6. C Programming & Data Structures, E. Balagurusamy, TMH.
7. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
8. C & Data structures – E V Prasad and N B Venkateswarlu, S. Chand & Co.

EE105ES: ELECTRICAL CIRCUIT ANALYSIS-I

B.TECH. I YEAR I SEMESTER	L	T	P	C
	3	0	0	3

Prerequisite: Matrices and Calculus

Course Objectives:

1. To gain knowledge in electrical circuits.
2. To understand the fundamentals of derived circuit laws.
3. To learn steady state and transient analysis of single phase and 3-phase circuits.
4. To comprehend Network Theorems and concepts of coupled circuits.
5. To understand the concepts of Graph theory.

Course Outcomes: Upon completing this course, the student will be able to

1. Understand network analysis techniques using mesh and node analysis.
2. Evaluate steady state and transient behavior of circuits for DC excitations.
3. Evaluate steady state and transient behavior of circuits for AC excitations.
4. Analyze the concept of poly phase circuits.
5. Analyze electric circuits using network theorems and concepts of coupled circuits.

UNIT: I NETWORK ELEMENTS & LAWS 10L

Active elements, Independent and dependent sources. Passive elements — R, L and C, Energy stored in inductance and capacitance, Kirchhoff's laws, Source transformations, Star-delta transformations, Node voltage method, Mesh current method including super node and super mesh analysis.

UNIT: II SINGLE-PHASE CIRCUITS 10L

RMS and average values of periodic sinusoidal and non- sinusoidal waveforms, Phasor representation, Steady-state response of series, parallel and series-parallel circuits. Impedance, Admittance, Current locus diagrams of RL and RC series and parallel circuits with variation of various parameters. Resonance: Series and parallel circuits, Bandwidth and Q-factor.

UNIT: III NETWORK THEOREMS 10L

Superposition theorem, Thevenin's theorem, Norton's theorems, Maximum power transfer theorem, Tellegen's theorem, Compensation theorem, Milliman's theorem and Reciprocity theorem. (AC & DC).

Unit: IV POLY-PHASE CIRCUITS 10L

Analysis of balanced and unbalanced 3-phase circuits, Star and delta connections, Measurement of three-phase power for balanced and unbalanced loads.

UNIT: V COUPLED CIRCUITS 10L

Concept of self and mutual inductance, Dot convention, Coefficient of coupling, Analysis of circuits with mutual inductance.

Topological Description of Networks: Graph, tree, chord, cut-set, incident matrix, circuit matrix and cut-set matrix.

TEXTBOOKS:

1. Van Valkenburg M.E, "Network Analysis", Prentice Hall of India, 3rd Edition, 2019.
2. Ravish R Singh, "Network Analysis and Synthesis", McGrawHill, 2nd Edition, 2019.

REFERENCE BOOKS:

1. B. Subramanyam, "Electric Circuit Analysis", Dreamtech Press & Wiley, 2021.
2. James W. Nilsson, Susan A. Riedel, "Electric Circuits", Pearson, 11th Edition, 2020.
3. A Sudhakar, Shyammohan S Palli, "Circuits and Networks: Analysis and Synthesis", McGraw Hill, 5th Edition, 2017.
4. Jagan N.C, Lakshrninarayana C., "Network Analysis", B.S. Publications, 3rd Edition, 2014.
5. William Hayt H, Kimmerly Jack E. and Steven Durbin M, "Engineering Circuit Analysis", McGraw Hill, 6th Edition, 2002.
6. Chakravarthy A., "Circuit Theory", Dhanpat Rai & Co., First Edition, 1999.

WEB REFERENCES:

1. https://nptel.ac.in/courses/108102042
2. https://nptel.ac.in/courses/108104139

ME105ES: COMPUTER AIDED ENGINEERING GRAPHICS

B.Tech. I Year I Sem

L	T	P	C
1	0	4	3

Course Objectives:

- To develop the ability of visualization of different objects through technical drawings.
- To acquire computer drafting skill for communication of concepts, ideas in the design of engineering products.
- Apply the knowledge of interpretation of projection in different quadrants.
- Create intricate details of components through sections and develop its surfaces.
- Convert the pictorial views into orthographic view and vice versa.

Course Outcomes: At the end of the course, the student will be able to:

- CO1: Apply computer aided drafting tools to create 2D and 3D objects
- CO2: Sketch conics and different types of solids
- CO2: Appreciate the need of Sectional views of solids and Development of surfaces of solids
- CO4: Read and interpret engineering drawings
- CO5: Conversion of orthographic projection into isometric view and vice versa manually and byusing computer aided drafting

UNIT – I:

Introduction to Engineering Graphics: Principles of Engineering Graphics and their Significance, Scales – Plain & Diagonal, Conic Sections including the Rectangular Hyperbola – General method only. Cycloid, Epicycloid and Hypocycloid, Introduction to Computer aided drafting – views, commands and conics

UNIT- II:

Orthographic Projections: Principles of Orthographic Projections – Conventions – Projections of Points and Lines, Projections of Plane regular geometric figures. Auxiliary Planes. Computer aided orthographic projections – points, lines and planes

UNIT – III:

Projections of Regular Solids – Auxiliary Views - Sections or Sectional views of Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views, Computer aided projections of solids – sectional views

UNIT – IV:

Development of Surfaces of Right Regular Solids – Prism, Cylinder, Pyramid and Cone, Developmentof surfaces using computer aided drafting.

UNIT – V:

Isometric Projections: Principles of Isometric Projection – Isometric Scale – Isometric Views – Conventions – Isometric Views of Lines, Plane Figures, Simple and Compound Solids – Isometric Projection of objects having non- isometric lines. Isometric Projection of Spherical Parts. Conversion of Isometric Views to Orthographic Views and Vice-versa – Conventions. Conversion of orthographic projection into isometric view using computer aided drafting.

TEXT BOOKS:

1. Engineering Drawing N.D. Bhatt / Charotar
2. Engineering Drawing and graphics Using AutoCAD Third Edition, T. Jeyapoovan, Vikas: S.Chand and company Ltd.

REFERENCE BOOKS:

1. Engineering Drawing, Basant Agrawal and C M Agrawal, Third Edition McGraw Hill
2. Engineering Graphics and Design, WILEY, Edition 2020
3. Engineering Drawing, M. B. Shah, B.C. Rane / Pearson.
4. Engineering Drawing, N. S. Parthasarathy and Vela Murali, Oxford
5. Computer Aided Engineering Drawing – K Balaveera Reddy et al – CBS Publishers
6. John, K.C. Engineering Graphics, Prentice Hall India Publishers.

Note: - External examination is conducted in conventional mode and internal evaluation to be done by both conventional as well as using computer aided drafting.

EE106ES: ELECTRICAL CIRCUIT ANALYSIS-I LABORATORY

B.TECH. I YEAR I SEMESTER	L	T	P	C
	0	0	2	1

Prerequisite: Knowledge of Intermediate level Physics & Mathematics

Course Objectives:

1. To measure the electrical parameters for different types of DC circuits using conventional approach.
2. To measure the RMS, Average values of Sinusoidal waveform
3. To Analyze the given circuits by using network theorems of AC & DC
4. To measure 3 phase power for balanced loads
5. To measure the coefficient of coupling for the given coupled circuit

Course Outcomes: Upon completing this course, the student will be able to

1. Measure the electrical parameters for different types of DC circuits using conventional approach.
2. Measure the electrical parameters for different types of AC circuits using conventional and theorems approach
3. Apply the concepts of network theorems to AC & DC circuits
4. Analyze 3 phase power for balanced Circuits
5. Calculate the Self & Mutual Inductance of the given coupled circuits

List of experiments/demonstrations:

PART-A (compulsory)

1. Verification Ohm's Law
2. Verification of KVL and KCL
3. Calculations and Verification of Impedance and Current of RL, RC and RLC series circuits
4. Verification of Series & Parallel Resonance
5. Verification of Thevenin's and Norton's theorem
6. Verification of Superposition theorem
7. Measurement of Active Power for Star and Delta connected balanced loads
8. Determination of Co-efficient of Coupling and Separation of Self and Mutual inductance in a Coupled Circuits.

PART-B (any two experiments from the given list)

1. Verification of Reciprocity and Milliman's Theorem.
2. Verification of Maximum Power Transfer Theorem.
3. Verification of Compensation Theorem
4. Determination of form factor for non-sinusoidal waveform
5. Measurement of Reactive Power for Star and Delta connected balanced loads

WEB REFERENCES:

1. https://phet.colorado.edu/en/simulations/circuit-construction-kit-dc-virtual-lab

CH107BS: ENGINEERING CHEMISTRY LABORATORY

B.Tech. I Year I Sem-CSE,IT,EEE,CSE(DS) **L T P C**
B.Tech. I Year II Sem-CE,ME,ECE,CSE(IoT),CSE(AI&ML),AI&ML,AI&DS **0 0 2 1**

Course Objectives: The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:

- Estimation of hardness of water to check its suitability for drinking purpose.
- Students are able to perform estimations of acids and bases using conductometry, potentiometry and pH metry methods.
- Students will learn to prepare polymers such as Thiokol rubber and nylon-6 in the laboratory.
- Students will learn skills related to the lubricant properties such as viscosity of oils.
- Students will learn the extent of corrosion in metals like mild steel.

Course Outcomes: The experiments will make the student gain skills on:

- Determination of parameters like hardness of water in various conditions.
- Able to know parameters of rate of corrosion of mild steel in various conditions.
- Able to perform methods such as conductometry, potentiometry and pH metry in order to find out the concentrations or equivalence points of acids and bases.
- Students are able to prepare polymers like Thiokol rubber and nylon-6.
- Estimations viscosity of lubricant oils.

List of Experiments:

I. Volumetric Analysis: Estimation of Hardness of water by EDTA Complexometry method.

II. Conductometry: Estimation of the concentration of an acid by Conductometry.

III. Potentiometry: Estimation of the amount of Fe+2 by Potentiomentry.

IV. pH Metry: Determination of an acid concentration using pH meter.

V. Preparations:

1. Preparation of Thiokol Rubber.
2. Preparation Nylon – 6,6.

VI. Lubricants:

1. Estimation of acid value of given lubricant oil.
2. Estimation of Viscosity of lubricant oil using Ostwald's Viscometer.

VII. Corrosion: Determination of rate of corrosion of mild steel in the presence and absence of inhibitor.

VIII. Virtual lab experiments

1. Construction of Fuel cell and its working.
2. Smart materials for Bio medical applications
3. Batteries for electrical vehicles.
4. Functioning of solar cell and its applications.

REFERENCE BOOKS:

1. Lab manual for Engineering chemistry by B. Ramadevi and P. Aparna, S Chand Publications, New Delhi (2022)
2. Vogel's text book of practical organic chemistry 5th edition
3. Inorganic Quantitative analysis by A.I. Vogel, ELBS Publications.
4. College Practical Chemistry by V.K. Ahluwalia, Narosa Publications Ltd. New Delhi (2007).

CS109ES: C PROGRAMMING AND DATA STRUCTURES LABORATORY

B.Tech. I Year I Sem.	L	T	P	C
	0	0	2	1

Course Objectives: Introduce the importance of programming, C language constructs, program development, data structures, searching and sorting.

Course Outcomes:

1. Develop modular and readable C Programs
2. Solve problems using strings, functions
3. Handle data in files
4. Implement stacks, queues using arrays, linked lists.
5. To understand and analyze various searching and sorting algorithms.

List of Experiments:

1. Write a C program to find the sum of individual digits of a positive integer.
2. Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.
3. Write a C program to generate the first n terms of the sequence.
4. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
5. Write a C program to find the roots of a quadratic equation.
6. Write a C program to find the factorial of a given integer.
7. Write a C program to find the GCD (greatest common divisor) of two given integers.
8. Write a C program to solve Towers of Hanoi problem.
9. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)
10. Write a C program to find both the largest and smallest number in a list of integers.
11. Write a C program that uses functions to perform the following:
    i. Addition of Two Matrices
    ii. Multiplication of Two Matrices
12. Write a C program that uses functions to perform the following operations:
    i. To insert a sub-string in to a given main string from a given position.
    ii. To delete n Characters from a given position in a given string.
13. Write a C program to determine if the given string is a palindrome or not
14. Write a C program that displays the position or index in the string S where the string T begins, or – 1 if S doesn't contain T.
15. Write a C program to count the lines, words and characters in a given text.
16. Write a C program to generate Pascal's triangle.
17. Write a C program to construct a pyramid of numbers.
18. Write a C program that uses functions to perform the following operations:
    i. Reading a complex number
    ii. Writing a complex number
    iii. Addition of two complex numbers
    iv. Multiplication of two complex numbers

(Note: represent complex number using a structure.)

19. i. Write a C program which copies one file to another.
    ii. Write a C program to reverse the first n characters in a file.

(Note: The file name and n are specified on the command line.)

20. i. Write a C program to display the contents of a file.
    ii. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file)

21. Write a C program that uses functions to perform the following operations on singly linked list.:
    i) Creation ii) Insertion iii) Deletion iv) Traversal
22. Write C programs that implement stack (its operations) using
    i) Arrays ii) Pointers
23. Write C programs that implement Queue (its operations) using
    i) Arrays ii) Pointers
24. Write a C program that implements the following sorting methods to sort a given list of integers in ascending order i) Bubble sort ii) Selection sort iii)Insertion sort
25. Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
    i) Linear search ii) Binary search

TEXT BOOKS:

1. C Programming & Data Structures, B.A. Forouzan and R. F. Gilberg, Third Edition, Cengage Learning.
2. Let us C, YeswanthKanitkar
3. C Programming, Balaguruswamy.