

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
LINEAR ALGEBRA AND SINGLE VARIABLE CALCULUS

Course Code: GR17A1001

L:2 T:1 P:0 C:3

Prerequisites: Vector algebra, Matrix algebra and Pre-calculus

Unit-I

Linear Algebra and Matrix eigen value problem: Rank of a matrix, Consistency of a system of linear equations - Pseudo inverse of a matrix - Condition number of a matrix - Approximate solution of an over determined system of linear equations using the pseudo inverse - Solution of a system of homogeneous linear equations.

Vector norms, Linear dependence of vectors, Gram-Schmidt orthogonalization of vectors, Matrix norms. Determination of eigen values and eigen vectors of a square matrix - Properties of eigen values and eigen vectors of real and complex matrices.

Unit-II

Matrix factorization and Quadratic Forms: Diagonalization of a matrix - Orthogonal diagonalization of symmetric matrices - Computation of matrix powers - Computation of Singular value decomposition - QR factorization.

Quadratic forms - Definiteness of a quadratic form - Rank, index and signature of a quadratic form - Reduction of a quadratic form into a canonical form by Lagrange's method and by an orthogonal transformation.

Unit-III

Differential Calculus of functions of a single variable: Mean value theorems (Rolle's, Lagrange's, Cauchy's, Taylor's and Maclaurin's theorems Geometrical Interpretation without proof) - Approximation of functions by Taylor's and Maclaurin's theorems - Series expansion of functions.

Unit-IV

Linear differential equations of the first order and their applications: Formation of ODE - Methods to solve first order LDE (exact, reducible to exact, linear and Bernoulli equations). Applications - Growth and decay models - Newton's law of cooling - Applications to electrical circuits (LR and RC circuits) - Geometrical applications - Orthogonal trajectories.

Unit-V

Linear differential equations of the higher order and applications: Equations with constant coefficients - Particular integrals for functions of the type e^{ax} , x^n , $\sin ax$, $\cos ax$, $e^{ax} \cdot V(x)$ Exponential shift - Method of variation of parameters.

Applications - Deflection of beams, Simple harmonic motion (simple pendulum, spring-mass systems) and RLC circuits.

Text Books

1. Advanced Engineering Mathematics: R.K.Jain and S.R.K.Iyengar- Narosa Publishing House
2. Advanced Engineering Mathematics: Erwin Kreyszig, Wiley.
3. Higher Engineering Mathematics: B.S.Grewal-Khanna Publications.

References Books

1. Introduction to Linear Algebra-Gilbert Strang
2. Schaum's outline series on Linear Algebra
3. GRIET reference manual

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ADVANCED CALCULUS

Course Code: GR17A1002

L:2 T:1 P:0 C:3

Prerequisites: Analytical 2-D and 3-D geometry, differential and integral calculus

Unit-I

Differential Calculus of functions of several variables and Function Optimization: Partial differentiation - Hessian matrix-Total differentiation-Jacobians. Optimization of functions of several variables without constraints- Constrained optimization of functions of several variables with equality constraints-The Lagrange's multiplier method.

Unit-II

Curve tracing principles and Applications of integration: Preliminary treatment of curve tracing Cartesian, polar and parametric curves -Applications of the definite integral to evaluate arc lengths, surface areas and volumes generated by revolution of plane area.

Unit-III

Multiple integrals and applications: Evaluation of Double integrals in Cartesian and polar coordinates- Changing the order of integration- Change of variables - Evaluation of triple integrals in Cartesian, cylindrical and spherical coordinates. Application of multiple integrals to evaluate plane areas and volumes of solids.

Unit-IV

Vector Calculus: Vector differentiation in Cartesian coordinates-Gradient, Divergence and Curl and their physical interpretation-Directional derivatives-Angle between surfaces, Vector Identities, Irrotational fields and scalar potentials. Vector integration-Evaluation of line integrals-Work done by conservative fields-Surface integrals.

Unit-V

Vector Field theorems: Green's theorem in the Plane-Divergence theorem of Gauss-Stoke's theorem (Without Proofs).

Text Books

1. Advanced Engineering Mathematics: R.K.Jain and S.R.K.IyengarNarosa Publishing House
2. Schaum's outline series on Vector Analysis
3. Higher Engineering Mathematics: B.S.Grewal-Khanna Publications

Reference Books

1. Advanced Engineering Mathematics: Erwin Kreyszig-Wiley
2. Calculus and Analytical Geometry-Thomas & Finney-Narosa
3. GRIET Reference Manual

**GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ENGINEERING PHYSICS**

Course Code: GR17A1007

L:2 T:1 P:0 C:3

Prerequisites: Fundamentals in Physics and Mathematics.

Unit-I

Crystal Structures: Lattice points, Space lattice, Basis, Bravais lattice, unit cell and lattice parameters, Seven Crystal Systems with 14 Bravais lattices, Atomic Radius, Co-ordination Number and Packing Factor of SC, BCC, FCC, Miller Indices, Inter planar spacing of Cubic crystal system.

Defects in Crystals: Classification of defects, Point Defects: Vacancies, Substitution, Interstitial, Concentration of Vacancies, Frenkel and Schottky Defects, Edge and Screw Dislocations (Qualitative treatment), Burger's Vector.

Principles of Quantum Mechanics: Waves and Particles, de Broglie Hypothesis, Matter Waves, Davisson and Germer's Experiment, Heisenberg's Uncertainty Principle, Schrodinger's Time Independent Wave Equation-Physical Significance of the wave Function-Particle in One Dimensional Potential Box.

Unit-II

Electron Theory of Metals: Classical free electron theory, Derivation of Ohm's law, Mean free path, Relaxation time and Drift velocity, Failures of Classical free electron theory, Quantum free electron theory, Fermi-Dirac distribution, Fermi energy, Failures of Quantum free electron theory.

Band Theory of Solids: Electron in a periodic potential, Bloch Theorem, Kronig-Penny Model (Qualitative Treatment), origin of Energy Band Formation in Solids, Classification of Materials into Conductors, Semi Conductors & Insulators, Effective mass of an Electron.

Semiconductor Physics: Intrinsic Semiconductors and Carrier Concentration, Extrinsic Semiconductors and Carrier Concentration, Fermi Level in Intrinsic and Extrinsic Semiconductors, Hall Effect and Applications.

Unit-III

Dielectric Properties: Electric Dipole, Dipole Moment, Dielectric Constant, Polarizability, Electric Susceptibility, Displacement Vector, Types of polarization: Electronic, Ionic and Orientation Polarizations and Calculation of Polarizabilities (Electronic & Ionic) - Internal Fields in Solids, Clausius - Mosotti Equation, Piezo-electricity and Ferro- electricity.

Magnetic Properties: Magnetic Permeability, Magnetic Field Intensity, Magnetic Field Induction, Intensity of Magnetization, Magnetic Susceptibility, Origin of Magnetic Moment, Bohr Magnetron, Classification of Dia, Para and Ferro Magnetic Materials on the basis of Magnetic Moment, Hysteresis Curve on the basis of Domain Theory of Ferro Magnetism, Soft and Hard Magnetic Materials, Ferrites and their Applications.

Unit-IV

Lasers: Characteristics of Lasers, Spontaneous and Stimulated Emission of Radiation, Meta-stable State, Population Inversion, Einstein's Coefficients and Relation between them, Ruby Laser, Helium-Neon Laser, Semiconductor Diode Laser, Applications of Lasers.

Fiber Optics: Structure and Principle of Optical Fiber, Acceptance Angle, Numerical Aperture, Types of Optical Fibers (SMSI, MMSI, MMGI), Attenuation in Optical Fibers, Applications of Optical Fibers, Optical fiber Communication Link with block diagram.

Unit-V

Nanotechnology: Origin of Nanotechnology, Nano Scale, Surface to Volume Ratio, Bottom-up Fabrication: Sol-gel Process; Top-down Fabrication: Chemical Vapor Deposition, Physical, Chemical and Optical properties of Nano materials, Characterization (SEM, EDAX), Applications.

Text Books

1. **Engineering Physics:** P.K.Palanisamy, Scitech Publishers.
2. **Engineering Physics:** S.O.Pillai, New age International.
3. **Applied Physics:** T.BhimaSankaram,GPrasad,BS Publications

Reference Books

1. **Solid State Physics:** Charles Kittel, Wiley & Sons (Asia) Pte Ltd.
2. **Fundamentals of physics:** Halliday, Resnick, Walker.
3. **Optical Electronics:** A.J Ghatak and K.Thyagarajan, Cambridge University Press.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
COMPUTER PROGRAMMING

Course Code: GR17A1009

L:2 T:1 P:0 C:3

Prerequisites: Knowledge of Mathematics required

Unit-I

Introduction to Computers: Computer Hardware and Software, System Software, Programming Languages, Program Development steps, Algorithms, Flowcharts.

Introduction to C: History of C, Structure of C-Program, Keywords, Identifiers, Data types, Constants, Variables, Operators, Expressions, Precedence and order of evaluation, Type Conversion and Type Casting .

Unit-II

Managing I/O: Input-Output statements, Formatted I/O.

Decision making statements: if, if-else, if-else-if, nested if, switch

Iterative Statements: while, do- while, for.

Unconditional statements: break, continue, goto.

Unit-III

Arrays: Introduction, One-Dimensional arrays, Declaring and Initializing arrays, Multidimensional arrays

Strings: Introduction to Strings, String operations with and without using String Handling functions, Array of strings.

Unit-IV

Functions: Introduction, Function definition, Function declaration, Function Calls, Return values and their types, Categories of Functions, Nested Functions, Recursion, Storage Classes, Passing arrays to Functions.

Pointers: Pointers and addresses, Pointer expressions and Pointer arithmetic, Pointers and Functions, void pointer, Pointers and Arrays, Pointers and Strings, Array of pointers, Pointers to Pointers.

Dynamic memory allocation: malloc, calloc, realloc, free.

Unit-V

Structures: Basics of Structures, Nested Structures, Arrays of Structures, Arrays within Structures, Structures and Functions, Pointers and Structures, Self-referential Structures, Unions. **Files:** Introduction, Types of Files, File Access Functions, I/O on Files, Random Access to Files, Error Handling, Command Line Arguments.

Text Books

1. The C Programming Language, BRIAN W. KERNIGHAN Dennis M.Ritchie, Second Edition, PHI.
2. Computer Programming and Data structures by E Balaguruswamy, published by McGrawHill.
3. Programming in C, Ashok N Kamthane, 2nd edition, Pearson Publication.

Reference Books

1. Programming in C, PradipDey, Manas Ghosh, Second Edition, Oxford University Press.
2. Let Us C, YashwanthKanetkar, 10th Edition, BPB Publications.
3. C& Data structures, P.Padmanabham, B.S. Publications.
4. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
5. Programming with problem solving, J.A.Jones&K.Harrow, Dreamtech Press.
6. Programming in C, Stephen G.Kochan, III Edition, Pearson Education.
7. Problem solving and program design in C, Jeri. R. Hanly, Elliot B.Koffman, Pearson Publication.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
BASIC ELECTRICAL ENGINEERING

Course Code: GR17A1018

L:2 T:1 P:0 C:3

Unit-I

Basic Laws: Ohm's law , Kirchoff's voltage and current laws , Nodes-Branched and Loops ,Series elements and Voltage Division , Parallel elements and Current Division , Star-Delta transformation, Independent sources and Dependent sources , Source transformation.

Unit-II

AC Fundamentals-I: Review of Complex Algebra , Sinusoids , Phasors , Phasor Relations of Circuit elements , Impedance and Admittance , Impedance Combinations , Series and Parallel combination of Inductors and Capacitors, Mesh analysis and Nodal Analysis

Unit-III

AC Fundamentals-II: RMS and Average values, Form factor, Steady State Analysis of Series, Parallel and Series Parallel combinations of R, L,C with Sinusoidal excitation, Instantaneous power, Average power, Real power, Reactive power and Apparent power, concept of Power factor, Frequency.

Unit-IV

Resonance and Network Theorems: Resonance in Electric circuits: Analysis of Series and Parallel Resonance, Theorems: Superposition theorem, Thevenin's theorem, Norton's Theorem, Maximum Power Transfer Theorem, Reciprocity theorem.

Unit-V

Fundamentals Of Electrical Machines: Construction, Principle, Operation and Applications of –(i) DC Motor,(ii) Single phase Transformer (iii) Single phase Induction motor

Text Books

1. Fundamentals of Electric Circuits by Charles K.Alexander, Matthew N.O.Sadiku, Tata McGraw Hill Company.

Reference Books

1. Circuit Theory (Analysis and Synthesis) by A.Chakrabarti – Dhanpat Rai & Co
2. Basic Electrical Engineering by Nagasarkar, Oxford Publishers
3. Network Theory by Prof.B.N.Yoganarasimham.
4. Engineering Circuit Analysis by William H.Hayt.Jr, Jack E.Kemmerly and Steven
5. M.Durbin by Tata McGraw Hill Company.
6. Electrical Engineering Fundamentals by Vincent Deltoro
- 6.Circuit Theory by Sudhakar and ShyamMohan

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ENGLISH

Course Code: GR17A1005

L:2 T:1 P:0 C:3

Prerequisites: Familiarity with basic language and communication skills.

Unit-I

1. Chapter entitled Sir C.V. Raman: A Path breaker in the saga of Indian Science from “Enjoying Every day English”, Published by Sangam Books, Hyderabad.
2. Chapter Entitled Mother Teresa from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Tutorial-1: Present a small biographical sketch of an inspiring personality **Tutorial-2:** Prepare an essay on “Charity begins at home.”

Unit-II

Grammar & Vocabulary Development: Articles: Types of Articles and their usages; Tense and Aspect; Subject and Verb Agreement; Prepositions

Vocabulary Development: Synonyms and Antonyms; One-word substitutes; prefixes and Suffixes; words often confused; idioms and phrases.

Speaking & Writing skills: Information transfer: verbal to graphical presentation and from graphical presentation to verbal. Public Speaking: Body Language, Presentation Skills and its Features.

Tutorial-3: Worksheet on the usage of Tenses, Articles and Prepositions

Tutorial-4: Exercises on vocabulary

Tutorial-5: Interpretation of data from different formats

Unit-III

1. Chapter Entitled the Connoisseur from “Enjoying Every day English”, Published by Sangam Books, Hyderabad
2. Chapter Entitled Sam Pitroda from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur.

Tutorial-5: Story Analysis

Tutorial-6: Present a person who bears risk taking ability to solve the problems of people/society

Tutorial-7: Describe a strange event that occurred in your life

Unit-IV

1. Chapter Entitled Bubbling Well Road from “Enjoying Every day English”, Published by Sangam Books, Hyderabad
2. Chapter Entitled Amartya Kumar Sen from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Tutorial-9: Oral Presentation on “Does the quality of Unity in Diversity help us to acquaint easily with the trends of globalization?”

Tutorial-10: Develop an essay “The ways to impart moral and ethical values amongst the students.”

Unit-V

1. Chapter entitled The Cuddalore Experience from “Enjoying Every day English”, Published by Sangam Books, Hyderabad
2. Chapter Entitled Martin Luther King Jr. (I have a dream) from “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

Tutorial-11: Presentation on “The possible ways to educate students about Disaster Management.”

Tutorial-12: Write or present “Is every present leader was a follower?”

Text Books

1. Enjoying Every day English by A. Rama Krishna Rao- Sangam Books
2. Inspiring Speeches and Lives by Dr.B.YadavaRaju, Dr.C.Muralikrishna, Maruthi Publications.

Reference Books

1. Murphy’s English Grammar with CD, Murphy, Cambridge University Press.
2. Effective Technical Communication, M. Ashraf Bizi, Tata McGraw Hill.
3. Technical Communication, Meenakshi Ramani, Sarigeeta Sharma, Oxford Higher Education.
4. English for Engineers Made Easy, AedaAbidi, Ritu Chaudhry, Cengage Learning.
5. Communicate or Collapse, PushpLatha, Sanjay Kumar, PHI Learning Pvt.Ltd.
6. Communication Skills, Sanjay Kumar, PushpLatha, Oxford Higher Education.
7. A Hand Book for Engineers, Dr. P. Eliah, BS Publications

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ENGINEERING WORKSHOP

Course Code: GR17A1025

L:0 T:0 P:2 C:2

Prerequisites

Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability

Unit-I

Carpentry Shop – 1:

Introduction to various types of wood such as Teak, Mango, Sheesham, etc. (Demonstration and their identification).

Demonstration, function and use of commonly used hand tools. Care, maintenance of tools and safety measures to be observed. Job I Marking, sawing, planing and chiselling & their practice

Introduction to various types of wooden joints, their relative advantages and uses. Job II

Preparation of half lap joint Job III Preparation of Mortise and Tenon Joint

Safety precautions in carpentry shop.

Unit-II

Fitting Shop – 2:

Introduction to fitting shop tools, common materials used in fitting shop.

Description and demonstration of simple operation of hack-sawing, demonstration and description of various types of blades and their specifications, uses and method of fitting the blade.

Job I Marking of job, use of marking tools and measuring instruments.

Job II Filing a dimensioned rectangular or square piece of an accuracy of + 0.5 mm Job III

Filing practice (production of flat surfaces). Checking by straight edge.

Job IV Making a cutout from a square piece of MS Flat using hand hacksaw such as T-fit and V-fit

2.3. Care and maintenance of measuring tools like callipers, steel rule, try square.

Unit-III

House wiring – 3:

Study, demonstration and identification of common electrical materials such as wires, cables, switches, fuses, PVC Conduits.

Study of electrical safety measures and demonstration about use of protective devices such

as fuses, and relays including earthing. Job I Identification of phase, neutral and earth of domestic appliances and their connection to two pin/three pin plugs.

Job II Preparation of a house wiring circuit on wooden board using fuse, switches, socket, holder, ceiling rose etc. in PVC conduit and PVC casing and capping wiring system.

Job III Two lamps in series and parallel connection with one way switch

Job IV Two lamps in series and one lamp in parallel connection with one way switch.

Job V Stair case lamp connection with two way switch.

Unit-IV

Tin-smithy – 4:

Introduction to tin-smithy shop, use of hand tools and accessories e.g. different types of hammers, hard and soft mallet, sheet and wire gauge, necessary allowance required during job fabrication, selection of material and specifications.

Introduction and demonstration of hand tools used in tin-smithy shop.

Introduction and demonstration of various raw materials used in sheet metal shop e.g. M.S. sheet,galvanized-iron plain sheet, galvanised corrugated sheet, aluminium sheets etc.
corrugated sheet, aluminium sheets etc.
corrugated sheet, aluminium sheets etc.
4.4. Preparation of a rectangle tray and open scoop/ funnel.

Reference Books

1. Workshop Technology I,II,III, by S K Hajra, Choudhary and A K Chaoudhary. Media Promoters and Publishers Pvt. Ltd., Bombay
2. Workshop Technology by Manchanda Vol. I,II,III India Publishing House, Jalandhar.
3. Manual on Workshop Practice by K Venkata Reddy, KL Narayanaet. al; MacMillan India Ltd.
4. Basic Workshop Practice Manual by T Jeyapoovan; Vikas Publishing House (P) Ltd.,New Delhi
5. Workshop Technology by B.S. Raghuwanshi, DhanpatRai and Co., New Delhi.
6. Workshop Technology by HS Bawa, Tata McGraw Hill Publishers, New Delhi.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
ENGINEERING PHYSICS LAB

Course Code: GR17A1029

L:0 T:0 P:2 C:2

Prerequisites: Fundamentals of Physics and Mathematics.

List of Experiments:

Task1:Determine the energy gap of a given semiconductor.

2.Calculate the energy loss in a given Ferro magnetic material by plotting B-H curve.

3.Calculate the Numerical Aperture of a given optical fiber.

4.Determine the Dielectric constant and Curie temperature of PZT material.

5.Calculate the Acceptance angle of a given optical fiber.

6.Draw V-I & L-I Characteristics of LASER diode.

7.Determine the bending losses in a given optical fibers.

8:Determine the Air-gap losses in a given optical fibers.

9:Determine the Hall Coefficient in Ge semiconductor by using Hall Experimental setup.

10:Determine the carrier concentration, mobility of charge carrier in Ge semiconductor.

11:Measure Ac voltage and frequency through CRO.

12:Measure Resistance and Capacitance by using digital multimeter.

13:Diffraction Grating.

GOKARAJU RANGARAJU
INSTITUTE OF ENGINEERING AND TECHNOLOGY
COMPUTER PROGRAMMING LAB

Course Code: GR17A1027

L:0 T:0 P:2 C:2

Prerequisite: Basic operations of computer and knowledge of mathematics

Task- I

1. The heights of three students are 165, 148, 154 cm. respectively. Write a C program to sort the heights of the students in descending order.
2. Write a C program to find the roots of a quadratic equation using if-else.
3. The program should request the user to input two numbers and display one of the following as per the desire of user.
 - a. Sum of numbers
 - b. Difference of numbers
 - c. Product of the numbers
 - d. Division of the numbers.
4. Write a C program using switch statement to accomplish the above task.
5. In a mathematical number sequence let the first and second term in the Sequence are 0 and 1. Subsequent terms are formed by adding the preceding terms in the sequence. Write a C program to generate the first 10 terms of the sequence.

Task-II

1. Write a C program to construct pyramid of numbers.
2. The reliability of an electronic component is given by reliability $r=e^{-\lambda t}$ where λ is the component failure rate per hour and t is the time of operation in hours. Determine the reliability at various operating times from 0 to 3000 hours by plotting a graph using a C program. The failure rate λ is 0.001. Plot the graph with a special symbol.
3. Write a C program to accept the date of birth and the current date to find the age of the person . The output should specify the age of a person in terms of number of years, months and days.

Task - III

1. Write a C program to calculate the following Sum: $\text{Sum}=1-x^2/2!+x^4/4!-x^6/6!+x^8/8!-x^{10}/10!$
2. For a certain electrical circuit with an induction (L) and Resistance (R) , the damped natural frequency is given by $f=\sqrt{(1/LC - R^2/ 4C^2)}$. Write a C program to calculate the frequency for different values of C starting from 0.01 to 0.1.
3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Task - IV

1. Write a C program to find both the largest and smallest number in a list of integers.
2. Write a C Program to search whether a given number is present in set of integers
3. Write a C Program to sort a given list of integers.

Task - V

1. Write a C program to count the lines, words and characters in a given text.
2. Write a C program to sort the names of 5 students in the alphabetical order.
3. Ex: Rita, Sneha, Priti, Briya, kitti as Briya , Kitti, Priti, Rita, Sneha c) Write a C program to print all the rotations of a given string.

4. Ex: Rotations of the string "NEWS" are NEWS EWSNWSNESNEW

Task - VI

1. Write a C program to perform the following operations:
 - a. To insert a sub-string in a given main string at a given position.
 - b. To delete n Characters from a given position in a given string.
2. Write a C program to determine if the given string is a palindrome or not?

Task - VII

1. Write a C program that uses functions to perform the following:
 - a. Transpose of a matrix
 - b. Addition of Two Matrices
 - c. Multiplication of Two Matrices

Task - VIII

1. Write C programs that use both recursive and non-recursive functions
 - a. To find the factorial of a given integer.
 - b. To print the Fibonacci sequence
 - c. To find the GCD (greatest common divisor) of two given integers.

Task- IX

1. Using pointers, write a function that receives a character string and a character as argument and deletes all occurrences of this character in the string.
2. Write a function using pointer parameter that compares two integer arrays to see whether they are identical. The function returns 1 if they are identical, 0 otherwise.

Task -X

1. Write a C program that uses functions to perform the following operations on two complex numbers
 - a) Addition
 - b) Subtraction
 - c) Multiplication
 - d) Division(Note: represent complex number using a structure.)

Task-XI

1. Write a c program which accepts employee details like (outer structure : name, employid, salary and (inner structure : area, street number, houseno)). Display the employee names and id belonging to a particular area.
2. Let us suppose that a hotel consists of name, address, average room charge and number of rooms. Then write a function to print out hotels with room charges less than a given value.(structures and functions)

Task - XII

1. Write a C Program to display the contents of a file.
2. Write a C Program for merging of two files into a single file.
3. Write a C Program to append data into a file.

Task - XIII

1. Write a C program which copies one file to another.
2. 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.)

Task-XIV

1. Write a C program to develop Tic Tac Toe game
2. Write a C program to solve Towers of Hanoi

Text Books

1. Programming in C, Ashok N Kamthane, 2nd edition, Pearson Publication.
2. The C Programming Language, BRIANW. KERNIGHAN Dennis M. Ritchie, Second Edition, PHI.
3. Computer Programming and Data structures by E Balaguruswamy, published by Mc GrawHill.

Reference Books

1. Programming in C, PradipDey, Manas Ghosh, Second Edition, Oxford University Press.
2. Let Us C, YashwanthKanetkar, 10th Edition, BPB Publications.
3. C& Data structures, P.Padmanabham, B.S. Publications.
4. Computer science, A structured programming approach using C, B.A. Forouzan and R.F. Gilberg, Third edition, Thomson.
5. Programming with problem solving, J.A.Jones&K.Harrow, Dreamtech Press.
6. Programming in C, Stephen G.Kochan, III Edition, Pearson Education.
7. Problem solving and program design in C, Jeri. R. Hanly, Elliot B. Koffman, Pearson Pu