STATE BOARD OF TECHNICAL EDUCATION, BIHAR

Scheme of Teaching and Examinations for

IV SEMESTER DIPLOMA IN COMPUTER SCIENCE & ENGINEERING

(Effective from Session 2016-17 Batch)

THEORY

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME							Credits
			Periods per Week	Hours of Exam.	Teacher's Assessment (TA) Marks (A)	Class Test(CT) Marks (B)	End Semester Exam. (ESE) Marks (C)	Total Marks (A+B+C)	Pass Marks ESE	Pass Marks in the Subject	
1.	Data Structure Using 'C'	1618401	03	03	10	20	70	100	28	40	03
2.	Digital Electronics & Microprocessor	1618402	03	03	10	20	70	100	28	40	03
3.	Data Base Management System	1618403	03	03	10	20	70	100	28	40	03
4.	Object Oriented Programming through C++	1618404	03	03	10	20	70	100	28	40	03
5.	System Analysis and Management Information System	1618405	03	03	10	20	70	100	28	40	03
		Total:- 15					**350**	**500**			

PRACTICAL

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME					Credits
			Periods per Week	Hours of Exam.	Practical (ESE)		Total Marks (A+B)	Pass Marks in the Subject	
					Internal (A)	External (B)			
6.	Data Base Management System Lab	1618406	04	03	15	35	50	20	02
7.	Object Oriented Programming through C++ Lab.	1618407	04	03	15	35	50	20	02
Total:- 08							**100**		

TERM WORK

Sr. No.	SUBJECTS	SUBJECT CODE	TEACHING SCHEME	EXAMINATION – SCHEME				Credits
			Periods per week	Marks of Internal Examiner (X)	Marks of External Examiner (Y)	Total Marks (X+Y)	Pass Marks in the Subject	
8.	Digital Electronics & Microprocessor (T W)	1618408	04	15	35	50	20	02
9.	Data Structure Using 'C' (T W)	1618409	03	15	35	50	20	02
10.	System Analysis & MIS (T W)	1618410	03	15	35	50	20	01
Total:- 10						**150**		
Total Periods per week Each of duration one Hours **= 33**						**Total Marks = 750**		**24**

DATA STRUCTURE USING "C"

Subject Code 1618401	Theory			No of Period in one session : 50			Credits
	No. of Periods Per Week			Full Marks	:	100	3
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	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

Contents (Theory)		Hrs/week	Marks
Unit -1	**BASIC CONCEPTS OF DATA REPRESENTATION:** Abstracting data types: Fundamental and derived data types, Primitive data structures.	[03]	
Unit -2	**INTRODUCTION TO ALGORITHM DESIGN AND DATA STRUCTURES:** Design and analysis of algorithm: Algorithm definition, comparison of algorithms, Analysis of Algorithm; Frequency count, Complexity measures in terms of time and space.	[05]	
Unit -3	**ARRAYS:** Representation of arrays: single and multidimensional arrays. Address calculation using column and row major ordering. Various operations on Arrays, Application of arrays: Matrix multiplication.	[06]	
Unit -4	**STACKS AND QUEUES:** Representation of stacks and queues using arrays and linked-lists, Circular queues, Priority Queue	[06]	
Unit -5	**LINKED LISTS:** Singly linked list; operations on list. Linked stacks and queues, Circular linked lists, doubly linked lists	[08]	
Unit -6	**TREES:** 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.	[07]	
Unit -7	**SEARCHING, SORTING AND COMPLEXITY:** Searching: Sequential and binary searches Sorting: selection, bubble, Quick, merge.	[08]	
Unit -8	**GRAPHS:** Graphs representation: Adjacency matrix, Adjancy lists, Traversal Schemes: Depth first search, Breadth first search.	[07]	
	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.		
	Total	**50**	

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
6	Data Structure Using 'C'	-	S.N. Pathak

DIGITAL ELECTRONICS & MICROPROCESSOR

Subject Code 1618402	Theory			No of Period in one session : 50			Credits
	No. of Periods Per Week			Full Marks	:	100	3
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	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.

Contents (Theory)		Hrs/week	Marks
Unit -1	**REVIEW OF NUMBER SYSTEM:** Decimal, binary, octal and hexadecimal number systems, Conversion from one system to another, binary arithmetic, signed numbers Codes: BCD, Excess-3, Gray.	[02]	
Unit -2	**LOGIC FAMILIES AND CIRCUITS:** 2.1 TTL, logic family 2.2 NAND gates 2.3 7400 and 5400 series of IC logic families: RTL, TTL, MOS and CMOS.	[04]	
Unit -3	**LOGIC GATES AND FLIP FLOPS:** 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.	[07]	
Unit -4	**REGISTERS:** 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	[04]	
Unit -5	**COUNTERS:** 5.1 Synchronous and Asynchronous counters Decade counter and its application	[04]	
Unit -6	**HMETIC CIRCUITS:** 6.1 Half adder and full adder circuit, design and implementation Half and full subtracted circuit, design and implementation	[04]	
Unit -7	**A/D AND D/CONVERTERS:** Analog to digital conversion	[02]	
Unit -8	**SEMICONDUCTOR MEMORIES:** 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	[06]	
Unit -9	**DECODERS, DISPLAY DEVICES AND ASSOCIATED CIRCUITS:** a) LED, LCD, seven segment display, basic operation of various commonly used types	[03]	

Unit -10	**MULTIPLEXERS AND DE-MULTIPLEXERS:** Basic functions and Block diagram of MUX and DEMUX.	[04]	
Unit -11	**MICROPROCESSORS:** 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	[10]	
	Total	**50**	

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
7.	Digital Electronics & Microprocessor	-	P.K. Dutta
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

DATA BASE MANAGEMENT SYSTEM

Subject Code 1618403	Theory			No of Period in one session : 50			Credits
	No. of Periods Per Week			Full Marks	:	100	3
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	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

Contents (Theory)		Hrs/week	Marks
Unit -1	**INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS (DBMS):** Why Database, Characteristics of Data in Database, DBMS, What is database Advantage of DBMS	[05]	
Unit -2	**DATABASE ARCHITECTURE AND MODELLING:** Conceptual, physical and logical database models, Role of DBA, Database Design	[05]	
Unit -3	**ENTITY RELATIONSHIP MODEL:** Components of ER Model, ER Modeling Symbols, Super Class and Sub Class types	[06]	
Unit -4	**RELATIONAL DBMS:** Introduction to Relational DBMS	[06]	
Unit -5	**RELATIONAL ALGEBRA AND RELATIONAL CALCULUS:** Relational Algebraic operations, Tuple Relational Calculus	[06]	
Unit -6	**INTRODUCTION TO SQL:** 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	[06]	
Unit -7	**DATABASE NORMALISATION:** Keys, Relationships, First Normal Form, Functional dependencies, Second Normal Form, Third Normal Form,	[08]	
Unit -8	**BACK UP AND RECOVERY:** Database backups; why plan backups? Hardware protection and redundancy, Transaction logs. Importance of backups, Database recovery	[03]	
Unit -9	**DATABASE SECURITY AND INTEGRITY:** 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.	[05]	
Concepts of DBMS will be implemented by using the popular relational DBMS package such as ORACLE/ MS-SQL.			
	Total	**50**	

Text Books /Books Recommended:-

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
6.	Data Base Management System	-	S.N. Verma

OBJECT ORIENTED PROGRAMMING THROUGH C++

Subject Code 1618404	Theory			No of Period in one session :60			Credits
	No. of Periods Per Week			Full Marks	:	100	3
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	20	

Rationale:

C++ is an object-oriented language, which enables a programmer to write programs, so that the object can be made to work collaboratively to produce the solution to live problems. By undergoing this course, the students will be able to understand the principles of object oriented programming, write programs in C++ and use them to make small application programs.

Objective:

The objective of the course is to make the students understand the basic concepts of object-oriented programming language C++ (Classes, Objects, Inheritance and Polymorphism).

The Course will enable the students to:

- Understand OOPs concepts.
- Use of various C++ constructs and functions.
- Use of C++ to develop programs to solve the real world problems.
- Implementing Inheritance, Encapsulation, Operator Over-loading and Dynamic Binding in C++.
- C++ Streams and concept of exception handling, class libraries, fundamentals of Microsoft foundation classes.

S.No.	Topics	Periods
01	Introduction to Object Oriented Programming	(04)
02	Elements of C++ Language	(10)
03	Functions	(08)
04	Objects and Classes	(08)
05	Constructors and Destructors	(06)
06	Operator Overloading	(08)
07	Derived Classes and Inheritance	(08)
08	Pointers	(08)
		(60)

Contents (Theory)		Hrs/week	Marks
Unit -1	**INTRODUCTION TO OBJECTS ORIENTED PROGRAMMING (OOP):** - Basic concept of OOPs - Comparison of procedural programming and OOP - Advantages of OOP, OOP Languages - Definitions: Class, Objects - Concepts of inheritance and encapsulation - Operator overloading - Dynamic binding - Overview of OOP using C++ - Basic program construction: main and functions, Program statements, class declaration, comments.	**[04]**	
Unit -2	**ELEMENTS OF C++ LANGUAGE:** - Tokens and Identifiers: Character Set and Symbols, Keywords, C++ Identifiers - Variables and Constants: Integers & Characters, Constants and Symbolic constants, Dynamic initialization of variables, reference variables, enumerated variables - Data Types: Basic data types, arrays and strings, user defined data types - Operators: Arithmetic, relational operators and operators precedence, logical operators, manipulators, type conversions and type cast operators - Console I/O: cin, cout functions - Control Statements: The *if* statement, *if-else*; *else ... if* switch statements - Loops: *for* and *do-While* statements, *Break*, *continue*, *go to*	**[10]**	

Unit -3	**FUNCTIONS:** - Simple functions: Declaration of functions, calling functions, function definition - Passing arguments and returning values: Passing constants and variables, pass by value - Return statement, types of functions - Passing and returning structure variables	**[08]**	
Unit -4	**OBJECTS AND CLASSES:** - Declaration of classes and objects in C++, Class definition - Declaration of members, objects as date, time, objects as functions arguments - Array of objects - Returning objects from function - Structures and classes	**[08]**	
Unit -5	**CONSTRUCTORS AND DESTRUCTORS:** - Basic constructors, parameterized constructors, multiple constructors - Dynamic initialization of objects - Use of copy constructor - Dynamic constructors - Destructors - Constraints on constructors and destructors	**[06]**	
Unit -6	**OPERATOR OVERLOADING:** - Overloading unary operators: Operator keyword, Argument and return values, Laminations of increment operators - Overloading binary operators: Arithmetic operators, Examples: Addition of polar coordinates and concatenation of strings, Comparison operators, Arithmetic assignments operators Data and type conversions: Conversion between basic types, Conversion between object and basic types, Conversion between objects of different classes	**[08]**	
Unit -7	**DERIVED CLASSES AND INHERITANCE:** - Derived classes and Base class: Defining a derived class, Accessing the base class members, The protected access specifier - Derived class constructors - Overriding the member functions - Class hierarchies: Abstract base class, Constructors and member functions - Inheritance: Public and private inheritance.	**[08]**	
Unit -8	**POINTERS:** - Addresses and Pointers: The address of operator & Pointer variables, Accessing the variable pointed to Pointer to void - Pointer and Arrays - Pointers and Functions: Call by value, Call by reference, pointer to functions, passing function to another function - Pointers and strings: Pointer to string constants, strings as function arguments, Arrays of pointers to strings - Pointers to objects, Pointers to pointers.	**[08]**	
	Total	**60**	

Text Books Recommended:

1. C++ Primer, Third Edition, 1998 - Stanley B. Lippman, Addison-Wesely
2. Problem Solving with C++, Second Edition, 1999 - W. Savitch Pearson Education
3. Object Oriented Programming with C++, 1999 - E. Balagurusamy Tata McGraw Hill
4. Object Oriented Programming with C++, 1999 - Nabajyoti Barkakati PHI
1. Object Oriented Programming in C++, Fourth Edition, 2001 - R. Lafore Techmedia
2. The Elements of C++ Programming, Third Edition, 2000 - B. Stroustrup Addison Wesely
3. Mastering C++, First Edition, 1997 - K.V. Venugopal, R. Kumar and T. Tavishankar, Tata McGraw Hill
4. Object Oriented Programming Through C++ - M.P. Singh

SYSTEM ANALYSIS AND MANAGEMENT INFORMATION SYSTEM

Subject Code 1618405	Theory			No of Period in one session : 50			Credits
	No. of Periods Per Week			Full Marks	:	100	3
	L	T	P/S	ESE	:	70	
	03	—	—	TA	:	10	
				CT	:	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

Contents (Theory)		Hrs/week	Marks
Unit -1	**INTRODUCTION:** System Definition and Concepts: General Theory systems, Manual and automated systems, Real-life Business Sub-systems. System Environments and Boundaries	[05]	
Unit -2	**SYSTEMS ANALYST:** Role and Need of Systems Analyst, Qualifications and responsibilities	[04]	
Unit -3	**SYSTEM DEVELOPMENT CYCLE:** Introduction to Systems Development Life Cycle (SDLC), various phases of SDLC: Study, Design, Development, Implementation, Maintenance.	[07]	
Unit -4	**SYSTEM PLANNING:** 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.	[05]	
Unit -5	**MODULAR AND STRUCTURED DESIGN:** Module specifications, Top-down and bottom-up design Module coupling and cohesion	[03]	
Unit -6	**SYSTEM DESIGN AND MODELLING:** Process Modeling, Logical and physical design	[05]	
Unit -7	**INPUT AND OUTPUT:** Classification of forms, Input/output forms design, User-interface design, Graphical interfaces. Standards and guidelines for GUI design.	[06]	
Unit -8	**SYSTEM IMPLEMENTATION AND MAINTENANCE:** System acceptance criteria, System Evaluation and Performance, Testing and Validation, Preparing User Manual Maintenance Activities and Issues	[03]	
Unit -9	**ANALYSIS/ DESIGN:** Introduction to UML, OO Development Life Cycle and Modeling, Static and dynamic modeling,	[04]	
Unit -10	**INTRODUCTION TO MANAGEMENT INFORMATION SYSTEM (MIS):** Meaning and role of MIS, Systems approach to MIS. Types of Information Systems: Transaction Processing System, Management Information System, Decision Support System,	[08]	
	Total	**50**	

Text Books Books Recommended:-

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
3	System Analysis and Management Information System	-	S.M. Rai

DATABASE MANAGEMENT SYSTEM LAB

Subject Code 1618406	Practical			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	50	2
	L	T	P/S	ESE	:	50	
	—	—	04	Internal	:	15	
				External	:	35	

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

OBJECT ORIENTED PROGRAMMING THROUGH C++ LAB.

Subject Code 1618407	Practical			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	50	2
	L	T	P/S	ESE	:	50	
	—	—	04	Internal	:	15	
				External	:	35	

Contents (Term Work)		Hrs/week	Marks
Unit -1	Programming exercise on executing a Basic C++ Program.	[ ]	
Unit -2	Programming Exercise on Control Statement (if-else, elseif ladder)	[ ]	
Unit -3	Programming exercise on loop Control Statement (for, while, do-while)	[ ]	
Unit -4	Programming exercise on Function	[ ]	
Unit -5	Programming exercise on creating classes and their object.	[ ]	
Unit -6	Programming exercise to demonstrated constructor and destructor.	[ ]	
Unit -7	Programming exercise on operator overloading.	[ ]	
Unit -8	Programming exercise to illustrate concept of Inheritence	[ ]	
	Total		

DIGITAL ELECTRONICS & MICROPROCESSOR (T W)

Subject Code 1618408	Term Work			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	50	02
	L	T	P/S	Internal Examiner	:	15	
	—	—	04	External Examiner	:	35	

Contents (Term Work)		Hrs/week	Marks
Unit -1	- Study of 4 bit up counter	[ ]	
Unit -2	- Study of 4 bit synchronous counter	[ ]	
Unit -3	- Study of decade counter	[ ]	
Unit -4	– Study of serial in serial out register	[ ]	
Unit -5	- Study of parallel in serial out register	[ ]	
Unit -6	- Study of different gates.	[ ]	
Unit -7	- Study of A/D converters	[ ]	
Unit -8	- Study of decoder, encoder, MUX and DEMUX, Design & realization of 4:1 multiplexer & 1:4 Demux.	[ ]	
Unit -9	- Study of half and full adders	[ ]	
Unit -10	- Assembly language Programming with Intel 8085, and related Programs – Addition, Subtraction, Comparision etc.	[ ]	
	Total		

Text Books /Books Recommended:-

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" (T W)

Subject Code 1618409	Term Work			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	50	02
	L	T	P/S	Internal Examiner	:	15	
	—	—	03	External Examiner	:	35	

Contents (Term Work)		Hrs/week	Marks
Problems based on topics taught in Theory classes as per instruction and guidance of the teacher concerned.			
Unit -1	- Write a program to create singly linked list, and perform insertion, deletion and updation of items of the list.	[ ]	
Unit -2	- Write a program, for creating of priority queues.	[ ]	
Unit -3	- Write a program to create Stack using linked list and arrays, and perform push and pop operation on it.	[ ]	
Unit -4	- Write a program to convert infix expression into postfix expression.	[ ]	
Unit -5	- Write a program for following sorting algorithms:- (a) Selection Sort (b) Merge Sort	[ ]	
Unit -6	- Write programs for following searching algorithms:- (a) Binary & Linear Search (b) Breadth first Search	[ ]	
Unit -7	- Write a program to find in order, Preorder and Post order traversal of tree.	[ ]	
	Total		

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 MANAGEMENT INFORMATION SYSTEM(T W)

Subject Code 1618410	Term Work			No of Period in one session :			Credits
	No. of Periods Per Week			Full Marks	:	50	01
	L	T	P/S	Internal Examiner	:	15	
	—	—	03	External Examiner	:	35	

Contents (Term Work) Problems based on topics taught in Theory classes as per instruction and guidance of the teacher			Hrs/week	Marks
Unit -1	-	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.	[ ]	
Unit -2	-	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.	[ ]	
Unit -3	-	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.	[ ]	
Unit -4	-	Draw DFD for order processing system.	[ ]	
Unit -5	-	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.	[ ]	
Unit -6	–	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.	[ ]	
Unit -7	-	Take hospital management system. Explain PCR (Parent Child Relationship) in Hierarchical/relational DBMS. Create a data dictionary for the same.	[ ]	
Unit -8	-	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?		
		Total		

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