BCA SYLLABUS FRAME WORK 2016-2019

5S.No	Sem.	Core/ Allied	Title of the paper	Lecture Hours		Max. Marks			Credits
				Th	Pr	In	Ex	Tot.	
1	I	Paper-I	Programming in C	4		25	75	100	4
2		Practical-I	Programming in C Lab		4	20	30	50	2
3		Practical-II	Multimedia Lab		4	20	30	50	2
4		Allied-I	Allied Maths-I	6		25	75	100	5
		Non-Major elective	Fundamentals of Programming Language	2		40	60	100	2
		Softskill-I	Essentials of Language and communication skills	2		40	60	100	3
T o t a l				**10**	**8**			**500**	**18**
4	II	Paper-II	Internet Programming	4		25	75	100	3
5		Practical-III	Internet Programming Lab		4	20	30	50	2
6		Practical-IV	Unix Lab		4	20	30	50	2
7		Allied-II	Allied Maths-II	6		25	75	100	5
		Non-Major elective	Basics in Object Oriented Concepts	2		40	60	100	2
		Softskill-II	Essentials of spoken and presentation skills	2		40	60	100	3
T o t a l				**10**	**8**			**500**	**17**
8	III	Paper-III	Object oriented programming with C++	5		25	75	100	3
9		Paper-IV	Data Structures and algorithms	5		25	75	100	4
10		Paper-V	Object Oriented Analysis and Design	6		25	75	100	4
11		Practical-V	C++ Lab		4	20	30	50	2

12		Practical-VI	Data structures Lab		4	20	30	50	2
13		Allied-III	Financial Accounting	6		25	75	100	5
			Environmental Studies	1		25	75	100	2
T o t a l				**22**	**8**			**600**	**22**
`14	IV	Paper-VI	Computer Architecture	5		25	75	100	4
15		Paper-VII	Database Management Systems	5		25	75	100	4
16		Paper VIII	Visual Programming	4		25	75	100	4
17		Practical-VII	VB and SQL Lab		4	20	30	50	2
18		Practical-VIII	Tally and SPSS Lab		4	20	30	50	2
19		Allied-IV	Cost and Management Accounting	6		25	75	100	5
		Skill Based Elective	Any one from the list	2		40	60	100	3
T o t a l				**22**	**8**			**600**	**24**
20	V	Paper-IX	Programming in Java	5		25	75	100	3
21		Paper-X	Programming in PHP and MYSQL	5		25	75	100	3
22		Paper-XI	Operating systems	6		25	75	100	4
23		Practical-IX	Java Programming Lab		4	20	30	50	2
24		Practical-X	PHP and MYSQL Lab		4	20	30	50	2
25		Elective-I	Choose one from List of Electives	6		25	75	100	5
		YVAE	Value Education(Yoga)			40	60	100	3
T o t a l				**22**	**8**			**600**	**22**
26	VI	Paper-XII	Data Communication and Networking	5		25	75	100	4
27		Paper-XIII	Web Technology	4		25	75	100	4
28		Practical-XI	Web Technology Lab		4	20	30	50	2
29		Practical-XII	Mini Project		5	20	30	50	2
30		Elective-II	Choose one from List of Electives	5		25	75	100	5
31		Elective-III	Choose one from List of Electives	5		25	75	100	5

		Skill Based Elective	Skill based paper	2		40	60	100	2
T o t a l				**21**	**9**			**600**	**24**
Total Core and Allied Courses				2600					107
Part –I (Language)				200					6
Part –II (English)				200					6
Environmental Science				100					2
Yoga				100					2
SoftSkill				400					12
Non-Major Elective				200					4
G R A N D T O T A L				**3800**					**139**

List of Electives :

1.Software Engineering and Testing
2.Resource Management Techniques
3.E-Commerce
4.Cloud Computing
5.Security in Information Technology
6.Computer Graphics.

Title of the Course/ Paper	***PAPER- I:- PROGRAMMING IN C***	
Core	I **Year** I **Semester**	**Credit: 4**
Course outline	**Unit-1:** C fundamental Character set – identifiers and keywords – data types –constants – variables –declaration –expression – statements –arithmetic, unary, relational and logical, assignment and conditional operator –library functions	
	Unit-2: Data input output functions –simple C programs –Flow of Control –if, if-else, while, do-while, for loop, Nested control structures – Switch, break and continue, go to statements – comma operator.	
	Unit-3: Functions – definition - proto-types - passing arguments - recursion. Storage classes - Automatic, External, and Static, Register variables.	
	Unit-4: Arrays – Defining and processing – passing arrays to functions - Multi-Dimension arrays - Arrays and string.Structures – User defined data types- passing structures to functions – self-referential structures – Unions – Bit-wise operations.	
	Unit-5: Pointers –declarations – passing pointers to functions – Operation in pointers –pointer and Arrays – Arrays of pointers – structure and pointers –Files: creating, processing, opening and closing a data file.	
Books for Study:	Balagurusamy , Programming in C, TMH.	
	Kanetkar Y. Let us C, BPB pub, New Delhi, 1999.	
Books for Reference:	H.schildt, C: The complete reference, 4th Edition, THM Edition, 2000.	
	Gottfried, B.S, programming with c, second Edition, THM pub. Co. ltd., New Delhi 1996.	
	B.w. Kernighan and D.M.Ritchie, The C programming Language, 2nd Edition, PHI, 1988.	

Title of the Course/ Paper	*PRACTICAL III:- C PROGRAMMING LAB*	
Practical	I **Year** I **Semester**	**Credit: 2**
Exercises	**I. Control structures** 1. Generate 'n' prime number. 2. Factorial of the given number. **II String manipulation :** 3. Counting the no. of vowels, consonants, words, white spaces in a line of text 4. Reverse a string and check for palindrome. 5. Finding and replacing substrings **III Functions:** 6. Fibonacci sequence. 7. Maximum and Minimum. **IV Recursion :** 8. GCD of two numbers. 9. Towers of Honai. **V Matrix Manipulation :** 10. Transpose of a matrix. **VI Pointers** 11. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function. 12. Write Insertion sort program using array of pointers. 13. Write a binary search program using array of pointers. **VI Files** 14. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file. 15. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i)no of chars ii) no. of words and iii) no. of lines.	

Title of the Course/ Paper	*PRACTICAL – II: -MULTIMEDIA LAB*	
Practical	I **Year** I **Semester**	**Credit: 2**
Exercises	**I GIMP** 1. Implementation of different Selection Tool. 2. Applying different View Options. 3. Implementation of Transforming and sizing. 4. Images-adding, Deleting and Moving. 5. Layers-Implementation of Paint Tool. 6. Implementation of Transform Tool. 7. Implementation of different Filters. 8. Implementation of different Color Tools **II – :BLENDER** 11. Getting Started 12. Modeling 13. Animation 14. Lighting and Rendering	

Websites	http://docs.gimp.org/2.4/en/ http://blender.org/education-help/tutorials http://blenderguru.com

DEPARTMENT OF COMPUTER APPLICATIONS
FIRST SEMESTER
NON MAJOR ELECTIVE FOR OTHER DEPARTMENTS (2 hrs/week)

Objective:

1. To train the students in attending various competitive exams
2. To improve the mental and reasoning ability
3. To enhance logical thinking of the students

Title of the Course/ Paper	***NON MAJOR ELECTIVE: FUNDAMENTALS OF PROGRAMMING LANGUAGE***		
Non Major Elective	I **Year** I **Semester**		**Credit: 2**
Course outline	**Unit-1:**	Introductory programming terminology -Creating a program plan: decisions, and program flow -Flow charting a program - Programming logic -Programming elements –Syntax	
	Unit-2:	Operators-Variables -Conditional Statements – Control Structures- Functions - Data Arrays -Debugging -Program Development in General.	
	Unit-3:	Sample Programs-Factorial-Fibonacci-Summation of series – palindrome checking – linear search-finding the maximum & Minimum number.	

Books for Study:	**1.**	Any programming Language Book.

Title of the Course/ Paper	***PAPER-II: - INTERNET PROGRAMMING***		
Core	I **Year** II **Semester**		**Credit: 3**
Course outline	**Unit-1:**	Internet basics, introduction to HTML, list, creating tables, linking documents, frames, graphics to HTML documents, style sheet basics, adding styles to documents.	
	Unit-2:	: Creating style sheet tools, style sheet properties, font, text, list, colour and background colour, box, display properties.	
	Unit-3:	Introduction to JavaScript, Advantages of JavaScript, JavaScript Syntax, data types, variables , arrays. Operators and Expressions, Looping constructors, functions, dialog box, JavaScript, document object model.	
	Unit-4:	Introduction – objects in HTML, event handling, window object, document object, browser object, object methods, built-in objects, user defined objects, cookies.	
	Unit-5:	DHTML, cascading style sheets, class, external style sheets, working with JavaScript style sheet.	

Books for Study:	**1.**	Ivan Bayross – Web Enabled Commercial Application Development, HTML, DHTML, JAVASCRIPT, PERL ,CGI
Books for Reference:	**2.**	Mastering in Javascript – Jaworski, James – BPB pub.

Title of the Course/ Paper	*PRACTICAL – III: - INTERNET PROGRAMMING LAB*	
Practical	I **Year** II **Semester**	**Credit: 2**
Exercises	**I HTML** 1. Create a Web Page for your Personal Information using text formatting tags. 2. Create a web page to display railway train timings. 3. Create a sample web page to promote a product using frames and links. 4. Working with lists **II – JAVASCRIPT:** 1. Create a javascript program to sort the given numbers in ascending and descending order. 2. Factorial of a number 3. Fibonacci series 4. Working with mouse events 5. Manipulation of Strings 6. Create a web page for getting personal details using form controls 7. Write a program to design a calculator **III - Cascading style sheet** 1. Box property in CSS **2.** Font property in CSS	

Title of the Course/ Paper	*PRACTICAL- IV:- UNIX AND SHELL PROGRAMMING LAB*	
Practical	I **Year** II **Semester**	**Credit: 2**
Exercises	1. Write a shell script which receives two file names as arguments. Check whether the file contents are same or not. If same delete the second file. 2. Write shell script, which gets executed the moment the user logs in, it, should display the message GOOD MORNING/GOOD AFTERNOON/GOOD EVENING depending on the time and user logs in. 3. Write a function GO which would change the $ prompt to the current directory name in which you are working. Thus if you are working in \usr\acc the prompt should look like \usr\acc. 4. Write a shell script which displays a) List of all files in the current directory to which you have read, write and execute permissions. b) Receive any number of filenames as arguments and check whether the argument supplied is a file or directory. If it is a directory it should appropriately reported. If it is a filename then name of the file as well as the number of lines present in it should be reported. 5. Write a shell script to search a file from the current directory in any of the sub-directories and report the path. 6. Create a file called TEST which contains sample data as follows. A00001 Shanthi 80,A00007Arun 70 ,S00005 Karthi 50 . Answer the following questions based on the above. • Display the contents of the file sorted according to the marks in the descending order. • Display the names of the students in the alphabetical order ignoring the cases. • Display the list of students who have scored marks between 60 and 80. • Display the list of students and their register number. 7. Write a shell script to check if the inputs string is a palindrome. 8. Write a shell script to accept two file names and check whether both exist. If the second file name exists then the contents of the first file name should be appended to it. If the second file name does not exist then create a new file with the contents of the first file name. 9. Write a shell script to accept a number in the command line and display the sum up to that number. 10. Write a shell script to prepare a pay slip.	

DEPARTMENT OF COMPUTER APPLICATIONS

SECOND SEMESTER

NON MAJOR ELECTIVE FOR OTHER DEPARTMENTS (2 hrs/week)

Objective:

1. To train the students in attending various competitive exams
2. To improve the mental and reasoning ability
3. To enhance logical thinking of the students

Title of the Course/ Paper	***NON MAJOR ELECTIVE: BASICS IN OBJECT ORIENTED CONCEPTS***		
Non Major Elective	I **Year** II **Semester**		**Credit: 2**
Course outline	**Unit-1:**	Principles of Object Oriented Programming(OOP)-Software Evaluation- OOP Paradigm-Basic Concepts of OOP-benefits of OOP Application of OOP.	
	Unit-2:	Classes and objects-Encapsulation-Abstraction-Polymorphism- Inheritance.	
	Unit-3:	Sample Programs using OOPs concept.	

Books for Study:	**1.**	E.Balaguruswamy-Object Oriented Programming With C++-TMH.

Title of the Course/ Paper	***PAPER- III :- OBJECT ORIENTED PROGRAMMING WITH C++***		
Core	II **Year** III **Semester**		**Credit: 3**
Course outline	**Unit-1:**	Principles of Object Oriented Programming (OOP)-Software evaluation-OOP Basic Concepts of OOP-benefits of OOP-Application of OOP.	
	Unit-2:	Introduction to c++-Tokens-Keywords-Identifiers-Variables-operators-Manipulators-Expresssions and Control Structures-Pointers-Functions-Function Prototyping parameters Passing in Functions-Values return by Functions-Inline functions-Friend and Virtual functions.	
	Unit-3:	Classes and objects-Constructors-Operator overloading-Type Conversions-Type of Constructors-Function Overloading.	
	Unit-4:	Inheritance-Types of Inheritance-Virtual Functions and Polymorphism Constructors in inheritance-Mapping Console I/O operations.	
	Unit-5:	Files-File Operations-File pointer-Error Handling during file operations-Command line arguments.	

Books for Study:	**1.**	E.Balaguruswamy-Object Oriented Programming With C++-TMH.
Books for Reference:	**1.**	Robert Lafore-Object Oriented Programming in Microsoft C++-Galgotia.
	2.	Venugopal – Programming with C

Title of the Course/ Paper	***PAPER- III - DATA STRUCTURES AND ALGORITHMS***		
Core	II **Year** III **Semester**		**Credit: 4**
Course outline	**Unit-1:**	Definition of Data Structure-Primitive and Composite Data Types, Asymptotic notations, Arrays, Operations on Arrays, Order lists.	
	Unit-2:	Stacks-Application of Stack-Infix to Postfix Conversion, Recursion, Maze Problems-Queues-Operations on Queues, Queue Application, Circular Queue,	
	Unit-3:	Singly Linked List-Operations, Application-Representation of a Polynomial, Polynomial addition; Doubly Linked List-Operations, Applications-Ordering of Books in Library(Alphabetical Ordering).	
	Unit-4:	Trees and Graphs: Binary Trees-Conversion of Forest to Binary Tree, Operations-Tree Traversals; Graph-Definition, Types of Graphs, Hashing Table and Hashing Functions, Traversal-Shortest Path; Dijkstra's Algorithm.	
	Unit-5:	Algorithm-Definition - Examples-Complexity-Divide and Conquer-Binary Search-Maximum and Minimum-Merge Sort.	

Books for Study:	**1.**	E.Horowitz and S.Shani Fundamentals of Data Structures in C++, Galgotia Pub.1999.
	2.	P.Sudharsan and J.JohnManoj Kumar ,C++ & Data Structures, RBA Publications, First Edition
Books for Reference:	**1.**	Horowitz, S.Sahni,andS.Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd., 1998.
	2.	R.Kruse C.L. Tondo and B.Leung,Data Structures and Program design in C, PHI, 1997.

Title of the Course/ Paper	***PAPER-V: -OBJECT ORIENTED ANALYSIS AND DESIGN***		
Core	II **Year** III **Semester**		**Credit: 4**
Course outline	**Unit-1:**	System Development-Object Basics-Development Life Cycle-Methodologies-Patterns-Framework-Unified Approach-UML.	
	Unit-2:	Use-Case Models-Object Analysis-Object relations-Attributes-Methods-Class and Object responsibilities-Case Studies.	
	Unit-3:	Design Processes-Design Axioms-Class Design-Object Storage-Object Interoperability-Case Studies.	
	Unit-4:	User interface Design-View Layer Classes-Micro-Level Processes-View Layer Interface-Case Studies.	
	Unit-5:	Quality Assurance Tests-Testing Strategies-Object Orientation on Testing-Test Cases-Test Plans-Continuous Testing-Debugging Principles-System Usability-Measuring User Satisfaction-Case Studies.	

Books for Study:	**1.**	Ali Bahrami, "Object Oriented System Development", McGraw-Hill International Edition, 1999.
Books for Reference:	**1.**	Booch G., "Object oriented analysis and design", Addison-Wesley Publishing Company, 1994.
	2.	Rambaugh J, Blaha.M. Premeriani, W., Eddy F and Loresen W., "ObjectOrientedModeling and Design", PHI, 1997.

Title of the Course/ Paper	*PRACTICAL -V:- C ++ LAB*	
Practical	II **Year** III **Semester**	**Credit: 2**
Exercises	**Functions** 1. Add the specific no. of distance values using inline function **Classes and Objects** 1. Construct a class for storage of dimensions of circle, triangle and rectangle and calculate their areas. 2. Perform arithmetic operation or complex data using class and object. **Recursion** 1. Perform Binary search 2. Print String backwards 3. Factorial of a numbers. **Polymorphism** 1. Overload Unary operator 2. Overload Binary operator 3. Overload operators using friends **Inheritance** 1. Illustrate multilevel inheritance 2. Resolve ambiguity in multiple inheritance (virtual base class) **Pointers** 1. Illustrate the use of THIS operator **Virtual and Friend Functions** 1. Illustrate runtime polymorphism 2. Illustrate working of a friend function **File Handling in C++** 1. Copy a text file to another 2. Create a file of objects and display the objects stored in the file **Templates** 1. Find largest value contained in an array 2. Illustrate a class template	

Title of the Course/ Paper	*PRACTICAL -VI - DATA STRUCTURES USING C++*	
Practical	II **Year** III **Semester**	**Credit: 2**
Exercises	1. Implement PUSH,POP operations of stack using Arrays. 2. Implement PUSH,POP operations of stack using Pointers. 3. Implement add,delete operations of a queue using Arrays. 4. Implement add,deleteoperatios of a queue using Pointers. 5. Conversion of infix to postfix using stack operations. 6. Postfix Expresssion Evaluation. 7. Addition of two polynomials using Arrays 8. Addition of two polynomials using Pointers. 9. Creation, Insertion,and Deletion in doubly linked list. 10. Binary tree traversals(in-order,pre-order,and post-order) using linked list.	

Title of the Course/ Paper	***ALLIED- III: – FINANCIAL ACCOUNTING***		
Allied	II **Year** III **Semester**		**Credit: 5**
Course outline	**Unit-1:**	The Accounting Structure: Basic accounting concepts and Conventions – Meaning of accounting – Groups interested in accounting information.	
	Unit-2:	Journal & ledger, trial balance preparation (simple problems)	
	Unit-3:	Final Accounts (Simple Problems)	
	Unit-4:	Depreciation accounting – Meaning of depreciation – Methods of providing depreciation – Fixed percentage on original cost – Fixed percentage on diminishing balance. (Simple Problems)	
	Unit-5:	Branch accounts: Debtors system	

Books for Study:	**1.**	T.S. Reddy & A. Murthy – Financial Accounting.
Books for Reference:	**1.**	S.P. Jain & K.L Narang – Financial Accounting
	2.	Gupta R.L Advanced Accountancy, S.Chand, Delhi

FINANCIAL ACCOUNTING

Proportion : Theory (15 Marks) : Problems (60 Marks)

Part-A (Qnos 1-12)
(10x2=20)
Answer any 10 out of 12

(7 Theory, 5 Problems)

Part-B (Qnos 13-19)
(5X5=25)
Answer any 5 out 7 Questions

(2Compulsory Theory, 5 Problems)

Part-C (Qnos20-24)
(3X10=30)
Answer any 3 out of 5

(All Problems)

Title of the Course/ Paper	***PAPER- VI :- COMPUTER ARCHITECTURE***		
Core	II **Year** IV **Semester**		**Credit: 4**
Course outline	**Unit-1:**	Data representation - Data types - complements, fixed point and floating point representation other binary codes - micro operations: Register transfer language, Register transfer, Bus and Memory transfer, Arithmetic, logic, and shift micro operations, Arithmetic logic shift unit - micro programmed control - control memory - Address sequencing - micro program example - design of control unit.	
	Unit-2:	Central processing unit: General register and stack organizations, instruction formats - Addressing modes, Data transfer and manipulation - program control, RISC - Pipelining - Arithmetic and instruction, RISC pipeline - Vector processing and Array processors.	
	Unit-3:	Computer Arithmetic - Addition and subtraction, Multiplication and division, floating point and decimal Arithmetic operations	
	Unit-4:	Input-output organization - peripheral devices, I/O interface, Asynchronous data transfer, modes of transfer, priority interrupt, direct memory access, I/O processor, serial communications.	
	Unit-5:	Memory organization - Memory hierarchy - main memory - Auxiliary memory - associative, cache and virtual memory, memory management hardware - multi processors: Interconnection structures, Inter processor arbitration.	

Books for Study:		1.Mano, Computer System architecture. PHI (Third Edition) 1993
		2.P.NaughtonandH.Schildt-Java2(TheCompleteReference)-ThirdEdition TMH1999.
Books for Reference:	**1.**	V. C. Hamacher, G.Vranesic, S. G.Zaky-Computer Organisation, McGraw Hill.
	2.	J. P.Hayes,. Computer architecture, McGraw Hill, ISE, 1988 3.H. K, Briggs. F.A - Computer Architecture and Parallel Processing, McGraw Hill ISE, 1988

Title of the Course/ Paper	***PAPER -VII:-DATABASE MANAGEMENT SYSTEMS***		
Core	II **Year** IV **Semester**		**Credit: 4**
Course outline	**Unit-1:**	Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De normalization – Examples of Normalization.	
	Unit-2:	Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.	
	Unit-3:	Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Join – Set operations.	
	Unit-4:	PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.	
	Unit-5:	PL/SQL Composite Data Types: Records – Tables – Varrays. Named Blocks: Procedures – Functions – Packages –Triggers – Data Dictionary Views.	

Books for Study:	**1.**	Database Systems Using Oracle – Nilesh Shah, 2nd edition, PHI.
Books for Reference:	**1.**	Database Management Systems – ArunMajumdar&Pritimoy Bhattacharya, 2007, TMH.
	2.	Database Management Systems – Gerald V. Post, 3rd edition, TMH.

Title of the Course/ Paper	***PAPER –VIII: -VISUAL PROGRAMMING***		
Core	II **Year** IV **Semester**		**Credit: 4**
Course outline	**Unit-1:**	CustomizingaForm-WritingSimplePrograms-Toolbox-CreatingControls-ameProperty-CommandButton-AccessKeys-ImageControls-TextBoxes – Labels - MessageBoxes - Grid-EditingTools-Variables-DataTypes-String Numbers.	
	Unit-2:	Displayinginformation-DeterminateLOOPs-IndeterminateLOOPs-Conditionals- Select case-nested If then- goto. Built-inFunctions-FunctionsandProcedures.	
	Unit-3:	Lists-Arrays-Filter and Split functions-SortingandSearching-Records Control Arrays-Combo Boxes- Flex GridControl-Projectswithmultipleforms-DoEventsandSub Main-ErrorTrapping.	
	Unit-4:	VBObjects-DialogBoxes-CommonControls-Menus-MDIForms-Testing, DebuggingandOptimization.	
	Unit-5:	MonitoringMouseactivity-File systemControls- FileSystem Objects -COM/OLE - automation-DLLServers-OLE DragandDrop-Database development using Visual Basic.	

Books for Study:	**1.**	1. GaryCornell-VisualBasic6fromtheGroundup-TataMcGrawHill-1999.
Books for Reference:	**1.**	NoelJerke-VisualBasic6(TheCompleteReference)-TataMcGrawHill-1999.

Title of the Course/ Paper	*PRACTICAL- VII: - VB and SQL LAB*	
Practical	II **Year** IV **Semester**	**Credit: 2**
Exercises		

PL/SQL block

1. Write a PL/SQL program to insert ten values in a table, check each value is odd or even and insert the output into the table
2. Use a cursor to select the five highest paid employees from the emp table.
3. Create a master and a transaction table. Write a Pl/SQL code to update the master using transaction table.
4. Create a package, which consists of two procedures named hire_employee which will insert new employee details into emp table and another procedure named fire_*employee*which will delete an employee details from the database.
5. Write a PL/SQL block that will select all rows from a employee table. The block displays empno, empname, doj, dept, and experience column. Experience column should be calculated using current date and doj column.
6. Write a PL/SQL block to select only those rows where the ordered is 2000 from the item table and update the price to be three times the quantity and set the actual price column of the table to the value in price.

Procedures

1. Create a procedure to calculate simple interest. Principal, rate of interest and no. of years are given as input.
2. Create a procedure to satisfy the following conditions accepting the route id as user input. Create suitable table(s).
    a. If the distance is less than 500 then update the fare to be 190.98
    b. If the distance is between 501-1000 then update fare to be 876.98
    c. If the distance is greater than 1000 then update fare to be 1200.98

Functions

1. Create a function that returns the empno of employees working in admin dept.
2. Create a function that finds out the result of a given student rollno.

Triggers

1. Write a database trigger before insert/update/delete for each row ant allowing any of the transactions on Mondays, Wednesdays and Fridays. Create suitable table(s)
2. The price of a product changes constantly. It is important to maintain the history of the prices of the products. Create a trigger to update the "Product_price_history" table when the price of the product is updated in the "Product" table. Create the "Product" table and "Product_price_history" table with the following fields respectively

    a. Product_price_history (product_id number(5), product_name varchar2(32), supplier_name varchar2(32), unit_price number(7,2))

    b. Product (product_id number(5), product_name varchar2(32), supplier_name varchar2(32), unit_price number(7,2))
3. Create the Price_history_trigger and execute it.
4. Update the price of a product. Once the update query is executed, the trigger fires and shoud updates the 'Product_price_history' table.

VB Applications

1. Write a program to convert Roman numerals to decimal.
2. Write a program to do money conversion. (conversion of rupees to various currencies)
3. Write a program to design a calculator with arithmetic, sqrt and trigonometric functions.
4. Write a program to perform temperature conversion and inches to feet conversion. The program should include facility to change font size, to display with precision (decimal places). The program should use MDI forms.
5. Write a program to select items from one list and move them to another list.
6. Write a program to implement the timer and shape controls.
7. Write a program to drag the controls within the form
8. Write a program to implement the slider control
9. Write a program to create a sketchpad using picture box.
10. Write a program to create a range tool using user controls.

	For the following programs use Oracle, create a databaseandperformtheoperationsgivenbelow. UseaMenuDrivenprogram. Insertion, Deletion, Modification and Generate simple reports using queries. 1. Payroll 2. Electricitybillpreparationsystem

Title of the Course/ Paper	***PRACTICAL- VIII: - TALLY AND SPSS LAB***	
Practical	II **Year** IV **Semester`**	**Credit: 2**
	Computerized Accounting-Tally Accounting Software SPSS - Statistical Package for Social Science	

Title of the Course/ Paper	*ALLIED- IV: – COST AND MANAGEMENT ACCOUNTING*	
Allied	II **Year** IV **Semester**	**Credit: 5**
Course outline	**Unit-1:**	Cost Accounting: Definition, meaning & objectives – Distinction between cost and financial accounting – Elements of cost and preparation of cost sheets.(Basic Cost Sheets)
	Unit-2:	Management accounting: Definition and Objectives – Distinction between management accounting and financial accounting
	Unit-3:	Fund flow– Importance of Fund flow– Schedule of changes in working capital – Preparation of Fund flow statement.
	Unit-4:	Preparation of Cash flow statement and its analysis.Difference between Fund flow and Cash flow
	Unit-5:	Marginal costing: The concept of Break-Even analysis

Books for Study:	**1.**	T.S. Reddy and A. Murthy - Cost and Management Accounting
Books for Reference:	**1.**	S.P. Jain & K.L Narang – Cost Accounting
	2.	S.N. Maheswari –Management Accounting

COST AND MANAGEMENT ACCOUNTING

Proportion : Theory (15 Marks) : Problems (60 Marks)

Part-A (Qnos 1-12)
(10x2=20)
Answer any 10 out of 12d

(7 Theory, 5 Problems)

Part-B (Qnos 13-19)
(5X5=25)
Answer any 5 out 7 Questions

(2Compulsory Theory, 5 Problems)

Part-C (Qnos 20-24)
(3X10=30)
Answer any 3 out of 5

(All Problems)

Title of the Course/ Paper	*PAPER IX - PROGRAMMING IN JAVA*	
Core	III **Year** V **Semester**	**Credit: 3**
Course outline	**Unit-1:**	Introduction to Java-Features of Java-Object Oriented Concepts- Lexical Issues- data Types- Variables- Arrays-Operators-control Statements.
	Unit-2:	Classes –Objects-Constructors-Overloading method-Access Control- Static and fixed methods-Inner Classes-String Class-Inheritance- Overriding methods-Using super Abstract class.
	Unit-3:	Packages-Access Protection-Importing Packages-Interfaces-Exception Handling Throw and Throws-Thread-Synchronization- Messaging-Runnable Interface-Inter thread Communication-Deadlock- Suspending, Resuming and stopping threads-Multithreading.
	Unit-4:	I/OStreams-FileStreams-Applets-StringObjects-StringBuffer-CharArray-JavaUtilities-CodeDocumentation.
	Unit-5:	WorkingwithwindowsusingAWT Classes-AWTControls-LayoutManagersand Menus.

Books for Study:	**1.**	CayS.Horstmann,GaryCornell-coreJava2VolumeI-Fundamentals,5th Edition.PHI,2000.
	2.	P.NaughtonandH.Schildt-Java2(TheCompleteReference)-ThirdEdition TMH1999.
Books for Reference:	**1.**	Programming with Java, - A Primer – E.Baluguruswamy
	2.	Programming with Java 2 – Xavier, C
	3.	K.ArnoldandJ.Gosling-TheJavaProgrammingLanguage-SecondEdition AddisonWesley,1996.

Title of the Course/ Paper	***PAPER-X : -PROGRAMMING IN PHP & MYSQL***		
Core	III **Year** V **Semester**		**Credit: 3**
Course outline	**Unit-1:**	Dynamic Content and the Web - PHP and MySQL's Place in Web Development - The components of a PHP Application - Integrating Many Sources of Information - Requesting Data from a Web Page. Developing Locally - working remotely.	
	Unit-2:	Exploring PHP-PHP and HTML text - coding building blocks. PHP decision making-Expressions - Operator Concepts - Conditionals-Looping. Functions - calling functions - defining functions- Object-Oriented Programming. Arrays: Array fundamentals. Database basics: Data base design-Structured Query Language.	
	Unit-3:	Using MySQL: MySQL Database - Managing the Database - Backing up and Restoring Data - Advanced SQL. Getting PHP to talk to MySQL: The process-querying the database with PHP functions - Using PEAR. Working with Forms: Building a form - Templates.	
	Unit-4:	String functions-Date and time functions - File Manipulation – Calling System Calls - Modifying MySQL objects and PH data: Changing database objects from PHP - Manipulating table data-displaying results with Embedded links-presenting a form to add and process in one file - updating data – deleting data – performing a subquery	
	Unit-5:	Cookies, Sessions and Access Control: Cookies - PHP and HTTP Authentication – sessions - using Auth_HTTP to Authenticate. Security: Session security. Validation and Error handling: Validating user input with JavaScript-Pattern Matching - Redisplaying a form after PHP validation fails. Building a Blog	

Books for Study:	**1.**	Michele Davis, Jon Phillips-Learning PHP and MySQL-2006 edition, O'Reilly publication
Books for Reference:	**1.**	Ellie Quigley , Margo Gargenta- PHP and MySQL by examples
	2.	W.Jason Gilmore -Beginning PHP and MySQL from novice to professional- 3rd edition, Apress publisher
	3.	VikramVaswani – PHP programming solutions-2007 edition-Tata McGraw Hill Publication

Title of the Course/ Paper	*PAPER XI - OPERATING SYSTEMS*	
Core	III **Year** V **Semester**	**Credit: 4**
Course outline	**Unit-1:**	Introduction - System structures-operating system services-user operating system interface-system calls-system programs-Operating system design and implementation--operating –system structure-Virtual Machines–System Boot-Process Management- Process scheduling-operations on processes-Interprocess communication –Communication in client-server systems- Multithreaded programming-overview-multithreading models-thread libraries-Process scheduling-Basic concepts-scheduling criteria-scheduling algorithms-Multiple-Processor scheduling-Algorithm Evaluation
	Unit-2:	Process Synchronization: Critical-Section Problem-Synchronization Hardware- Semaphores-Classical Problems of Synchronization-Critical Region-Monitors. Deadlocks: Characterization- Methods for Handling Deadlocks-Deadlock Prevention-Avoidance-Detection-Recovery.
	Unit-3:	Memory Management: Address Binding-Dynamic Loading and Linking- Overlays-Logical and Physical Address Space-Contiguous Allocation- Internal & External Fragmentation. Non-Contiguous Allocation: Paging And Schemes-Implementation-Hardware-Protection-Sharing— Fragmentation- Segmentation
	Unit-4:	Virtual Memory: Demand Paging-Page Replacement-Page Replacement Algorithms-Thrashing. File System: File Concepts-Access Methods- Directory Structures-Protection Consistency Semantics-File System Structures – Allocation Methods-Free Space Management.
	Unit-5:	I/O System: Overview-I/O Hardware-Application I/O interface-Kernel I/O Subsystem-Transforming I/O Requests to Hardware Operations- Performance. Secondary Storage Structures: Protection-Goals-Domain- Access matrix-The Security Problem-Authentication-Threats-Threat Monitoring-Encryption.

Books for Study:	**1.**	A.SilberschatzP.B.Galvin,Gange., "Operating System Concepts",7th Edn., John Wiley & Sons., 2002.
Books for Reference:	**1.**	A.SilberschatzP.B.Galvin,Gange., "Operating System Concepts",6th Edn., JohnWiley& Sons., 2002.
	2.	H.M.Deitel,An Introduction to Operating System, Second Edition, Addison esley,1990

Title of the Course/ Paper	*PRACTICAL- IX: - JAVA PROGRAMMING LAB*	
Practical	III **Year** V **Semester**	**Credit: 2**
Exercises	**Applications** 1. Substring Removal from a String. Use String Buffer class. 2. Finding area and Perimeter of a circle. Use Buffered Reader class 3. Determining the order of numbers generated randomly using Random class. 4. Implementation of Point Class for Image manipulation. 5. String Manipulation using Char Array. 6. Usage of Vector Classes. 7. Implementing Thread based applications & Exception Handling. 8. Application using synchronization such as Thread based, Class based and synchronized statements. **Applets** 1. Working with Frames and various controls. 2. Working with Dialogs and Menus. 3. Working with Panel and Layout. 4. Working with Colors and Fonts.	

Title of the Course/ Paper	*PRACTICAL- X:-PHP & MySQL LAB*	
Practical	III **Year** V **Semester**	**Credit: 2**
Exercises	1. Write a program in PHP to display date, month and year in a neat format. 1. Write a program in PHP to change background color based on day of the week using if else else if statements and using arrays 2. Write a program in PHP to force the text in a string to be all upper or lowercase 3. Write a program in PHP which writes the given number in words 4. Write a simple program in PHP for i) generating Prime number ii) generate Fibonacci series 5. Write a simple program in PHP to manipulate array values. 6. Write a program in PHP for processing a simple form (use controls like checkbox, radio buttons and options). 7. Write a function in PHP to generate random password 8. Write a program for a simple and fast calendar combining PHP and tables. 9. Write a program in PHP for a simple POST and GET functions. 10. Write a program in PHP for setting and retrieving a cookie 11. Write a program in PHP for exception handling for i) divide by zero ii) checking date format 12. Write a program in PHP for random text link advertising using predefined arrays 13. Write a program in PHP for a simple email processing 14. Write a program for PHP for a login script	

	15. Write a program in PHP for counting lines, number of characters with space and without space from a file 16. Write a program in PHP to upload file using form control. 17. Write a program in PHP for storing, retrieving and deleting session data 18. Write a program in PHP for admin interface to add and delete users using MySQL 19. Write a program in PHP to add, update and delete using student database.

Title of the Course/ Paper	***PAPER- XII:- DATA COMMUNICATION AND NETWORKING.***		
Core	III **Year** VI **Semester**		**Credit: 4**
Course outline	**Unit-1:**	Introduction to data communication, network, protocols & standards organizations- line configuration- topology- transmission mode – classification of network – OSI model – layers of OSI model.	
	Unit-2:	**:** Parallel and serial transmission –DTE/DCE/ such as EIA-499, EIA-530, EIA-202 and x21 interface- interface standards- modems – guided media – unguided media – performance – types of errors- error detection – error correction.	
	Unit-3:	Multiplexing – types of multiplexing – multiplexing application – telephone system – project 802 – Ethernet – token bus – token ring – FDDI – IEE 802.6 – SMDS- circuit switching – packet switching – message switching – connection oriented and connectionless services.	
	Unit-4:	History of analog and digital network – access to ISDN – ISDN layers – broadband ISDN – X.25 layers – packet layer protocol – ATM – ATM Topology – ATM protocol.	
	Unit-5:	Repeaters – bridges - routers – gateway – routing algorithms – TCP/IP network, transport and application layers of TCP/IP – world wide web.	

Books for Study:	**1.**	Behrouz and Forouzan – Introduction to Data Communication and Networking – 2nd edition – TMH- 2001.
Books for Reference:	**1.**	Jean Warland – Communication Networks (A first course) – second edition – WCB/McGraw Hill – 1998.
	2.	Behrouz and Forouzan – Introduction to Data Communication and Networking – 3rd edition – TMH- 2001.

Title of the Course/ Paper	***PAPER- XIII: -WEB TECHNOLOGY***		
Core	III **Year** VI **Semester**		**Credit: 4**
Course outline	**Unit-1:**	Introduction to HTML Tags – Introduction to XML – XML structure and syntax : Logical structure – XML syntax – Tags – Elements – Comments – Attributes – Cdata – Processing instructions – Entities – Well formed documents .	
	Unit-2:	Validating XML with DTD : Introduction – Defining a DTD – Attribute Declaration – Entity declaration – Combining internal and external DTDs – Other DTD keywords – Client side validation – Server side validation – validating XML with schemas : Components of schemas – Using CSS with XML : XML versus HTML – Cascading style sheet – CSS and XML – Extensible style sheet language : Using XSL style sheet – XSL methods – XSL queries.	
	Unit-3:	ASP.NET Language Structure-Page event, properties & compiler Directives HTML server controls-Anchor, Tables, Forms, Files, Basic Web server controls-Label, textbox, Button, Image, links, check & Radio Button, Hyperlink	
	Unit-4:	Data List Web server controls-Checkbox list, Radio button list, Drop down list, Listbox, Data grid, Repeater. Other Web Server Controls: Calendar Control, AdRotator Control, Validation controls. Request and response objects, cookies.	
	Unit-5:	Working with Data-OLEDB connection class, command class, transaction class, data adaptor class, data set class, Advanced issues-Email, Application issues, working with IIS and page Directives-Error handling. Security-Authentication, IP Address, secure by SSL & client certificates	

Books for Study:	**1.**	Professional ASP XML ,Wrox Press Ltd. SPD Pvt. Ltd. ASP.NET Developers Guide, Greg Buczek
Books for Reference:	**1.**	T.A.Powell,complete Reference HTML(Third edition)TMH,2002
	2.	XML Complete Reference,ASP.net Complete Reference, Mc Donald, Mathew, TMH

Title of the Course/ Paper	***PRACTICAL- XI: – WEB TECHNOLOGY LAB***	
Practical	III **Year** VI **Semester**	**Credit: 2**
Exercises	***HTML*** • Put an existing image on a web page. Create a table, use a heading and at least one use of rowspan/colspan. Colour a page and some text within the page. Link to another site. • Create a new file called index.html. • Put the normal HTML document structure tags in the file. • Give it a title. • At the bottom of the page (i.e. the last thing between the body tags) put the following; • A horizontal rule. • A link to your email addresses (with your name between the tag); remember to put the link to your email address within address tags. • A line break. • The date. (I have this same structure at the bottom of this page). • Above this block (which is called the footer), put a title in heading tags. • Add some text describing you. (You can split this into multiple headings and paragraphs if you wish). ***XML*** 1. Creation of XML documents. 2. Validation of XML using DTD 3. Validation of XML using schemas 4. Using CSS in XML 5. Creating XSL style sheets.	

Exercises	

ASP.NET

1. Create a web form for online quiz. The score earned by the user should be displayed back.
2. Create a web form for an online library. This form must be able to accept the membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the books are to be returned. You can enhance the look of the page by using various ASP.NET controls. Use proper validation controls.
3. Create a web form for an online library. This form must be able to accept the membership Id of the person borrowing a book, the name and ID of the book, and the name of the book's author. On submitting the form, the user (the person borrowing the book) must be thanked and informed of the date when the books are to be returned. You can enhance the look of the page by using various ASP.NET controls. Use proper validation controls. Display an advertisement at the bottom of the web from that you created.
4. Create an array containing the titles of five new movies .use this array as a data source for a drop down list control. The page must be capable of displaying the selected movies title to the user when the user clicks on the submit button.
5. Create a web application to generate employee payroll report. The form accepts the employee Id, employee name, basic pay. On submitting the form the allowances and deductions are calculated and display the respective report. Use proper validation controls.
6. Use a calendar control in the page to determine the current date (when the book is borrowed) and calculate the due date, which must be one week from the current date. Display the due date to the user.
7. Create a virtual directory in IIS. Create a global file and include the "session _Start" and "session _End" and, "Application _ Begin Request" and application End request" events. Write a simple ASP.NET page and execute it in the browser.

Title of the Course/ Paper	*PRACTICAL: - MINIPROJECT*	
Practical	III**Year** VI**Semester**	**Credit: 2**
Group Projects		
Project Evaluation: Power point presentation of the project and individual viva		

Title of the Course/ Paper	*ELECTIVE:Software Engineering and Testing*	
Elective	III **Year** V/VI **Semester**	**Credit: 5**
Course outline	**Unit-1:**	Introduction to Software Engineering: The Software process: A generic view of process-Software Engineering –Layered technology, Process framework, CMMI ,Process patterns , Process assessment , Personal and Team process models ,Process technology, Product and Process.
	Unit-2:	Process models: Waterfall model, Incremental Model, Evolutionary process models, Specialized Process models, Unified process.System engineering – computer based systems, System Engineering hierarchy, business process engineering,Product engineering, system modeling.
	Unit-3:	Requirements Engineering- Bridge to design and construction. Requirements Engineering tasks,Initiating the requirements engineering process,Eliciting Requirements, Developing Use-cases,Building the analysis model,Negotiating Requirements and Validating Requirements.
	Unit-4:	Principles of Testing - White Box Testing- Black Box testing
	Unit-5:	Integration Testing -System and Acceptance Testing

Books for Study:	**1.**	Roger .S. Pressman ,Software Engineering – A Practitioner's Approach : McGraw – Hill International Edition , Sixth Edition.
	2.	Software Testing Principles and Practices, Srinivasan Desikan& Ramesh Gopalswamy,Pearson Education
Books for Reference:	**1.**	Ian Sommerville, Software Engineering-Pearson Education, Asia - 3rd Edition
	2.	K.K. Aggarwal & Yogesh Singh, Software Engineering, New Age International publishers.
	3.	Software Engineering-Richard Fairely
	4	Software Testing Technique-Beizer Boris, Dreamtech

Title of the Course/ Paper	***ELECTIVE :-RESOURCE MANAGEMENT TECHNIQUES***		
Elective	III**Year** V/VI**Semester**		**Credit: 5**
Course outline	**Unit-1:**	Basic of Operations Research (OR): Characteristics of O.R-Necessity of O.R in industry-OR and Decision making-Role of computers in O.R. Linear programming: Formulation and Graphical solution (of 2 variables) canonical and standard terms of Linear programming problem. Algebraic solution and Graphical solution: Simplex method	
	Unit-2:	Transportation model: Definition-formulation and solution of transportation models – the row- minima, column-minima, matrix minima and vogel's approximation methods. Assignment model: Definition of assignment model-comparison with transportation model-formulation and solution of Assignment model-variation of Assignment problem.	
	Unit-3:	Sequencing problem: Processing each of n jobs through m machines-processing n jobs through 2 machines-processing n jobs through 3 machines – processing 2 jobs through m machines-processing n jobs through m machines – traveling salesman problem.	
	Unit 4:	Game Theory: Characteristic of games – maximin,minimax criteria of optimality – Dominance property – algebraic and graphical method of solution of solving 2*2 games.	
	Unit-5:	Pert-CPM: Networks-PERT computation-CPM computation – resource scheduling.	

Books for Study:	**1.**	Operations Research -Resourse Management Technique, P.R.Vittal,V.Malini ,Margham Publication.
	2.	Srinath L.S.: PERT and CPM principles and applications, Affiliated East Press Pvt. Ltd., New York, 1973.
Books for Reference:	**1.**	HamdyA.Taha: Operation Research – An Introduction, 5thed. Prentice Hall of India, Private Limited.,New Delhi,1996.

Title of the Course/ Paper	***ELECTIVE :-CLOUD COMPUTING***		
Elective	**III Year**	**V/VI SEMESTER**	**Credit:5**
Course outline	**Unit-1:**	**Understanding Cloud Computing:** Beyond the Desktop: An Introduction to Cloud Computing – Are you ready for Computing the Cloud – Developing Cloud Services.	
	Unit-2:	**Cloud Computing for Everyone:** Cloud Computing for the Family – Cloud Computing for the Community– Collaborating on Group Projects and Events – Cloud Computing for the Corporation.	
	Unit-3:	**Using Cloud Services:** Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management.	
	Unit-4:	**Collaborating on Word Processing** - Collaborating on Spreadsheets - Collaborating on Databases - Collaborating on Presentations – Storing and Sharing Files and other Online Content – Sharing Digital Photographs – Controlling it all with Web-Based Desktops.	
	Unit-5:	**Outside the Cloud: Other Ways to Collaborate Online:** Collaborating via Web-Based Communication Tools - Collaborating via Social Networks and Groupware - Collaborating via Blogs and Wikis.	

Books for Study:	**1.**	"Cloud Computing" Michael Miller, Pearson publication, 2013
Books for Reference:	**1.**	"Cloud Computing" , Dr.Kumar Saurabh ,Wiley India ,2011

Title of the Course/ Paper	***ELECTIVE :-E-COMMERCE.***		
Elective	**III Year**	**V/VI SEMESTER**	**Credit: 5**
Course outline	**Unit-1:**	Electronic Commerce and Opportunities: Background The Electronic Commerce Environment – Electronic Marketplace Technologies – Modes of Electronic Commerce: Overview: Electronic Data Interchange.	
	Unit-2:	Approaches to Safe Electronic Commerce. Overview – Secure Transport Protocols – Secure Transaction – Secure Electronic Payment Protocol (SEPP) – Secure Electronic Transaction (SET)	
	Unit-3:	Certificates for Authentication – Security on Web Servers – Payment Schemes: Internet Monetary Payment and Security Requirements- Payment and purchase order process – Online electronic cash.	
	Unit-4:	Internet / Intranet Security Issues and Solutions : The Need for Computer Security – Specific Intruder Approaches – Security Strategies-Security Tools – Encryption – Enterprise Networking and Access to the Internet Antivirus Programs.- Security Teams.	
	Unit-5:	MasterCard/Visa Secure Electronic Transaction: Introduction –Business Requirements – Concepts – payment Processing.	

Books for Study:	**1.**	Daniel Minoli& Emma Minoli, "Web Commerce Technology Handbook", Tata McGraw Hill – 1999.
Books for Reference:	**1.**	"E-Commerce" ,K.Bajaj& D Nag , Tata McGraw Hill – 1999.
	2.	"E-Commerce" , MamtaBhusry

Title of the Course/ Paper	***ELECTIVE:SECURITY IN INFORMATION TECHNOLOGY***	
Elective	III **Year** V/VI **Semester**	**Credit: 5**
Course outline	**Unit-1:**	**Information Security –** Introduction of information security – History, critical characteristic of Information, NSTISSC Security model, Components of an information system, securing components. **The need for security** – Introduction, Business needs, Treats, Attacks, Malicious code, Hoaxes, Back doors, Password crack, Brute force, Dictionary, DoS, Spoofing, Man-in-the-middle, Spam, Mail Bombing, Sniffers, Social Engineering, Buffer Overflow, Timing Attack.
	Unit-2:	**Risk Management** – Introduction, overview of risk management, risk identification, risk assessment, risk control strategies, selecting a risk control strategy. **Security Policies** – Introduction, information security policy, standards and practices, information security blueprint, continuity strategies, introduction to ISO27000 series.
	Unit-3:	**Firewall and VPNs -** Introduction, Physical design, Firewalls, protecting remote connections. **Intrusion Detection, Access control and other tools** – Introduction, IDSs, Honey nets and Padded cell systems, Scanning and Analysis tools, Access control devices.
	Unit-4:	**Cryptography –** Introduction, Principles of Cryptography, Cryptography tools, Public key infrastructure, Digital certificates, Hybrid cryptography systems, Steganography, protocols for secure communication.
	Unit-5:	**Information Security Maintenance –** Introduction, security management models, maintenance model.
Books for Study	**1.**	**Michael E. Whitman and Herbert J. Mattord,** Principles of Information Security,4th Edition, Thomson Course Technology, Boston.
Books for Reference	**1.**	**Daswani Neil, Christopher Kern and Anita Kesavan,** (2007), Foundations of Security – What every programmer needs to know, Apress, Berkeley CA.

Title of the Course/ Paper	***ELECTIVE -COMPUTER GRAPHICS***		
Elective	**III Year V/VI Semester**		**Credit: 5**
Course outline	**Unit-1:**	Introduction to computer graphics: Brief Survey of Computer Graphics – Graphics Systems: Video Display Devices – Types – Raster-Scan Systems and Random-Scan Systems – Input Devices – Hard-Copy Devices – Graphics Software.	
	Unit-2:	Output primitives and their attributes Line-Drawing (DDA and Bresenham's) Algorithms – Circle-Generating (Midpoint) Algorithm – Ellipse-Generating (Midpoint) Algorithms- Area-Filling (Boundary-Fill and Flood-Fill) Algorithms - Line Attributes - Color and Grayscale Levels – Character Attributes.	
	Unit-3:	Two-dimensional transformations and viewing : Basic Transformations - Matrix Representations and Homogeneous Coordinates – Composite Transformations - Other Transformations – Window-to- Viewport Coordinate Transformation.	
	Unit-4:	Three-dimensional concepts: Three-Dimensional Display Methods: Parallel and Perspective Projections – Depth Cueing - Visible Line and Surface Identification – Three-Dimensional Transformations: Translation- Rotation- Scaling - Other Transformations.	
	Unit-5:	Three-dimensional viewing: Viewing Pipeline and Coordinates – Transformation from World to Viewing Coordinates – Projections – Parallel Projection- Perspective Projection.	

Books for Study:	**1.**	D. Hearn and M.P. Baker,2005,Computer Graphics, 2ndEdition, Pearson Education, Prentice Hall, 19th Reprint.
Books for Reference:	**1.**	S. Harrington,1987, Computer Graphics , 2nd Edition , Tata McGraw-Hill Book Co.
	2.	W.M. Newman and R.F. Sproull ,1997, Principles of Interactive Computer Graphics, 2nd Edition, Tata McGraw-Hill Publishing Co. Ltd.
	3.	D.P. Mukherjee, 1999,Fundamentals of Computer Graphics and Multimedia , 1st Edition, Prentice-Hall of India Pvt. Ltd.

Internal Marks Split

THEORY Internal 25 and External 75		PROJECT Internal 20 and External 80	
Internal breakup		Internal breakup	
Components	Weightage (in %)	Components	Weightage (in %)
• Seminar • Surprise Objective test • Continuous assessment test I & II • Midsem/model	5 5 10 5	• Average of Review(I,II & III)	20
TOTAL	25	TOTAL	20

PRACTICAL Internal 20 and External 30	
Internal breakup	
Components	Weightage (in %)
• Model test • Record • Observation	10 5 5
TOTAL	20

Question Paper Pattern

Maximum marks 75 and three hour examination:-

Section A (Answer any 10 from 12)	10 x 2 = 20
Section B (Answer any 5 from 7)	5 x 5 = 25
Section C (Answer any 3 from 5)	3 x 10 = 30