COLLEGE OF ENGINEERING
(AUTONOMOUS)

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING

(AUTONOMOUS)

MADHURAWADA, VISAKHAPATNAM-530048
AFFILIATED TO JNTU KAKINADA

INFORMATION TECHNOLOGY

SYLLABI FOR B.TECH. (III, IV SEMESTERS) UNDER AUTONOMOUS STATUS FOR 2009 ADMITTED, 2010 LATERAL ENTRY BATCHES

ALL BRANCHES ARE ACCREDITED BY **NBA** OF AICTE
ACCREDITED BY **NAAC** WITH **'A'** GRADE WITH A **CGPA** OF **3.47**/4.00

Meeting of the Joint Board of Studies held on 11th April 2010

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING

(AUTONOMOUS)

MADHURAWADA , VISAKHAPATNAM-530048

AFFILIATED TO JNTU KAKINADA

COLLEGE OF ENGINEERING
(AUTONOMOUS)

SYLLABI FOR B.TECH. (III, IV SEMESTERS)
UNDER AUTONOMOUS STATUS
FOR 2009 ADMITTED,
2010 LATERAL ENTRY BATCHES

ALL BRANCHES ARE ACCREDITED BY **NBA** OF AICTE

ACCREDITED BY **NAAC** WITH **'A'** GRADE WITH A **CGPA** OF **3.47**/4.00

Vision

To evolve into and sustain as a Centre of Excellence in Technological Education and Research with a holistic approach.

Mission

To produce high quality engineering graduates with the requisite theoretical and practical knowledge and social awareness to be able to contribute effectively to the progress of the society through their chosen field of endeavour.

To undertake Research & Development, and extension activities in the fields of Science and Engineering in areas of relevance for immediate application as well as for strengthening or establishing fundamental knowledge.

FOREWARD

The G.V.P. College of Engineering has started its new life as an autonomous College with great responsibility and confidence one year ago. It has become now a torch bearer for other sister institutions because of its success story in running an autonomous system for the last one year. People are inquisitive to know what has happened and how it has happened.

The functional mechanism has been explained to the faculty and students before the start. A mid-term review and an end-term review are conducted with students as well as faculty for their feed-back and corrective measures in both the semesters of first year. This helped us in eliminating some of the hitches and improving the rate of progression.

The course structure and syllabi for 1st and 2nd semesters have been reviewed for fine tuning in the second BOS meeting alongwith the syllabi for the 3rd and 4th semesters. The College expresses its thanks to all the members for their cooperation.

It must be said that the success is because of the acceptance of the main stakeholders, the students and their parents. The enthusiasm of the faculty cannot be understressed. Various learned academicians from outside, as paper setters and valuers have extended timely support through their positive response to become a part of the mechanism in the conduct of exams and bringing out the results quickly at the end of each semester. The college acknowledges their association and wishes to share its happiness with them.

Principal

AMENDMENTS TO B.TECH. REGULATIONS, REGULATIONS FOR LATERAL ENTRY STUDENTS

AMENDMENTS TO ACADEMIC REGULATIONS FOR EIGHT SEMESTER (4 YEAR) B.TECH. - 2009-10 ADMITTED BATCH

EXTERNAL EVALUATION:

If the difference between the first and second valuations is less than or equal to 15% of the maximum of the paper the better of the two valuations shall be awarded and if the difference between the first and second valuation is more than 15%, the chief examiner appointed has to discuss with the two valuers and have his own assessment of the script. The marks given by the chief examiner shall be final for award.

R.2.0 CLAUSE d (i):

EXISTING:

A student has to record a participation of minimum of 32 hours **per semester** in his/her chosen activity during the first year.

MODIFICATION:

A student has to record a participation of minimum of 32 hours in his/her chosen activity **during the first year.**

R.6.0-CLAUSE (iii):

EXISTING:

Incase of practical/drawing/project/seminar, a student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each of them if he or she secures not less than 50% of marks on the aggregate in the internal evaluation and external end-examination taken together.

MODIFICATION:

Incase of practical/drawing/project/seminar, a student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each of them **if the student secures a minimum of 50% in the end examination** and not less than 50% of marks

on the aggregate in the internal evaluation and external end-examination taken together.

R.9.0 CLASS/DIVISION:

EXISTING:

70% and above	: First class with distinction.
60% and above, but less than 70%	: First class.
50%and above, but less than 60%	: Second class.
Less than 50%	**: Fail**.

A candidate shall get an aggregate of 50% overall at the end of VIII semester while fulfilling a minimum of 216 credits for the award of B.Tech. degree. The best 216 out of 224 credits shall be considered for the award of class/division.

MODIFICATION:

70% and above	: First class with distinction.
60% and above, but less than 70%	: First class.
50%and above, but less than 60%	: Second class.
40% and above, but less than 50%	**: Pass class**.
Less than 40%	**: Fail**

A candidate shall get an aggregate of 40% overall at the end of VIII semester while

Fulfilling a minimum of 216 credits for the award of B.Tech. degree. The best 216 out of 224 credits shall be considered for the award of class/division.

REGULATIONS FOR B.TECH. (LATERAL ENTRY) STUDENTS ADMITTED INTO III SEMESTER (II YEAR) (UNDER AUTONOMOUS STREAM)

RL 1.0

1.1 The selection and admission process shall be as per Government of Andhra Pradesh rules through ECET.

1.2 A student admitted to B.Tech. through lateral entry scheme joins the College in the III Semester of the respective 8-Semester program. The duration of the programme is 3 years / 6 semesters. However, if a student can not complete within 3 years, he can do so by taking more time but not more than consecutive 6 years / 12 semesters.

RL 2.0 These students are exempted from social work.

RL 3.0 The attendance requirements shall be same as those admitted into four year B.Tech programme, I- Semester (Autonomous stream).

RL 4.0 Minimum Academic Requirements :

i) A student shall be promoted to the VII Semester only after securing 56 credits in III and IV semester courses from the examinations including supplementary examinations in these subjects held till the end of VI semester of study.

ii) A student shall register and put up minimum required attendance in all the 172 credits counted from the regular course structure of VIII semester B.Tech programme and earn at least 164 credits prescribed as compulsory to be qualified for the award of B.Tech. degree. Marks out of the best 164 credits shall be considered for the award of class /division.

RL 5.0 All other regulations are same as those applicable to the students admitted into B.Tech I-Semester under Autonomous stream.

RL 6.0 Subjects are identified as exempted / mandatory / pre-requisites. A student has to attend classes in subjects prescribed as mandatory/ pre-requisites and has to earn the credits in the examinations as and when conducted. The evaluation for the above courses may be totally internal.

TRANSITORY REGULATIONS FOR STUDENTS RE-ADMITTED INTO II - YEAR OF AUTONOMOUS STREAM FROM PREVIOUS REGULATIONS

1. The student has to attend classes in the subjects declared as prerequisites before joining into II year (III or IV semester) under autonomous stream offered in the preceding summer and has to earn the credits in the examinations as and when conducted.
2. For subjects which are not prerequisites but declared as compulsory, the instruction may be taken during the following summer programmes or as and when they are offered and shall earn the credits in the examinations as and when conducted.
3. The re-admitted students have to appear and pass the I year / II Year I semester (in case of readmission into II semester) subjects by appearing for the examinations as and when conducted by JNT University Kakinada in the failed subjects.
4. **Promotion to V semester:**

   For a readmitted student to get promoted to V semester (III year) he has to earn 52 credits out of 56 credits in the I year courses from both regular and supplementary examinations, conducted by JNT University-Kakinada.
5. **Promotion to VII semester:**

   For a re-admitted student to get promoted to VII semester (IV year) the following criteria must be satisfied

   I. He shall acquire all the 56 credits of the I year courses.

   II. He shall acquire at least 104 credits from the courses up to the end of II year excluding prerequisites (Including the supplementary examinations) and secure

a pass in prerequisite courses offered during the transition from previous regulations to autonomous regulations.

6. The student seeking readmission into II year shall abide by all other relevant regulations in force under the autonomous stream in addition to the above and shall secure a pass in prerequisite and compulsory courses.

7. For the award of the degree, the student shall acquire 216 credits excluding prerequisite and compulsory subjects.

REGULATIONS FOR THE SUMMER PROGRAMME

In addition to the rules and regulations given in R 7.0 of the B.Tech regulations and syllabus book the following rules are to be followed.

1. It is desirable for a candidate to put up 100% attendance in all the subjects registered for the summer course. However 25% concession in attendance may be permitted at the discretion of the principal based on the merits of the individual case under extraneous conditions with proper evidence. No further condonation of attendance on par with the regular semester shall be permitted.
2. If a candidate is failed to satisfy the attendance requirement in a course registered during summer then he has to repeat the course in the subsequent summer programme when offered next.
3. The method of internal evaluation is same as for the regular B.Tech programme. I mid examination shall be completed by the end of IV weeks and II mid to be completed by the end of VIII weeks of the programme.
4. The earlier internal marks secured in the regular semester for the subjects registered in the summer programme are nullified and internal marks from the latest summer programme shall be final.
5. The end semester examinations for the summer programme shall be conducted on the immediately following Saturdays and / or Sundays as the need arises
6. Attendance and completion of subjects during the summer programme shall be suitably reflected in the consolidated marks memo.

SYLLABI FOR III & IV SEMESTERS

DISCRETE MATHEMATICAL STRUCTURES
(Common to CSE & IT)

Course Code: ABM1106

L	T	P	C
4	1	0	4

Aim:

To acquire basic knowledge in some concepts of discrete mathematical structures.

Objective:

The student shall be able to learn logical thinking and be able to apply enumerating techniques. The student shall be able to use graph theoritic techniques.

UNIT- I

MATHEMATICAL LOGIC-I: Statements and notations, connectives, Well formed formulas, tautologies, equivalence of formulas, Duality law, Tautological Implications, other connectives, Normal forms, Rules of inference, consistency of premises and Indirect method of proof. (1-1, 1-2.1 to 1-2.4, 1-2.7 to 1-2.11, 1-2.14, 1-3.1 to 1-3.4, 1-4.2, 1-4.3 of [1])

UNIT- II

MATHEMATICAL LOGIC-II: Predicates, the statement function, variables and quantifiers, predicate formula, free and bound variables, universe of discourse, inference theory of the predicate calculus, Automatic theorem proving.

(1-5.1 to 1-5.4, 1-6.1, 1-6.3, 1-6.4, 1-4.4 of [1])

UNIT- III

RELATIONS: Relations, properties of binary relations in a set, Relation matrix and Graph of a relation, partition and covering of a set, equivalence relations, partial ordering, partially ordered set, lattices, Definition and examples, properties of lattices. (2-3.1 to 2-3.5, 2-3.8, 2-3.9, 4-1.1, 4-1.2of [1])

UNIT- IV

ALGEBRAIC STRUCTURES

Algebraic systems Definition and examples, Semi groups and monoids: Definitions and examples, Homomorphism of Semi groups and Monoids, Groups: Definitions, and examples, Subgroups and Homomorphisms, (3-1.1, 3-2.1, 3-2.2, 3-5.1, 3-5.2 of [1])

UNIT- V

COMBINATORICS-I: Basics of counting, Combinations and permutations, Enumeration of Combinations and permutations , Enumerating Combinations and permutations with repetitions, Enumerating permutations with constrained repetitions, Binomial coefficients, The binomial and Multinomial theorems, The principle of inclusion-exclusion (2.1-2.8 of [2])

UNIT- VI

COMBINATORICS-II: Generating Functions of sequences, Calculating coefficients of generating functions, Recurrence relations, Solving Recurrence relations by substitution and generating functions, the method of characteristic roots, (3.1-3.5 of [2])

UNIT- VII

GRAPH THEORY I: Basic concepts, Isomorphism and Subgraphs, Trees and their properties, spanning trees. (5.1-5.4 of [2])

UNIT- VIII

GRAPH THEORY II: Directed Trees, Binary Trees, Planar graphs, Euler's formula, Multigraphs and Euler Circuits, (5.5-5.9 of [2])

Text Books:

[1] "Discrete Mathematical Structures with Applications to Computer Science", J.P Tremblay R.Manohar, Tata McGraw-Hill Publishing Company Limited, 1997

[2] "Discrete Mathematics for Computer Scientists & Mathematicians", J.L. Mott, A. Kandel, T.P. Baker, Prentice Hall of India Pvt Limited, New Delhi Second Edition.

Reference Book:

"Discrete Mathematics of Computer Science" Kenneth Bogart, Clifford Stein and Robert L. Drysdale, Springer International Edition, 2006.

COMPUTER ORGANIZATION

(Common to ECE, CSE, IT)

Course Code: ACT1104	**L**	**T**	**P**	**C**
	4	**1**	**0**	**4**

Aim:

To give detailed information about the structure of computers and internal organization of different units regarding memory I/O devices registers.

Objective:

Student will get an idea about the internal organization of the computer system and its internal operations.

UNIT-I

BASIC STRUCTURE OF COMPUTERS: Computer Types, Functional unit, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers, Multicore processors, Data Representation. Fixed Point Representation & Arithmetic, Error Detection codes.

UNIT-II

REGISTER TRANSFER LANGUAGE AND MICRO OPERATIONS: Register Transfer language, Register Transfer Bus and memory transfers, Arithmetic Micro-operations, logic micro operations, shift micro operations, Arithmetic logic shift unit. Instruction codes. Computer Registers Computer instructions – Instruction cycle.

Memory – Reference Instructions. Input – Output and Interrupt. STACK organization. Instruction formats. Addressing modes. DATA Transfer and manipulation. Program control. Reduced Instruction set computer.

UNIT-III

MICRO PROGRAMMED CONTROL: Control memory, Address sequencing, microprogram example, design of control unit Hard wired control. Microprogrammed control

UNIT-IV

COMPUTER ARITHMETIC: Addition and subtraction, multiplication Algorithms, Division Algorithms, Floating – Point Representation, Floating – point Arithmetic operations, Decimal Arithmetic unit Decimal Arithmetic operations.

UNIT-V

THE MEMORY SYSTEM: Basic concepts, semiconductor RAM memories, Read-only memories Cache memories performance considerations, Virtual memories secondary storage. Introduction to RAID, Hierarchical memory features.

UNIT-VI

INPUT-OUTPUT ORGANIZATION: Peripheral Devices, Input-Output Interface, Asynchronous data transfer Modes of Transfer, Priority Interrupt Direct memory Access, Input –Output Processor (IOP) Serial communication; Introduction to peripheral component, Interconnect (PCI) bus. Introduction to standard serial communication protocols like RS232, USB, IEEE1394.

UNIT-VII

PIPELINE AND VECTOR PROCESSING: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline Vector Processing, Array Processors.

UNIT-VIII

MULTI PROCESSORS: Characteristics or Multiprocessors, Interconnection Structures, Interprocessor Arbitration. InterProcessor Communication and Synchronization Cache Coherance. Shared Memory Multiprocessors.

Text Books:

1. Computer Organization – Carl Hamacher, Zvonks Vranesic, SafeaZaky, 5th Edition, McGraw Hill.
2. Computer Systems Architecture – M.Moris Mano, 3rd Edition, Pearson/PHI

References:

1. Computer Organization and Architecture – William Stallings 6th Edition, Pearson/PHI
2. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition PHI/Pearson
3. Fundamentals of Computer Organization and Design, - Sivaraama Dandamudi Springer Int. Edition.
4. Computer Architecture a quantitative approach, John L. Hennessy and David A. Patterson, 4th Edition Elsevier
5. Computer Architecture: Fundamentals and principles of Computer Design, Joseph D. Dumas II, BS Publication.
6. Computer Architecture and Organization - John P. Hayes, 3rd Edition, Tata McGraw hill.

DIGITAL LOGIC DESIGN

Course Code:AEC1142

L	T	P	C
4	0	0	4

Aim:

To provide necessary Digital fundamentals required for the construction of different circuits that required for computer science research and development.

Objective:

The student shall be able to deal with digital logic, counters, sequential circuits, combinational circuits etc.

UNIT – I

BINARY SYSTEMS: Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary Storage and Registers, Binary logic.

UNIT - II

BOOLEAN ALGEBRA AND LOGIC GATES: Basic Definitions, Axiomatic definition of Boolean Algebra, Basic theorems and properties of Boolean algebra, Boolean functions, canonical and standard forms, other logic operations, Digital logic gates, integrated circuits.

UNIT - III

GATE – LEVEL MINIMIZATION: The map method, Four-variable map, Five-Variable map, Product of sums simplification, Don't-care conditions, NAND and NOR implementation, other Two-level implementations, Exclusive – OR function.

UNIT - IV

COMBINATIONAL LOGIC: Combinational Circuits, Analysis procedure, Design procedure, Binary Adder-Subtractor, Decimal Adder, Binary multiplier, Magnitude comparator, Decoders, Encoders, Multiplexers.

UNIT - V

SYNCHRONOUS SEQUENTIAL LOGIC: Sequential circuits, latches, Flip-Flops, Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

UNIT - VI

Registers, shift Registers, Ripple counters, synchronous counters, Other counters.

UNIT - VII

Introduction, Random-Access Memory, Memory Decoding, Error Detection and correction, Read-only memory, Programmable logic Array, Programmable Array logic, Sequential Programmable Devices.

UNIT - VIII

Asynchronous Sequential Logic : Introduction, Analysis Procedure, Circuits with Latches, Design Procedure, Reduction of state and Flow Tables, Race-Free state Assignment Hazards, Design Example.

Text Books:

1 DIGITAL DESIGN – Third Edition, M.Morris Mano, Pearson Education/PHI.

2. FUNDAMENTALS OF LOGIC DESIGN, Roth, 5th Edition,Thomson.

References:

1. Digital Principles & Applications, 5th Edition, by Donald Leach, Albert Paul Malvino, TMH.

2. Switching and Finite Automata Theory by Zvi. Kohavi, Tata McGraw Hill

3. Switching and Logic Design, C.V.S. Rao, Pearson Education

4. Digital Principles and Design – Donald D.Givone, Tata McGraw Hill

5. Fundamentals of Digital Logic & Micro Computer Design, 5TH Edition, M. Rafiquzzaman John Wiley

ELECTRONIC DEVICES AND CIRCUITS

Course Code:AEC1143

L	T	P	C
4	1	0	4

Aim & Objective:

To introduce the basic design concepts of low frequency & high frequency amplifiers & oscillators circuits using various transmissions for different applications.

Unit – I

DIODE CHARACTERISTICS: Introduction to semiconductor materials, V-I Characteristics of diode, Zener Diode Characteristics, Zener Diode as Voltage Regulator, Tunnel diode, LED.

UNIT–II

RECTIFIERS AND FILTERS: Introduction, Half wave rectifier, Full wave rectifier , Advantages of full wave rectifier over Half Wave rectifier, Inductor filter, C- Filter, LC- Filter, ð- filter .

UNIT–III

TRANSISTOR CHARACTERISTICS: Construction, current components, input & output Characteristics of transistor in CB, CE, CC configurations, Relations between á,â,ã.

UNIT–IV

FET CHARACTERISTICS: Introduction, JFET Characteristics (qualitative and quantitative discussion), MOSFET Characteristics (Enhancement and depletion), V-I Characteristics of UJT .

UNIT-V

BIASING AND STABILITY: Introduction, need for biasing, criteria for fixing the operating point, thermal run away, thermal stability, stabilization techniques.

UNIT-VI

SMALL SIGNAL AMPLIFIERS: h-parameter representation of a transistor, Analysis of single stage transistor amplifier using h-parameters, comparison of transistor configurations in terms of A_V , A_I , R_i ,R_o.

UNIT-VII

NEGATIVE FEEDBACK AMPLIFIERS: Concept of feedback, classification of feedback amplifiers, general characteristics of negative feedback amplifiers, effect of negative feedback on input and output characteristics.

UNIT-VIII

OSCILLATORS: Introduction, condition for oscillations, RC Phase shift oscillator with Transistor, Wein bridge oscillator, Hartley and Collpits oscillators.

Text Books:

1. Integrated Electronics Millman Jacob , Halkias C Christos :Tata Mcgrawhill publications.
2. Electronic Devices And Circuits Theory : Boylestad.Robert, PHI publications.

Reference Books:

1. Electronic Devices And Circuits : Sanjeev Gupta, Dhanpat Rai publications.
2. Electronic Devices & Circuits Vol I: Lal Kishore, BSP publications.
3. Electronic Devices And Circuits, Bhaskarram Murthy, K.Raja Rajeswari.
4. Electronic Devices And Circuits : Raju GSN, IK International.

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Code: AHM 1101

L	T	P	C
4	1	0	4

Objective

To explain the basic principles of managerial economics, accounting practices and financial management techniques for effective business decision making and to promote entrepreneurial abilities among budding engineers

Outcome

To understand the economic environment and to give an idea on various accounting and financial management techniques for effective utilization of economic resources

UNIT-I

INTRODUCTION TO MANAGERIAL ECONOMICS: Definition, Nature and Scope of Managerial Economics, Demand Analysis, Demand Determinants, Law of Demand and its exceptions

UNIT-II

ELASTICITY OF DEMAND AND DEMAND FORECASTING: Definition, Types, Measurement and Significance of Elasticity of Demand

Demand Forecasting, Factors governing demand forecasting, Methods of demand forecasting (Survey method, Statistical method, Expert opinion method, Test marketing, Controlled experiment, Judgmental approach)

UNIT-III

THEORY OF PRODUCTION AND COST ANALYSIS: Production Function – Isoquants and Isocosts, Laws of returns, Internal and External Economies of Scale

COST ANALYSIS: Types of Costs, Break Even Analysis (BEA) –

Determination of Break Even Point (Simple numerical problems) – managerial significance and limitations of BEA

UNIT-IV

INTRODUCTION TO MARKETS: Market Structures: Types of competition, features of perfect competition, monopoly and monopolistic competition, price output determination in case of perfect competition and monopoly

UNIT-V

FORMS OF BUSINESS ORGANIZATIONS: Features of Business, Advantages, Limitations of Sole Proprietorship, Partnership and Joint Stock Company

UNIT-VI

INTRODUCTION TO FINANCIAL ACCOUNTING: **ACCOUNTING:** Principles, concepts, conventions, double entry book keeping, Journal, Ledger, Trial Balance, Trading Account, Profit and Loss Account and Balance Sheet with simple adjustments, international financial reporting standards (simple numerical problems)

UNIT-VII

FINANCIAL ANALYSIS THROUGH RATIOS: Introduction, Advantages and limitations, Computation, Analysis and Interpretation of Liquidity ratios, Activity ratios, Solvency ratios and Profitability ratios (simple numerical problems)

UNIT-VIII

BUDGETING AND CAPITAL BUDGETING: Introduction to Budgeting: Production budget, Flexible budget and Cash budget

Definition, nature and scope of capital budgeting, features of capital budgeting proposals, methods of capital budgeting: Traditional and discounted methods (simple numerical problems)

Text Books:

1. Aryasri : Managerial Economics and Financial Analysis, Tata McGraw Hill, 3/e,2009

2. Siddiqui and Siddiqui : Managerial Economics and Financial Analysis, New Age Publishers, 1/e, 2005

Reference Books:

1. R L Varshney and K L Maheswari: Managerial Economics, Sultan Chand & Sons
2. D Ragnunath Reddy & M V Narasimha Chary: Managerial Economics and Financial

Analysis, SciTech Publications

3. Dwivedi: Managerial Economics, Vikas Publishers
4. P K Sharma and Shashi K Gupta: Management Accounting, Kalyani Publishers
5. S P Jain and K L Narang: Financial Accounting, Kalyani Publishers
6. Bhattacharya: Management Accounting, Pearson Education
7. P L Mehta: Managerial Economics, Sultan Chand & Sons

DATA STRUCTURES USING C++

Course Code:ACT1105

L	T	P	C
4	1	0	4

Aim:

To deliver the programming Techniques which are advanced for solving the problems regarding memory locations and also object oriented features.

Objective:

Student can get the grip on advanced programming and gets the knowledge to solve the problems regarding large data structures like stack, queue and heap, and gets good grip on pointers.

UNIT-I

Different strategies for problem solving , need for OOP, overview of OOP principles –Encapsulation, inheritance, polymorphism .C++ Class Overview- Class Definition, Objects, Class Members, Access Control, Class Scope, Constructors and destructors, Inline functions, static class members, this pointer, friend functions, dynamic memory allocation and deallocation (new and delete).

UNIT-II

POLYMORPHISM AND INHERITANCE: Function Overloading, Operator Overloading, Generic Programming- Function and class templates, Inheritance basics, base and derived classes, inheritance types, base class access control, virtual base class, function overriding, runtime polymorphism using virtual functions, abstract classes.

UNIT-III

Streams, libraries and error handling-stream classes hierarchy, console I/O, formatted I/O,file streams and string streams, exception handling mechanism , standard template library.

UNIT-IV

Searching and sorting- linear and binary search methods, sorting-bubble sort, selection sort, insertion sort, quick sort, merge sort.

UNIT-V

Introduction to data structures, singly linked lists, doubly linked lists, circular list, representing stacks and queues in C++ using arrays and linked lists, infix to post fix conversion, postfix expression evaluation.

UNIT-VI

Trees-binary trees, terminology, representation, insertion, deletion, searching, traversals, Binary search trees, definition, ADT, implementation, operations-searching, insertion and deletion, Balanced search trees- AVL trees, definition, height of an AVL tree, representation, operations-insertion, deletion and searching.

UNIT-VII

Priority Queues – Definition, ADT, Realizing a Priority Queue using Heaps, Definition, insertion, Deletion, Application-Heap Sort, Leftist Trees.

UNIT-VIII

Graphs- terminology, representation, traversal(BFS and DFS) , minimal spanning trees, Kruskal's algorithm, prim's algorithm.

Text Books:

1. Data structures , algorithms and applications in C++, S.Sahni, 2nd edition, university Press(India) pvt ltd.
2. Data structures using C and C++, Langsam ,M. J. Augenstein, A. M. Tanenbaum , 2nd edition, PHI Education.

Reference Books:

1. Data structures and Algorithm analysis in C++, Mark Allen Weiss, Pearson Education, 2nd edition.
2. C++; The Computer Refernce, Herbert Schildt, 4th Edition, Tata McGrwaw Hill
3. OOP with ANSI & Turbo C++, Ashok N.Kamthane, PCA
4. Object Oriented Programming using C++ , Barkakali, PHI
5. Data Structures and Algorithms: Concepts, Techniques and applications, Vijayalakshmi Pai.A.G; Tata McGraw Hill Publications.

ANALOG & DIGITAL CIRCUITS LAB

Course Code:AEC1144	L	T	P	C
	0	0	3	2

Aim & Objective:

To design & implement various analog and digital electronic circuits such as amplifiers, oscillators, combinational and sequential circuits.

Part- A

1. PN Junction diode characteristics.
2. Zener Diode Characteristics.
3. Rectifiers without filters (Full wave & half wave).
4. Transistor CE characteristics.
5. FET Characteristics.
6. CE Amplifier.
7. FET Amplifier.
8. RC Phase shift oscillator.

Part –B

1. Study of Logic Gates using Discrete Components.
2. Half Adder and Full Adder.
3. Encoder and Decoder.
4. Multiplexer and Demultiplexer.
5. Study of Flip-flops.
6. Asynchronous Counter.
7. Synchronous Counter.
8. Registers.

Note : Any FIVE experiments from PART –A and FIVE experiments from Part- B are to be conducted.

DATA STRUCTURES LAB

Course Code:ACT1106

L	T	P	C
0	0	3	2

Aim:

Same as the Data Structures using C++, but student will be taught practically.

Objective:

gets the practical knowledge to solve the problem regarding memory locations practically so that the student will be benefitted in the usage of pointers.

1. 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
2. Write C++ programs that implement the following sorting methods to sort a given list of integers in ascending order:
   i) Bubble sort ii) Quick sort
3. Write C++ programs that implement the following sorting methods to sort a given list of integers in ascending order:
   i) Insertion sort ii) Merge sort.
4. Write C++ programs that implement stack (its operations) using
   i) Arrays ii) Singly linked list
5. Write C++ programs that implement Queue (its operations) using
   i) Arrays ii) Singly linked list
6. Write a C++ program to implement Circular queue
7. Write a C++ program that uses Stack operations to perform the following:
   i) Converting infix expression into postfix expression ii) Evaluating the postfix expression

8. Write a C++ program to perform the following operations on singly linked list to implement priority queue on student records.
   i) Creation ii) Insertion iii) Deletion iv) Traversal v)Reversal
9. Write a C++ program to perform the following operations on circular doubly linked list.
   i) Creation ii) Insertion iii) Deletion iv)Traversal in both ways
10. Write a C++ program to implement binary trees
    i) Creating a Binary Tree of integers ii) Insertion, searching iii) Traversing the above binary tree in preorder, inorder and postorder.
11. Write a C++ program to perform the following operations: i) Insert an element into a binary search tree. ii) Delete an element from a binary search tree. iii) Search for a key element in a binary search tree.
12. Write C++ programs for the implementation of bfs and dfs for a given graph.
13. Write C++ programs for the implementation of Prim's algorithm for shortest paths between every pair of nodes in the graph.
14. Write a C++ program to implement Kruskal's algorithm to generate a minimum cost spanning tree.

UNIX AND SHELL PROGRAMMING

Course Code:ACT1107

L	T	P	C
4	0	0	4

Aim:

An Introduction to UNIX Environment, through explanation of shell programming, as well as some system programming concepts.

Objective:

Student will get knowledge about unix environment. UNIX is the powerful O.S. which will be used on 90% of servers, hence while working in industry this knowledge should be helpful.

UNIT -I

INTRODUCTION TO UNIX: Architecture of Unix, Features of Unix , Unix Commands – PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip.

UNIT -II

UNIX UTILITIES: Introduction to unix file system, vi editor, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin.Text processing utilities and backup utilities , detailed commands to be covered are tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio

UNIT -III

INTRODUCTION TO SHELLS: Unix Session, Standard Streams, Redirection, Pipes, Tee Command, Command Execution, Command-Line Editing, Quotes, Command Substitution, Job Control, Aliases, Variables, Predefined Variables, Options, Shell/Environment Customization.

FILTERS: Filters and Pipes, Concatenating files, Display Beginning and End of files, Cut and Paste, Sorting, Translating Characters, Files with Duplicate Lines, Count characters, Words or Lines, Comparing Files.

UNIT -IV

GREP: Operation, grep Family, Searching for File Content.

SED: Scripts, Operation, Addresses, commands, Applications, grep and sed.

UNIT -V

AWK: Execution, Fields and Records, Scripts, Operations, Patterns, Actions, Associative Arrays, String Functions, String Functions, Mathematical Functions, User – Defined Functions, Using System commands in awk, Applications, awk and grep, sed and awk.

UNIT -VI

INTERACTIVE KORN SHELL: Korn Shell Features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, Options, Startup Scripts, Command History, Command Execution Process.

KORN SHELL PROGRAMMING: Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.

UNIT -VII

INTERACTIVE C SHELL: C shell features, Two Special Files, Variables, Output, Input, Exit Status of a Command, eval Command, Environmental Variables, On-Off Variables, Startup and Shutdown Scripts, Command History, Command Execution Scripts.

C SHELL PROGRAMMING: Basic Script concepts, Expressions, Decisions: Making Selections, Repetition, special Parameters and Variables, changing Positional Parameters, Argument Validation, Debugging Scripts, Script Examples.

UNIT -VIII

FILE MANAGEMENT: File Structures, System Calls for File Management – create, open, close, read, write, lseek, link, symlink, unlink, stat, fstat, lstat, chmod, chown, Directory API – opendir, readdir, closedir, mkdir, rmdir, umask.

Text Books:

1. Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg.Thomson
2. Your Unix the ultimate guide, Sumitabha Das, TMH. 2nd Edition.

References:

1. Unix for programmers and users, 3rd edition, Graham Glass, King Ables, Pearson Education.
2. Unix programming environment, Kernighan and Pike, PHI. / Pearson Education
3. The Complete Reference Unix, Rosen, Host, Klee, Farber, Rosinski, Second Edition, TMH.
4. Unix Shell programming by Yashwanth Kanitkar, 1st Edition, BPB Publisher.

OPERATING SYSTEMS

Course Code:ACT1108	L	T	P	C
	4	1	0	4

Aim:

Gives the idea about the CPU scheduling and memory scheduling and now they implemented using respective algorithms.

Objective:

Student may have the idea about resource sharing, multitasking, multiprocessing etc.

UNIT-I

Computer System and Operating System Overview: Overview of computer operating systems operating systems functions protection and security distributed systems special purpose systems operating systems structures and systems calls operating systems generation

UNIT-II

Process Management – Process concepts threads, scheduling-criteria algorithms, their evaluation,Thread scheduling, case studies UNIX, Linux, Windows

UNIT-III

CONCURRENCY: Process synchronization, the critical- section problem, Peterson's Solution, synchronizationHardware, semaphores, classic problems of synchronization, monitors, Synchronization examples, atomic ransactions. Case studies UNIX, Linux, Windows.

UNIT-IV

MEMORY MANAGEMENT: Swapping, contiguous memory allocation, paging, structure of the page table ,segmentation, virtual memory, demand paging, page-Replacement, algorithms, case studies UNIX, Linux,Windows

UNIT-V

Principles of deadlock – system model, deadlock characterization, deadlock prevention, detection and Avoidance, recovery form deadlock, I/O systems, Hardware, application interface, kernel I/O subsystem, Transforming I/O requests Hardware operation, STREAMS, performance.

UNIT-VI

File system Interface - the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection.

File System implementation- File system structure, file system implementation, directory implementation, directory implementation, allocation methods, free-space management, efficiency and performance, case studies. UNIX, Linux, Windows

UNIT-VII

Mass-storage structure overview of Mass-storage structure, Disk structure, disk attachment disk scheduling, swap-space management, RAID structure, stable-storage implementation, Tertiary storage structure.

UNIT-VIII

PROTECTION: Protection, Goals of Protection, Principles of Protection, Domain of protection Access Matrix, Implementation of Access Matrix, Access control, Revocation of Access Rights, Capability- Based systems, Language – Based Protection,

Security- The Security problem, program threats, system and network threats cryptography as a security tool, user authentication, implementing security defenses, firewalling to protect systems and networks, computer –security classifications, case studies UNIX, Linux, Windows

Text Books:

1. Operating System Concepts- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7th Edition, John Wiley.
2. Operating systems- A Concept based Approach- D.M.Dhamdhere, 2nd Edition, TMH

References:

1. Operating Systems' – Internal and Design Principles, Stallings, Fifth Edition–2005, Pearson education/PHI
2. Operating System A Design Approach-Crowley, TMH.
3. Modern Operating Systems, Andrew S Tanenbaum 2nd edition Pearson/PHI.

DATABASE MANAGEMENT SYSTEMS

Course Code:ACT1109

L	T	P	C
4	1	0	4

Aim:

To make the student confident in maintaining huge amount of data by creating tables, and accessing them.

Objective:

Student can get the capability of maintenance of huge amount of data along with reducing of redundancy in data.

UNIT-I

Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor

UNIT-II

History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT-III

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views. Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples

of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT-IV

Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT-V

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT-VI

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock – Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.

UNIT-VII

Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems.

UNIT-VIII

Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures –

Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning- Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

Text Books:

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.

References:

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education

OBJECT ORIENTED PROGRAMMING THROUGH JAVA

Course Code:ACT1110

L	T	P	C
4	1	0	4

Aim:

To make the student confident in object oriented programming and also in developing network, and multi threaded user interface programs.

Objective:

Student will get the capability of developing applications using GUI with the help of JAVA concepts.

UNIT-I

Object oriented thinking :- Need for oop paradigm, A way of viewing world – Agents, responsibility, messages, methods, classes and instances, class hierarchies (Inheritance), method binding, overriding and exceptions, summary of oop concepts, coping with complexity, abstraction mechanisms.

UNIT-II

Java Basics History of Java, Java buzzwords, data types, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, classes and objects – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT–III

Inheritance – Hierarchical abstractions, Base class object, subclass, subtype, substitutability, forms of inheritance- specialization, specification, construction, extension, limitation, combination, benefits of inheritance, costs of inheritance. Member access rules, super uses, using final with inheritance, polymorphism- method overriding, abstract classes.

UNIT-IV

PACKAGES AND INTERFACES: Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces,Exploring packages java .io (Character streams, Byte streams),Files, Directories, randomaccessfiles), java.util (collections (vectors, hashmap, treemap, lists, sets,), calendar, regex(pattern matching),date, scanner)

UNIT -V

EXCEPTION HANDLING AND MULTITHREADING: Concepts of exception handling, benefits of exception handling, Termination or resumptive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exception sub classes. Differences between multi threading and multitasking, thread life cycle, creating threads, synchronizing threads, daemon threads, thread groups.

UNIT -VI

EVENT HANDLING : Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes, inner classes.The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels – scrollpane, dialogs, menubar, graphics, layout manager – layout manager types – boarder, grid, flow, card and grib bag.

UNIT -VII

APPLETS: Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

SWING: Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

UNIT -VIII

NETWORKING: Basics of network programming, addresses, ports, sockets, simple client server program, multiple clients, Java .net package.

Text Books:

1. Java: the complete reference, 7th editon, Herbert schildt, TMH.
2. An Introduction to OOP, 3rd edition, T. Budd, pearson education.

References:

1. An Introduction to programming and OO design using Java, J.Nino and F.A. Hosch, John wiley & sons.
2. Introduction to Java programming 6th edition, Y. Daniel Liang, pearson education.
3. An introduction to Java programming and object oriented application development, R.A. Johnson-Thomson.
4. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, seventh Edition, Pearson Education.
5. Core Java 2, Vol 2, Advanced Features, Cay.S.Horstmann and Gary Cornell, Seventh Edition, Pearson Education.
6. Object Oriented Programming through Java, P. Radha Krishna, University Press.
7. Beginning in Java 2 SDK 1.4 edition, Iver Horton, Wrox publications.

DESIGN AND ANALYSIS OF ALGORITHMS

Course Code:ACT1116

L	T	P	C
4	1	0	4

UNIT -I

Introduction:

Algorithm, Psuedo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation-Big oh notation, Omega notation, Theta notation and Little oh notation,Probabilistic analysis, Amortized analysis.

UNIT -II

Disjoint Sets- disjoint set operations, union and find algorithms, spanning trees, connected components and biconnected components.

UNIT -III

DIVIDE AND CONQUER: General method , applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

UNIT -IV

GREEDY METHOD: General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

UNIT -V

DYNAMIC PROGRAMMING: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem,Travelling sales person problem, Reliability design.

UNIT -VI

BACKTRACKING: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

UNIT -VII

BRANCH AND BOUND: General method, applications - Travelling sales person problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

UNIT -VIII

NP-HARD AND NP-COMPLETE PROBLEMS: Basic concepts, non deterministic algorithms, NP - Hard and NPComplete classes, Cook's theorem.

Text Books:

1. Fundamentals of Computer Algorithms, Ellis Horowitz,Satraj Sahni and ajasekharam,Galgotia publications pvt. Ltd.
2. Algorithm Design: Foundations, Analysis and Internet examples, M.T.Goodrich and R.Tomassia,John wiley and sons.

References:

1. Introduction to Algorithms, secondedition, T.H.Cormen, C.E.Leiserson, R.L.Rivest and C.Stein, PHI Pvt. Ltd./ Pearson Education
2. Introduction to Design and Analysis of Algorithms A strategic approach, R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.
3. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson education.
4. Design and Analysis of algorithms, Aho, Ullman and Hopcroft,Pearson education.
5. Algorithms – Richard Johnson baugh and Marcus Schaefer, Pearson Education.

COMPUTER GRAPHICS

Course Code: ACT1113

L	T	P	C
4	0	0	4

UNIT -I

Introduction, Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices.

UNIT -II

OUTPUT PRIMITIVES : Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms.Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms

UNIT -III

2-D GEOMETRICAL TRANSFORMS : Translation, scaling, rotation, reflection and shear transformations, matrix geneous coordinates, composite transforms, transformations between coordinate systems.

UNIT -IV

2-D VIEWING : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm

UNIT -V

3-D OBJECT REPRESENTATION : Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon rendering methods.

UNIT -VI

3-D GEOMETRIC TRANSFORMATIONS : Translation, rotation, scaling, reflection and shear transformations, composite transformations.

3-D VIEWING: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping.

UNIT -VII

VISIBLE SURFACE DETECTION METHODS : Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods

UNIT -VIII

COMPUTER ANIMATION: Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

Text Books:

1. "Computer Graphics C version", Donald Hearn and M.Pauline Baker, Pearson Education.
2. "Computer Graphics Principles & practice", second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education.

References:

1. "Computer Graphics", second Edition, Donald Hearn and M.Pauline Baker, PHI/Pearson Education.
2. "Computer Graphics Second edition", Zhigand xiang, Roy Plastock, Schaum's outlines, Tata Mc- Graw hill edition.
3. Procedural elements for Computer Graphics, David F Rogers, Tata Mc Graw hill, 2nd edition.
4. "Principles of Interactive Computer Graphics", Neuman and Sproul, TMH.
5. Principles of Computer Graphics, Shalini Govil, Pai, 2005, Springer.
6. Computer Graphics, Steven Harrington, TMH

OPERATING SYSTEM LAB

Course Code: ACT1111

L	T	P	C
0	0	3	2

Aim:

To provide necessary operating system concepts like Disk scheduling paging, deadlock avoidance and concurrency techniques.

Objective:

To provide an understanding of the design aspects of operating system Recommended Systems/Software Requirements:

· Intel based desktop PC with minimum of 166 MHZ or faster processor with atleast 64 MB RAM and 100 MB free disk space

JDK kit

Part – A

1. Simulate the following unix commands:
   a) mv b) cp c) ls (Use system calls)
2. Simulate the following CPU scheduling algorithms
   a) Round Robin b) SJF c) FCFS d) Priority
3. Simulate all file allocation strategies
   a) Sequential b) Indexed c) Linked
4. Simulate Bankers Algorithm for Dead Lock Avoidance
5. Simulate Bankers Algorithm for Dead Lock Prevention
6. Simulate all page replacement algorithms
   a) FIFO b) LRU c) LFU

Part – B

1. (Using java.math class)
   a) Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a,b, c and use the quadratic formula. If the discriminant $b^2 - 4ac$ is negative, display a message stating that there are no real solutions.

b) The Fibonacci sequence is defined by the following rule:

The fist two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non recursive functions to print the nth value in the Fibonacci sequence.

2. a) Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that integer.

   b) Write a Java program to multiply two given matrices.

   c) Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (Use StringTokenizer class of java.util)

3. (Using java.lang.FileInputStream and FileOutputStream)

   a) Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type of file and the length of the file in bytes.

   b) Write a Java program that reads a file and displays the file on the screen, with a line number before each line.

   c) Write a Java program that displays the number of characters, lines and words in a text file.

4. Write a Java program that:

   a. Implements stack ADT.

   b. Converts infix expression into Postfix form

   c. Evaluates the postfix expression

5. (packages)

   Design a package to contain the class Student that contains data members such as name, roll number and another package contains the interface Sports which contains some sports information. Import these two packages in a package called Report which process both Student and Sport and give the report.

6. a) Write a java program to create an abstract class named Shape that contains an empty method named number OfSides( ).Provide three classes named Trapezoid, Triangle and Hexagon such that each one of the classes extends the class Shape. Each one of the classes contains only the method numberOfSides ( ) that shows the number of sides in the given geometrical figures.

   b) Write a Java program that checks whether a given string is a palindrome or not. Ex: MADAM is a palindrome.

   c) Write a Java program for sorting a given list of names in ascending order.

7. (Exception Handling and Multithreading)

   a. Write a program that reads two numbers from the user to perform integer division into Num1 and Num2 variables. The division of Num1 and Num2 is displayed if they are integers. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an ArithmeticException.

   b. Create a user defined exception.

   c. Write a Java program that correctly implements producer consumer problem using the concept of multithreading.

8. (Using java.awt.*)

   a. Write a java program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.

   b. Write a applet program that simulates a digital clock.

9. (Applets and EventHandling)

   a) Develop an applet that displays a simple message.

   b) Develop an applet that receives an integer in one text field, and computes its factorial Value and returns it in

another text field, when the button named “Compute” is clicked.

c) Write a Java program that works as a simple calculator. Use a grid layout to arrange buttons for the digits and for the +, -,*, % operations. Add a text field to display the result.

10. (Swings and Event Handling)

a) Suppose that a table named Table.txt is stored in a text file. The first line in the file is the header, and the remaining lines correspond to rows in the table. The elements are separated by commas. Write a java program to display the table using Jtable component.

b) Write a Java program for handling mouse events.

11. (Socket Programming)

Write a Java program that implements a simple client/server application. The client sends data to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The data sent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)

DATABASE MANAGEMENT SYSTEMS LAB

Course Code: ACT1112

L	T	P	C
0	0	3	2

Aim:

To teach the student logical database design and querying the database using SQL & PL/SQL.

Objective:

Student will get knowledge of creating and maintaining tables of a database using SQL, handling all types of Queries, and writing all kinds of programming scripts in PL/SQL, transaction managements, creation of stored procedures, functions, cursors & triggers.

Recommended Systems/Software Requirements:

- Intel based desktop PC
- Mysql /Oracle latest version Recommended

1) Creation, altering and droping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2) Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints.

   Example:- Select the roll number and name of the student who secured fourth rank in the class.
3) Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4) Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)
5) i) Creation of simple PL/SQL program which includes declaration section, executable section and exception

–Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)

ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.

6) Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions.

7) Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE-APPLICATION ERROR.

8) Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES.

9) Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions.

10) Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.

11) Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.

12) Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Text Books:

1) ORACLE PL/SQL by example. Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Edition

2) ORACLE DATA BASE LOG PL/SQL Programming SCOTT URMAN, Tata Mc- Graw Hill.

3) SQL & PL/SQL for Oracle 10g, Black Book, Dr.P.S. Deshpande.

LIST OF MEMBERS OF THE ACADEMIC COUNCIL

Prof. N.S.V.V.S.J. GANDHI, Chairman
Principal, GVPCOE

Dr. B. SRINIVAS
Professor & Head, Department of Chemical Engg.

Dr. MANCHIKANTI SRINIVAS
Professor & Head, Department of Civil Engg.

Dr. V.SITARAMAM
Professor & Head, Department of CSE

Dr. N. BALASUBRAHMANYAM
Professor & Head, Department of ECE

Dr. C.V. KRISHNA BHANU
Professor & Head, Department of EEE

Dr. K.B. MADHURI
Professor & Head, Department of IT

Dr. B. GOVINDA RAO
Professor & Head, Department of Mechanical Engg.

SRI G.S. MALLIKARJUNA RAO
Associate Professor & Head, Dept. of M.C.A.

Dr. R.V.G. RAVI KUMAR
Associate Professor & Head, Dept. of Mathematics

Dr. Y.V.P.K. RAGHAVA
Professor & Head, Dept. of Physics

Dr. J. RAVINDRANATH
Associate Professor & Head, Dept. of English

Dr. R. RAMBABU
Professor & Head, Dept. of Chemistry

Dr. P. VENKATA RAO
Professor & Head, Dept.
of Management Studies

Dr. D.S. MURTHY
Professor & Associate Director (Research)

Prof. P. VEERABHADRA RAO
Professor & Vice Principal

SRI PRASANTH KUMAR DAS
Associate Professor, Dept. of EEE

Mrs. P.V. RAJESWARI
Asst. Professor, Dept. of Physics

SRI V. RAJANNA
GM & Head, AP Region,
Tata Consultancy Services, Hyderabad

Prof. S.V. RAGHAVAN
Dept. of CSE, IIT-Madras, Chennai

Dr. S. NARASIMHA RAO
Civil Engineering Consultant, Chennai

SRI K. RAGHAVAIAH
Director, Sujana Towers Ltd., Hyderabad

Dr. E.V. PRASAD
Professor of CSE & Principal,
University College of Engineering, JNTUK

Dr. I. SHANTI PRABHA
Professor of ECE,
University College of Engineering, JNTUK

Smt. V. LAKSHMI
Asst. Professor in Civil Engg.,
University College of Engineering, JNTUK

Dr. M.P.K. KISHORE, **Member-Secretary**
Professor, Dept. of Information
Technology, GVP College of Engg.

G.V.P. COLLEGE OF ENGINEERING

(Autonomous)

LIST OF MEMBERS OF THE GOVERNING BODY

Dr. B. SWAMI, M.B.B.S., M.D., Chairman
Former Professor Medicine and Supdt.
KG Hospital, Visakhapatnam, Former
Vice-Chancellor, Nagarjuna University,
Member, Indian Medical Council;
President, Gayatri Vidya Parishad

SRI V. SEETHARAMAIAH, CA
Chartered Accountant, Brahmaiah & Co;
Vice-President, Gayatri Vidya Parishad

SRI A.S.N. PRASAD, B.E., M.I.E.
Director, Sri Rama Corporation; Member,
Srinivasa Vidya Parishad;
Secretary, Institute of Development &
Planning Studies, Visakhapatnam;
Vice-President, Gayatri Vidya Parishad

Prof. P. SRINIVASA RAO
B.Tech. (Hons), M.Tech., Dr.Ing (Munich),
Advisor (Tech. Edn. and R&D), GVP
Formerly Professor of Civil Engineering,
Dean of Industrial Consultancy, IIT Madras,
Dean of Academic Courses, IIT Madras

Prof. P. SOMA RAJU, M.A., Ph.D.
Secretary, Gayatri Vidya Parishad

Sri V.R.K.S. SIVA PRASAD, C.A.
Chartered Accountant and Treasurer, Gayatri
Vidya Parishad

Dr. SHAKEEL AHMAD, Ph.D.
Deputy Secretary, UGC, New Delhi

Dr. M.D. CHRISTOPHER, Ph.D.
Secretary, A.P. State Council
of Higher Education

Dr. J.V.R. MURTHY, Ph.D.
Professor, Department of CSE
University College of Engineering,
JNT University-Kakinada

Prof. N.S.V.V.S.J. GANDHI, Ph.D.
Principal, GVP College of Engineering
Formerly Principal, JNTU College of
Engineering, Kakinada

Prof. P.V.C. SARMA, Ph.D.
Formerly Professor of Physics
Nominee of Teachers' Co-operative
House Building Society, Visakhapatnam

Prof. R.V. SUBBA RAJU, Ph.D.
Formerly Professor of Chemical Engineering,
Nominee of Teachers' Co-operative House
Building Society, Visakhapatnam

SRI D. DAKSHINA MURTHY, M.Sc.
Coordinator, Gayatri Vidya Parishad College for
Degree & PG Courses

Dr. P. RAJAGANAPATHI, M.Sc., Ph.D.
Former Principal, Govt. Degree College,
Joint-Secretary, Gayatri Vidya Parishad.

Dr. B. SUBBA RAO, M.S., M.Ch. (Neuro Surgery)
Director, MIMS, Vizianagaram, Former Professor
of Neuro Surgery, AMC
Vice-Principal, AMC, Additional Director of
Health Services, Govt. of Andhra Pradesh.

SRI D.V.S. KAMESWARA RAO, B.E.
Vice-President, Gayatri Engineering Works,
Member, Gayatri Vidya Parishad.

Prof. A. PRASANNA KUMAR, Ph.D.
Former Rector, Andhra University;
Director, Centre for Policy Studies

SRI D.V. SUBBA RAO, M.L.
Former President, Bar Council of India,
Member, Gayatri Vidya Parishad.

Prof. P.V. SARMA, M.A., Ph.D.
Former Professor of Economics and
Co-ordinator, School of Economics,
Andhra University, Director, Research &
Development, Gayatri Vidya Parishad

Prof. V.S.R.K. PRASAD, B.Tech., M.Tech., Ph.D.
Principal, ANITS, Visakhapatnam; Former
Professor, Dept. of Chemical Engg.,
AU College of Engg., Member,
Gayatri Vidya Parishad.

Prof. A.B.K. RAO, Ph.D.
Professor, Dept. of Mechanical Engg.,
G.V.P. College of Engineering

Prof. P. VEERABHADRA RAO
Professor & Vice Principal,
GVP College of Engineering