Scheme of Teaching and Examination for
IV Semester DIPLOMA in COMPUTER SCIENCE & ENGINEERING

THEORY

SL. No	SUBJECTS	SUBJECT CODE	Periods per Week	Periods in one Session	Hours of Exam.	Terminal Exam. (A) Marks	Final Exam. (B) Marks	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject
1	Data Structure Using 'C'	18401	4	50	3	20	80	100	26	36
2	Digital Electronics & Microprocessor	18402	4	50	3	20	80	100	26	36
3	Data Base Management System	18403	4	50	3	20	80	100	26	36
4	Introduction to Software Package	18404	4	50	3	20	80	100	26	36
5	System Analysis and Management Information System	18405	4	50	3	20	80	100	26	36
	Total :-		20					500		

PRACTICAL

SL. No.	SUBJECTS	SUBJECT CODE	Periods per Week	Periods in one Session	Hours of Exam.	Marks Internal Exam. (A)	Marks External Exam. (B)	Total Marks (A+B)	Pass Marks Final Exam.	Pass Marks in the Subject
6	Data Base Management System Lab	18406	4	50	3	10	40	50	16	21
7	Introduction to Software Package Lab	18407	6	60	3	10	40	50	16	21
	Total :-		10					100		

SESSIONAL

SL. No.	SUBJECTS	SUBJECT CODE	Periods per Week	Periods in One Session	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject
8	Digital Electronics & Microprocessor	18408	4	50	20	30	50	25
9	Data Structure Using 'C'	18409	4	50	20	30	50	25
10	**System Analysis & MIS**	18410	4	50	20	30	50	25
	Total :-		12				150	
Total Periods per Week			42			**Total Marks**		**750**

DATA STRUCTURE USING C

Subject Code **18401**	Theory			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	04	-	-	Internal Exam.	:	20

Rationale:

Data Structure is a subject which deals with data and their structures. In system programming, application programming, the method and techniques of data structures are widely used. This study of data structure helps the students in developing logic & structured programs.

Objective:

After completion of this course student will be able to:-

- Understand and use the process of abstraction using a programming language such as 'C'.
- Analyze step by step and develop algorithm to solve real world problems.
- Implementing various data structures viz. Stacks, Queues, Linked Lists, Trees and Graphs
- Understanding various searching & sorting techniques

S.No.	Topics	Periods
01	Basic concepts of data representation	(03)
02	Introduction to Algorithm Design and Data Structure	(05)
03	Arrays	(06)
04	Stacks and Queues	(06)
05	Linked lists	(08)
06	Trees	(07)
07	Searching, sorting and complexity	(08)
08	Graphs	(07)
	Total:	**(50)**

CONTENTS:

TOPIC: 01 – BASIC CONCEPTS OF DATA REPRESENTATION: [03]

Abstracting data types: Fundamental and derived data types, Primitive data structures.

TOPIC: 02 – INTRODUCTION TO ALGORITHM DESIGN AND DATA STRUCTURES: [05]

Design and analysis of algorithm: Algorithm definition, comparison of algorithms, Analysis of Algorithm; Frequency count, Complexity measures in terms of time and space.

TOPIC: 03 – ARRAYS: [06]

Representation of arrays: single and multidimensional arrays. Address calculation using column and row major ordering. Various operations on Arrays, Application of arrays: Matrix multiplication.

TOPIC: 04 – STACKS AND QUEUES: [06]

Representation of stacks and queues using arrays and linked-lists, Circular queues, Priority Queue

TOPIC: 05 – LINKED LISTS: [08]

Singly linked list; operations on list. Linked stacks and queues, Circular linked lists, doubly linked lists

TOPIC: 06 - TREES: [07]

Binary tree traversal methods: Preorder, In-order, Post-order traversal. Recursive and non-recursive Algorithms for above mentioned Traversal methods. Representation of trees and its applications: Binary tree representation of a tree.

TOPIC: 07 – SEARCHING, SORTING AND COMPLEXITY: [08]

Searching: Sequential and binary searches
Sorting: selection, bubble, Quick, merge.

TOPIC: 08 – GRAPHS: **[07]**
Graphs representation: Adjacency matrix, Adjancy lists,
Traversal Schemes: Depth first search, Breadth first search.
Spanning tree: Definition, Minimal spanning tree algorithms
Shortest Path algorithms (Prime's and Kruskal's)

Implementation of Strategies:

To implement the methods of data structure, C is found to be appropriate language.
The student/teacher has to study/teach data structures and their methods using C.

Books Recommended:

1	Data Structure Using C and C++, Second Addition, 2000, Prentice Hall of India.	-	Y. Langsam, M. J. Augustein and A. M. Tanebaum
2	Data Structure Using C and C++, Second Addition, 2000, Prentice Hall of India.	-	R. Kruse, C. L. Tonodo and B. Leung
3	Data Structure through "C" Language, First Edition, 2001, BPB Publication	-	S. Chottopadhyay, D. Ghoshdastidar & M. Chottopadhyay
4	Data Structures, Algorithms and Object Oriented Programming, First Edition, 2002, Tata McGraw Hill.	-	G. L. Heileman
5	Fundamental of Data Structes in C++, 2002, Galgotia Publication 2002	-	E. Horowitz, Sahni and D. Mehta

DIGITAL ELECTRONICS & MICROPROCESSOR

	Theory			No of Period in one session : 50		
Subject Code	**No. of Periods Per Week**			**Full Marks**	**:**	**100**
18402	**L**	**T**	**P/S**	**Annual Exam.**	**:**	**80**
	04	**-**	**-**	**Internal Exam.**	**:**	**20**

Rationale:
The subject will help the students to learn facts, concepts, principle and procedure of digital electronics. These techniques can be used for designing sequential and combinational circuits which forms the basis of any electronic device. Also, this subject is designed to give clear idea about working principles of 8085 microprocessor.

Objective:
The objective of this subject is to enable the students to know basic concepts of digital electronics and familiarity with available chips. After undergoing this course the students will have the awareness of various arithmetic circuits, counter design, registers, A/D and D/A converters, semi-conductor memories, multiplexers and de-multiplexers etc.

S.No.	Topics	Periods
01	Review of Number System	(02)
02	Logic Families and Circuits	(04)
03	Logic Gates and Flip Flops	(07)
04	Registers	(04)
05	Counters	(04)
06	Arithmetic Circuits	(04)
07	A/D and D/A Converters	(02)
08	Semiconductor Memories	(06)
09	Decoders, display devices and associated circuits	(03)
10	Multiplexers and De-multiplexers	(04)
11	Microprocessors	(10)
	Total:	**(50)**

 CONTENTS:

TOPIC: 01 – REVIEW OF NUMBER SYSTEM: [02]
Decimal, binary, octal and hexadecimal number systems, Conversion from one system to another, binary arithmetic, signed numbers Codes: BCD, Excess-3, Gray.

TOPIC: 02 – LOGIC FAMILIES AND CIRCUITS: [04]
2.1   TTL, logic family
2.2   NAND gates
2.3   7400 and 5400 series of IC logic families: RTL, TTL, MOS and CMOS.

TOPIC: 03 – LOGIC GATES AND FLIP FLOPS: [07]
3.1   Definitions, symbols and truth table of NOT, OR, AND, NAND, NOR, XOR, XNOR gates, De Morgan's theorems; Karnaugh-map.
3.2   Logical diagram, truth table; timing diagram and operation of following latches and flip flops: NOR latch, RS, T, D, JK, Master/ Slave JK flip flops, encoders, decoders.

TOPIC: 04 – REGISTERS: [04]
4.1   Shift Registers
4.2   Serial in Serial out
4.3   Serial in Parallel out
4.4   Parallel in Parallel out
4.5   Parallel in Serial out

TOPIC: 05 – COUNTERS: [04]
5.1   Synchronous and Asynchronous counters
5.2   Decade counter and its application

TOPIC: 06 – ARITHMETIC CIRCUITS: [04]
6.1   Half adder and full adder circuit, design and implementation
6.2   Half and full subtracted circuit, design and implementation

TOPIC: 07 – A/D AND D/CONVERTERS: **[02]**
7.1   Analog to digital conversion

TOPIC: 08 – SEMICONDUCTOR MEMORIES: **[06]**
8.1   Memory Unit
8.2   Concept of memories using registers
8.3   Read only Memory (ROM)
8.4   Random Access Memory (RAM)
8.5   Static and Dynamic Memory

TOPIC: 09 – DECODERS, DISPLAY DEVICES AND ASSOCIATED CIRCUITS: **[03]**
a)   LED, LCD, seven segment display, basic operation of various commonly used types

TOPIC: 10 – MULTIPLEXERS AND DE-MULTIPLEXERS: **[04]**
Basic functions and Block diagram of MUX and DEMUX.

TOPIC: 11 – MICROPROCESSORS: **[10]**
11.1   Evaluation of microprocessors, microcomputer organization, 8-bit, microprocessor-Intel 8085 architecture buses, flags and register organization, timing signals, instruction sets, addressing modes. Programming in machine and assembly languages
11.2   16-bit microprocessors-Intel 8086 architecture, register organization, and instruction sets and addressing modes.

Books Recommended:

Text Books
1.   Digital Electronics and Applications, McGraw Hills Publishers.   -   Malvino Leach
2.   Digital Logic and Computer Design, Prentice Hall of India Ltd., New Delhi.   -   Morries Marrow
3.   Digital Integrated Electronics, Prentice Hall of India Ltd., New Delhi   -   Herbert Raub and Donals Sachilling
4.   Digital Electronics, Prentice Hall of India Ltd., New Delhi   -   Rajaraman
5.   Microelectronics, McGraw Hill, 1987   -   J. Millman and A. Grabel
6.   Linear Integrated Circuits, Wiley Eastern, 1991   -   D. Roychaudhuri and S.B. Jani

Reference Books:
1.   Digital Principles, Latest Edition, 2000, Tata McGraw Hill Publishing Company Ltd., New Delhi   -   Malvino & Leach
2.   Modern Digital Electronics, Second Edition, 2000, Tata McGraw Hill Publishing Company Ltd., New Delhi   -   R.P. Jain
3.   Digital Electronics, First Edition, 2000, Tata McGraw Hill Publishing Company Ltd., New Delhi   -   V.K. Puri
4.   Electronics Circuits and Systems, 1992, Tata McGraw Hill Publishing Company   -   Y.N. Bapat
5.   Modern Digital Electronics, 1983, Tata McGraw Hill Publishing Company   -   R.P. Jain
6.   Digital Computer Fundamentals, T.M.H.   -   Malvino
7.   Digital Computer, Dhanpat Roy & Sons.   -   B. Ram
8.   Introduction to Microprocessors, Dhanpat Roy & Sons.   -   Dr. B. Ram

DATABASE MANAGEMENT SYSTEM

Subject Code **18403**	Theory			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	04	-	-	Internal Exam.	:	20

Rationale:
This subject will allow students to develop understanding of the basic concepts of data in general and Relational Database System in particular. The students will learn Database concept, Data Structure, Data Models, various approaches to Database design, strengths of relational model, Normalization.

Objective:
At the end of the course the student will be able to:
• Develop Database System to handle the real world problem.
• Understand Database design and normalization techniques.
• Use Standard Query Language and its various versions.
• Understand Importance

S.No.	Topics	Periods
01	Introduction to Database Systems(DBMS)	(05)
02	Database Architecture and Modelling	(05)
03	Entity Relationship Model	(06)
04	Relational Model	(06)
05	Relational Algebra and Relational Calculus	(06)
06	Introduction to SQL	(06)
07	Database Normalization	(08)
08	Backup and Recovery	(03)
09	Database Security and Integrity	(05)
	Total:	**(50)**

CONTENTS:

TOPIC: 01 – INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS (DBMS): **[05]**
Why Database, Characteristics of Data in Database, DBMS, What is database Advantage of DBMS

TOPIC: 02 – DATABASE ARCHITECTURE AND MODELLING: **[05]**
Conceptual, physical and logical database models, Role of DBA, Database Design

TOPIC: 03 – ENTITY RELATIONSHIP MODEL: **[06]**
Components of ER Model, ER Modeling Symbols, Super Class and Sub Class types

TOPIC: 04 – RELATIONAL DBMS: **[06]**
Introduction to Relational DBMS

TOPIC: 05 – RELATIONAL ALGEBRA AND RELATIONAL CALCULUS: **[06]**
Relational Algebraic operations, Tuple Relational Calculus

TOPIC: 06 – INTRODUCTION TO SQL: **[06]**
History of SQL, Characteristics of SQL Advantages of SQL, and SQL in Action SQL data types and Literals, Types of SQL commands, SQL Operators and their precedence, Queries and Sub queries Aggregate functions, Insert, Update and Delete operations. Joins, Unions

TOPIC: 07 – DATABASE NORMALISATION: **[08]**
Keys, Relationships, First Normal Form, Functional dependencies, Second Normal Form, Third Normal Form,

TOPIC: 08 – BACK UP AND RECOVERY: **[03]**
Database backups; why plan backups? Hardware protection and redundancy, Transaction logs. Importance of backups, Database recovery

TOPIC: 09 – DATABASE SECURITY AND INTEGRITY: [05]

Types of Integrity constraints, Restrictions on Integrity constraints, Data security risks, Data security requirements, Database users, Protecting data within the database, Granting and revoking privileges and roles.

Concepts of DBMS will be implemented by using the popular relational DBMS package such as ORACLE/ MS-SQL.

Books Recommended:

Text Books
1. Database Management Systems, First Edition, 2002, Vikas Publishing House   -   A. Leon & M. Leon
2. Fundamentals of Database Systems, Third Edition, 2000, Addison Wesley   -   R. Elmasri, S. Navathe

Reference Books:
1. Database System Concepts, Third Edition, 1997, McGraw-Hill Internation   -   H. Korth, A. Silberschatz
2. An Introduction to Database Systems, Galgotia Publication   -   B. Desai
3. Database Processing: Fundamentals, Design Implementation, Prentice Hall of India.   -   D.K. Kroenke
4. Database Management Systems, First Edition, 1996, McGraw Hill   -   P. Bhattacharya and A.K. Majumdar
5. Database System Concepts, Fourth Edition, 1997, Tata McGraw Hill   -   Abraham Silberschtz, Henry Korth & S. Sudarshan

INTRODUCTION TO SOFTWARE PACKAGES

Subject Code 18404	Theory			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	04	-	-	Internal Exam.	:	20

Rationale & Objective:

This course will enable the students to familiarize with the features and use of application packages such as Word Processing Package (MS-Word), Spreadsheet Package (MS-Excel), Presentation Packages (MS-Power Point), Data Base Management Package (Visual Fox Pro) and Anti-virus Packages.

S.No.	Topics	Periods
01	Word Processing (MS-Word)	(16)
02	Spreadsheet (MS-Excel)	(16)
03	Presentation Package (MS-Power Point)	(13)
04	Anti Virus Packages	(05)
	Total:	**(50)**

CONTENTS:

TOPIC: 01 – WORD PROCESSING PACKAGE (MS-WORD): **[16]**

01.01 Features of Word Processing Package MS-Word, Menu Options-File, Edit, View, Insert, Format, Tools-spelling and grammar, language, mail-merge, options; table.

01.02 Creating, editing and saving a document, Opening a document, password protection for file.

01.03 Setting page margins, tab setting, ruler and indenting.

01.04 Formatting a document- using different fonts; changing font size and colour; changing the appearance through bold/italic/underline; highlighting text; change case; use of sub script and superscript.

01.05 Alignment of text in a document and justification, use of bullets and numbering.

01.06 Paragraph formatting, inserting page breaks and column breaks.

01.07 Use of headers, footers, footnote and end note. Use of Comments, inserting date, time, and special symbols, importing graphical images and use of drawing tools

01.08 Creating table, formatting cells, using different border styles, shading in tables, merging of cells, and partition of cells, inserting and deleting a row/column in a table.

01.09 Print preview, zoom, page setup, print options.

01.10 Use of tools such as spell checker, help, mail-merge, and use of macros.

TOPIC: 02 – SPREADSHEET PACKAGE (MS-EXCEL): **[16]**

02.01 Features of Spreadsheet package such as MS Excel, Menu Options- File; edit; view; insert; format; tools- spelling, auto correct, protection, options; data.

02.02 Concepts of cell and cell-addressing.

02.03 Creating, operating and saving worksheet.

02.04 Entering text, numeric information and formula

02.05 Formatting numbers and text, protection cells, printing worksheet.

02.06 Using data management functions-mathematical, statistical and financial functions.

02.07 Creating different types of charts, graphs and balance worksheet and displaying 3-D Charts, printing and resizing charts.

02.08 Importing files and graphics.

TOPIC: 03 – PRESENTATION PACKAGE (MS-POWER POINT): **[13]**

03.01 Features of Presentation Package MS-Power Point, Menu options-File; edit, view; insert; format; tools-spelling, language, auto clipart, slide show

03.02 Status bar, tool bar, customized tool bar, slide view, outline view, slide sorter view, notes page view, slide show view

03.03 Creating and saving slides, opening and editing slides, changing layout of a slide, deleting of slide, changing layouts of a slide, deleting of slide, changing the order of slides, animation.

03.04 Working with objects: selecting, grouping, ungrouping and regrouping of objects, moving, aligning, cutting, copying, pasting, and duplicating objects.

03.05 Putting text on slides: selecting and editing text, finding and replacing text.

03.06 Creating graphs and importing files.

03.07 Creating tables.

03.08 Use of data sheet view and design view.

TOPIC: 04 – ANTI VIRUS PACKAGES: **[02]**

05.01   Introduction to Virus.
05.02   Virus Protection, Deletion & Removal Utilities
05.03   Anti Virus Packages to prevent, detect & delete Viruses.

Books Recommended:

MS office 2000 for Everyone, Vikash Publications, New Delhi	-	Sanjay Saxena
MS office 2000, Addison Wesley(Singapore) Pvt. Ltd., New Delhi	-	Sagman
MS office 2000 8-in-1, Prentice Hall of India, New Delhi	-	Habraken
MS office, BPB Publications, New Delhi	-	Ron Mansfield
MS Word 2000 in a Nutshell, Vikash Publishing House, New Delhi.	-	Sanjay Saxena
MS Excel 2000 in a Nutshell, Vikash Publishing House, New Delhi.	-	Sanjay Saxena
A Quick Course in Power Point and A Quick Course for Windows, Galgotia Publications Pvt. Ltd., Daryaganj New Delhi.	-	Cox
Building Visual FoxPro 5 Application, First Edition, 1997, IDG Books	-	B. Sosinsky
FoxPro 2.6 code Book, BPB Publication, 1994	-	Griver
Mastering FoxPro 2.5, BPB Publication, 1994	-	Siegel
FoxPro 2.6 for Dummies, Pustak Mahal	-	Dan Gookin
Understanding Norton Utilities	-	Peter Dysen

SYSTEM ANALYSIS & MIS

Subject Code **18405**	Theory			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	100
	L	T	P/S	Annual Exam.	:	80
	04	-	-	Internal Exam.	:	20

Rationale:
For the design of an Information System, it is important to understand the requirements, carry out system study and analyze information. After undergoing this Course, the student will be able to study, analyze and design a system for the user.

Objective:
The Course focuses on the following aspects of Information System Development:
* Study, Analysis and Design of a System
* Documenting and evaluating the System
* Data Modeling
* Developing Information Management System for an Organization
* Implementing and Testing

S.No.	Topics	Periods
01	Introduction	(05)
02	System Analyst	(04)
03	System Development Cycle	(07)
04	System Planning	(05)
05	Modular and Structured Design	(03)
06	System Design and Modeling	(05)
07	Input and Output	(06)
08	System Implementation and Maintenance	(03)
09	OO Analysis/ Design	(04)
10	Introduction to Management Information System	(08)
	Total:	**(50)**

CONTENTS:

TOPIC: 01 – INTRODUCTION: [05]
System Definition and Concepts: General Theory systems, Manual and automated systems, Real-life Business Sub-systems. System Environments and Boundaries

TOPIC: 02 – SYSTEMS ANALYST: [04]
Role and Need of Systems Analyst, Qualifications and responsibilities

TOPIC: 03 – SYSTEM DEVELOPMENT CYCLE: [07]
Introduction to Systems Development Life Cycle (SDLC), various phases of SDLC: Study, Design, Development, Implementation, Maintenance.

TOPIC: 04 – SYSTEM PLANNING: [05]
Data and fact gathering techniques: Interviews, Group Communication – Questionnaires, Presentation & Site Visits. Modern Methods for determining system requirements: Joint Application, Development Program, Prototyping, Business Process Re-engineering.

TOPIC: 05 – MODULAR AND STRUCTURED DESIGN: [03]
Module specifications, Top-down and bottom-up design Module coupling and cohesion

TOPIC: 06 – SYSTEM DESIGN AND MODELLING: [05]
Process Modeling, Logical and physical design

TOPIC: 07 – INPUT AND OUTPUT: [06]
Classification of forms, Input/output forms design, User-interface design, Graphical interfaces. Standards and guidelines for GUI design.

TOPIC: 08 – SYSTEM IMPLEMENTATION AND MAINTENANCE: [03]
System acceptance criteria, System Evaluation and Performance, Testing and Validation, Preparing User Manual Maintenance Activities and Issues

TOPIC: 09 – OO ANALYSIS/ DESIGN: [04]
Introduction to UML, OO Development Life Cycle and Modeling, Static and dynamic modeling,

TOPIC: 10– INTRODUCTION TO MANAGEMENT INFORMATION SYSTEM (MIS): [08]
Meaning and role of MIS, Systems approach to MIS. Types of Information Systems: Transaction Processing System, Management Information System, Decision Support System,

Books Recommended:

Text Books

1 Modern Systems Analysis and Design, Second Edition, 2000, Joey George and Joseph Valacich Pearson Education. - J. Hoffer
2 Systems Analysis and Design, First Edition, 2002, John Wiley & Sons, Inc. - A. Dennis and B.H. Wixom

Reference Books:

1 Systems Analysis and Design Methods, First Edition, 2000, Tata McGraw-Hill. - J. Whitten, L. Bentley and   K. Dittman
2 Management Information Systems, Seventh Edition, 2002, Pearson Education. - K.C. Laudon and J.P. Laudon

DATABASE MANAGEMENT SYSTEM LAB

Subject Code	Practical			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
18406	L	T	P/S	Annual Exam.	:	40
	04	-	-	Internal Exam.	:	10

LIST OF PRACTICALS:

S.No.   Experiment

Hands on experience on any RDBMS to implement the role of Database Administrator like creating the users, alter user, grant and revoke of rights of user.

Create a Database of employees and departments with the following details.

Table name	Fields name
Emp	empno (primary key), ename, Edetails, ebasic, salary-Details, e-deptno (foreign key)
Dept	deptno (primary key), dept-name, dept. Details.

Create suitable tables to perform the following relational operations

> select
> project
> product
> join
> restriction
> union
> intersection
> difference

Perform the following data manipulation operation on table created in Problem 2

(a)   insertion of records
(b)   deletion of records
(c)   Updating records

For the table created in problem 2 perform the following SQL constructs

a. SELECT……FROM….WHERE……GROUP BY ….. HAVING ….. ORDER BY…..

Create views, temporary tables and perform nested queries on the table created in problem2.

Develop a small application using Visual basic as front end and Oracle SQL as backend using ODBC connectively

Creation and modification of databases through ER diagram, nornmalisation

Creation, updation, insertion and deletion of tables

Teachers can take DBMS Lab topics such as the following:- Personal/Bank/Library/ Hostel Accounting / Insurance /Budget /Preparing Highest Cricket Score/Class Marks Management/Admission Merit List/Income Tax Calculation/Books Publisher database/Preparation of Salary of a Govt. organization employee etc.

Books Recommended:

1	Introduction to Database Systems, Addison Wesley(Singapore) Pvt. Ltd., New Delhi	-	C.J. Date
2	Database Management Systems, Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi	-	Bipin C. Desai
3	Relational Database Management Systems, Theory & Practice	-	Val Occardi
4	Teach Yourself Access 97/2000 for Windows, BPB Publications, New Delhi	-	Charles Siegal
5	Database System	-	Silver Schutz
6	Relational Database Management System by	-	ATF, H. Wiley
7	Database Structured Techniques for Design, Performance and Management	-	S. Atre, Wiley
8	Database Management	-	C.J. Date, Addison Wesley
9	SQL in 21 days	-	B.P.B.
10	ORACLE, SQL & PL/SQL – Handbook	-	Phlinski-Person
11	SQL Bible	-	Alox Krigel, Boris M. Trukhnov

INTRODUCTION TO SOFTWARE PACKAGE LAB

Subject Code	Practical			No of Period in one session : 60		
18407	**No. of Periods Per Week**			**Full Marks**	**:**	**50**
	L	**T**	**P/S**	**Annual Exam.**	**:**	**40**
	06	**-**	**-**	**Internal Exam.**	**:**	**10**

LIST OF PRACTICALS:

1. Using mail merge of MS-Word prepare send New Year greetings to the all Principal, staffs and students of your institution.
2. Demonstrate the different tools of the MS-Word.
3. Using MS-Excel prepare monthly salary payment of your institution. For calculating use mathematical, statistical and financial functions of MS-Excel.
4. Using MS-Excel Prepare Pie and bar chart to show current branch wise and batch wise status of students, pass outs, fails for last five years.
5. Using MS-PowerPoint Prepare a power point presentation of last year annual activities of your polytechnic.
6. Using MS-PowerPoint Prepare a power point presentation on current scientific research based on direction of your teacher.
7. Prepare a Project Report on definition, types, and history of viruses and antivirus virus packages to fight with viruses.

Books Recommended:

1	MS office 2000 for Everyone, Vikash Publications, New Delhi	-	Sanjay Saxena
2	MS office 2000, Addison Wesley(Singapore) Pvt. Ltd., New Delhi	-	Sagman
3	MS office 2000 8-in-1, Prentice Hall of India, New Delhi	-	Habraken
4	MS office, BPB Publications, New Delhi	-	Ron Mansfield
5	MS Word 2000 in a Nutshell, Vikash Publishing House, New Delhi.	-	Sanjay Saxena
6	MS Excel 2000 in a Nutshell, Vikash Publishing House, New Delhi.	-	Sanjay Saxena
7	A Quick Course in Power Point and A Quick Course for Windows, Galgotia Publications Pvt. Ltd., Daryaganj New Delhi.	-	Cox
8	Building Visual FoxPro 5 Application, First Edition, 1997, IDG Books	-	B. Sosinsky
9	FoxPro 2.6 code Book, BPB Publication, 1994	-	Griver
10	Mastering FoxPro 2.5, BPB Publication, 1994	-	Siegel
11	FoxPro 2.6 for Dummies, Pustak Mahal	-	Dan Gookin
12	Understanding Norton Utilities	-	Peter Dysen

DIGITAL ELECTRONICS & MICROPROCESSOR

Subject Code **18408**	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	04	-	-	Internal Exam.	:	20

LIST OF SESSIONALS:

1. Study of 4 bit up counter
2. Study of 4 bit synchronous counter
3. Study of decade counter
4. Study of serial in serial out register
5. Study of parallel in serial out register
6. Study of D/A converter
7. Study of A/D converters
8. Study of decoder, encoder, MUX and DEMUX, Design & realization of 4:1 multiplexer & 1:4 Demux.
9. Study of half and full adders
10. Assembly language Programming with Intel 8085, and related Programs – Addition, Subtraction,Comparision etc.

Books Recommended:

Text Books

1	Digital Electronics and Applications, McGraw Hills Publishers.	-	Malvino Leach
2	Digital Logic and Computer Design, Prentice Hall of India Ltd., New Delhi.	-	Morries Marrow
3	Digital Integrated Electronics, Prentice Hall of India Ltd., New Delhi	-	Herbert Raub and Donals Sachilling
4	Digital Electronics, Prentice Hall of India Ltd., New Delhi	-	Rajaraman
5	Microelectronics, McGraw Hill, 1987	-	J. Millman and A. Grabel
6	Linear Integrated Circuits, Wiley Eastern, 1991	-	D. Roychaudhuri and S.B. Jani

Reference Books:

1	Digital Principles, Latest Edition, 2000, Tata McGraw Hill Publishing Company Ltd., New Delhi	-	Maluino & Leach
2	Modern Digital Electronics, Second Edition, 2000, Tata McGraw Hill Publishing Company Ltd., New Delhi	-	R.P. Jain
3	Digital Electronics, First Edition, 2000, Tata McGraw Hill Publishing Company Ltd., New Delhi	-	V.K. Puri
4	Electronics Circuits and Systems, 1992, Tata McGraw Hill Publishing Company	-	Y.N. Bapat
5	Modern Digital Electronics, 1983, Tata McGraw Hill Publishing Company	-	R.P. Jain

DATA STRUCTURE USING C

Subject Code **18409**	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	04	-	-	Internal Exam.	:	20

Contents:-

Problems based on topics taught in Theory classes as per instruction and guidance of the teacher concerned.

01 Write a program to create singly linked list, and perform insertion, deletion and updation of items of the list.
02 Write a program, for creating of priority queues.
03 Write a program to create Stack using linked list and arrays, and perform push and pop operation on it.
04 Write a program to convert infix expression into postfix expression.
05 Write a program for following sorting algorithms:-
    (a)   Selection Sort
    (b)   Merge Sort
06 Write programs for following searching algorithms:-
    (a)   Binary & Linear Search
    (b)   Breadth first Search
    (c)   Depth First Search
07 Write a program to find in order, Preorder and Post order traversal of tree.

Books Recommended:

Text Books
1 Data Structure Using C and C++, Second Edition, 2000, Prentice Hall of India. - Y. Langsam, M. J. Augesntein and A. M. Tanenbaum
2 Data Structures and Program Design in C, Second Edition, 1997, Pearson Education. - R. Kruse, C. L. Tonodo and B. Leung
3 Data Structure through C, First Edition, 2001, BPB Publication - S. Chottopadhyay, D. Ghoshdastidar & M. Chottopadhyay

Reference Books:
1 Data Structures, Algorithms and Object Oriented Programming, First Edition, 2002, Tata McGraw Hill - G. L. Heileman
2 Fundamentals of Data Structure in C++, 2002, Galgotia Publication - Y. Langsam, M. J. Augesntein and A. M. Tanenbaum

SYSTEM ANALYSIS AND MIS

Subject Code **18410**	Sessional			No of Period in one session : 50		
	No. of Periods Per Week			Full Marks	:	50
	L	T	P/S	Annual Exam.	:	30
	04	-	-	Internal Exam.	:	20

LIST OF SESSIONALS:

S.No.	Topics	Periods
01	Construct an ER diagram for a bank database that shows the basic relationship among customers, checking account, saving account, loans and bank branches where various accounts and loans are taken out. You also want to keep track of transactions on accounts and loans and maintain the current balance in each account and balance on loan. Remember that each entity in ER diagram represent a simple file of data of which you want to keep track. Construct DFD showing the functional view of the system.	

02   Construct an ER diagram for a car insurance database that includes data about customers (car owners), cars, and accidents, drivers involved in accident, and injured driver and/or passenger. Note that any customer can insure many cars, each car may have different drivers at different times, and accidents typically involve one or more cars. Convert this into DFD.

03   A clinic is in the business of providing dental services to the patient. A number of doctors are on rolls of the clinic. Patients can take the appointments on the phone or personally for a particular doctor and particular services. Clinic sends reminders to patient and appointment schedule to the doctor one day in advance. At due date and time the patient performs the visit for the appointment to get the services performed on him. At the time of performing services doctor asks the clinic for patient's last record (if any) and what ever services he has performed and informs the clinic so that the records can be updated.

04   Draw DFD for order processing system.

05   An international airlines initiated a policy for a traveler. The information is as follows:-
Passengers who fly more than 10,000 miles per calendar year and pay cash and have been flying for last 5 years, the get concession of free round trip ticket Otherwise traveler is not entitled for round trip ticket.
(a)   Draw suitable decision trees for the above.
(b)   Draw decision table for the above.

06   Consider a marketing based system. Analyze strategic, managerial and operational trends. Assign various tasks to entities like product, customer, city and departments. Draw also DFD for the above.

07   Take hospital management system. Explain PCR (Parent Child Relationship) in Hierarchical/relational DBMS. Create a data dictionary for the same.

08   What are the different threats to system security (in view of information system) like virus, data processing errors, employee errors, telephone fraud, hacking, software piracy, violations, natural disaster, bugs and worms?

Books Recommended:

1	System Analysis and Design, Galgotia Publications Pvt. Ltd., New Delhi	-	E. M. Awad
2	System Analysis	-	Fitzgerald
3	Project Management, Tata Mcgraw Hill, New Delhi.	-	Chaudhary
4	Introduction to Sytem Analysis and Design, Prentice Hall of India Pvt. Ltd., New Delhi.	-	Hawryszkiewycz
5	Projects-Presentation, Appraisal, Budgeting and Implementation, Tata Mcgraw Hill, New Delhi.	-	Prasanna Chandra
6	System Analysis and Design Vol.1 and 2, Galgotia Publications Pvt. Ltd., Dariyaganj, New Delhi.	-	Lee
7	Analysis and Design of Information System, Second Edition, McGraw Hill, 1989.	-	Senn
8	The Analysis Design and Implementation of Information System, Fourth Edition, McGraw Hill, 1992.	-	Henry C. Lucas
9	System Analysis and Design, Second Edition, Galgotia Publications Pvt. Ltd., Dariyaganj, 1996.	-	Elias M. Avad