JSS COLLEGE FOR WOMEN (Autonomous)

Saraswathipuram Mysore-9

Choice Based Credit System

CBCS Scheme

Bachelor of Computer Science (B.Sc)

(2018-19)

DEPARTMENT OF COMPUTER SCIENCE

Department Regulations

1. **Teaching instruction per week:**

   "Course duration: 16 weeks with 4 hours of instructions per week."

   a) Lecture classes: 4 Hrs of duration per paper per week.

   b) Practical classes: 4 Hrs of duration for I to VI semester per week.

2. **Examination:**

   a) Theory:

   C1- Will be assessed for I to VI semester for 10 marks after the completion first half of the semester by 8th week through test, assignment, attendance, seminar, projects in group and poster presentation (after the completion of 50% of the syllabus).

   C2- Will be assessed for I to VI semester for 10 marks after the completion second half of the semester by 16th week through test, assignment, attendance, seminar, projects in group and poster presentation (after the completion of rest 50% of the syllabus).

   C3- examinations for I to VI semester are conducted at the end of every semester for THREE hours of duration. The question paper shall be set for a maximum of 70 marks from I to VI semester and then after evaluation it will be reduced to 50 marks.

   b) Practical:

   C1- Will be assessed for I to VI semester for 05 marks after the completion first half of the semester by 8th week through experiment/continuous assessment of experimental work and record completion/procedure writing/viva/ attendance (after the completion of 50% of the experiments).

   C2- Will be assessed for I to VI semester 05 marks after the completion first half of the semester by 16th week through experiment/continuous assessment of experimental work and record completion/procedure writing/viva/ attendance (after the completion of 50% of the experiments).

C3- examinations for I to IV semester are conducted at the end of every semester for THREE hours of duration for a maximum of 40 marks and then after evaluation it will be reduced to 20 marks.

ONE experiment shall be conducted in each practical examination (I to VI semester).

3. **Eligibility criteria for students :**

   Only the students who have scored minimum 30% in C1 and C2 are eligible to take C3 examination.

4. **Eligibility criteria for teaching faculty:**

   a) Paper setting-the teacher with minimum of 5 years of teaching experience in the first grade college are eligible to set the question paper.

Paper valuation and practical examination – the teacher with minimum of 3years of experience is eligible to become evaluator and examiner

JSS COLLEGE FOR WOMEN (AUTONOMOUS)

SARASWATHIPURAM MYSURU-570009

CBCS Syllabus - B.Sc. (Computer Science) for 2018-2019 onwards

Year	Sem	Corse	Title	Hours / Week			Credits			Maximum Marks						Exam Duration	Total Marks
										Th IA		Pr IA		Exam			
				L	T	P	L	T	P	C1	C2	C1	C2	Th	Pr		
I	I	DSC 1	Programming in C and Python	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
	II	DSC 2	Problem Solving and Data Structure	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
II	III	DSC 3	Operating Systems and Software Engineering	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
	IV	DSC 4	RDBMS and Visual Programming	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
III	V	DSE 5.1	JAVA and Computer Networks	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
		DSE 5.2	Internet Programming	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
		DSE 5.3	Multimedia Computing	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
		SEC 1.1	Office Automation	1	0	2	1	0	1	05	05	05	05	40	40	2 Hours	50
		SEC 1.2	XML Programming	1	0	2	1	0	1	05	05	05	05	40	40	2 Hours	50
	VI	DSE 6.1	Advanced Visual Programming	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
		DSE 6.2	Object Oriented Analysis and design	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
		DSE 6.3	Mobile Application	4	0	4	4	0	2	10	10	05	05	70	50	3 Hours	100
		SEC 2.1	R Programming	1	0	2	1	0	1	05	05	05	05	40	40	2 Hours	50
		SEC 2.2	Tally	1	0	2	1	0	1	05	05	05	05	40	40	2 Hours	50

JSS COLLEGE FOR WOMEN (AUTONOMOUS)
SARASWATHIPURAM MYSURU-570009

CBCS SCH

EME FOR B.Sc. (Computer Science) PROGRAMME

I SEMESTER

Ability Enhancement Course	Course	Credits
AECC 1.1	**English**	**3**
AECC 1.2	**Kannada / MIL-1**	**3**
AECC 1.3	**Constitution of India**	**2**

II SEMESTER

Ability Enhancement Course	Course	Credits
AECC 1.1	**English**	**3**
AECC 1.2	**Kannada / MIL-1**	**3**
AECC 1.3	**Environmental Studies**	**2**

III SEMESTER

Ability Enhancement Course	Course	Credits
AECC 1.1	**English**	**3**
AECC 1.2	**Kannada / MIL-1**	**3**

IV SEMESTER

Ability Enhancement Course	Course	Credits
AECC 1.1	**English**	**3**
AECC 1.2	**Kannada / MIL-1**	**3**

B.Sc I SEMESTER
DSC 1
Credit (L: T: P = 4: 0: 2)
Programming in C and Python (Theory)

Unit-1 **16 Hrs**

Introduction to C language– History, Features and Applications of 'C'. Programming preliminaries – Character set, definitions and declarations of Identifiers, Variables, Constants, Keywords, Data types with examples.

Operators & expressions – Various operators & expressions, Operator precedence with example programs

Control structures – Decisions making and branching statements, Decisions making and looping statements with example programs. **Arrays –** Definition and need of arrays, 1-d and 2-d arrays with example programs. Introduction to multidimensional arrays.

Unit - 2 **16 Hrs**

String handling – Declarations, Initialization, reading and writing of strings, operations and string functions with example programs.

Functions: Definition and neesd of functions. Library functions, user defined functions in detail, functions and arrays, recursion, storage classes with example program. **Structures and Unions –** Definition and use of structures. Declaring, initializing and accessing structure member, arrays of structures, introduction to union.

Pointers - Introduction to pointers, Declaring and initializing a pointer, accessing a variable using pointer. pointers and arrays, pointers and functions, pointers and structures with example programs.

Unit - 3 **16 Hrs**

Overview of Programming: Structure of a Python Program, Elements of Python

Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator). Input and Output Statements,

Unit - 4 **16 Hrs**

Creating Python Programs: Control statements Conditional Statement- if...else, Difference between break, continue and pass. (Looping- while Loop, for Loop, Loop Control)

Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.

Reference Books:

1. C Programming for BCA - Srikanth

2. E. Balaguruswamy – Programming In C – Second edition – Tata Mcgraw Hill Publishing.
3. V. Rajaraman – Computer programming in c – PHI 2000.
4. Byron S Gottfried–Schaum's outline of theory and problems of programming with C
5. M G Venkatesh Murthy - Programming in C.

6. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 2007.
7. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.
8. T. Budd, Exploring Python, TMH, 1st Ed, 2011
9. Python Tutorial/Documentation www.python.or 2010
10. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012

DSC 3: Programming in C and python (Practical)

Part-A:

1. PROGRAM to find the roots of the quadratic equation using nested if.
2. Given two numbers PROGRAM to perform arithmetic operations using switch statement.
3. PROGRAM to generate Fibonacci series upto N numbers and to find palindrome or not using Switch Statement.
4. PROGRAM to generate prime numbers using for loop.
5. Program to find sin/cos series using any of the loops.
6. PROGRAM for Addition and Subtraction two M X N matrices
7. PROGRAM to multiply two M X N matrices using Functions
8. PROGRAM to find the factorial of a number using recursion.
9. PROGRAM to find the length, concatenate, copy the strings using inbuilt functions.
10. PROGRAM to calculate the marks card of student using structure.
11. PROGRAM to swap two numbers using function and pointers.

Part-B:

1. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria Grade A: Percentage >=80, Grade B: Percentage>=70 and <80, Grade C: Percentage>=60 and <70, Grade D: Percentage>=40 and <60, Grade E: Percentage<40
2. WAP to find the largest of three number
3. WAP to find the given number is Palindrome or not
4. WAP to display the first n terms of Fibonacci series.
5. WAP to find factorial of the given number
6. Generate Prime Numbers
7. WAP to find sum of the following series for n terms: 1 – 2/2! + 3/3! - - - - - n/n!
8. WAP to Transpose a Matrix
9. WAP to calculate the sum and product of two compatible matrices.

B.Sc II SEMESTER
DSC 2
Credit (L: T: P = 4: 0: 2)
Problem Solving and Data Structures (Theory)

Unit 1: 16 Hrs

Techniques of Problem Solving: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation, Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming. **Basic File System Operations:** Create, open, close, extend, delete, read-block, write-block, protection mechanisms. **Data Structure:** Fundamentals, Primitive & Non primitive data structure, Operations on primitive data structure.

Unit 2: 16 Hrs

Arrays: Introduction as linear data structure, Different operations on array:
Traversal, Insertion, Deletion, Sorting, Searching, Merging, Simple applications to implement traversing, **Sorting:** Bubble sort, insertion sort, selection sort, merge sort. **Searching** - linear search, binary search. Merge 2 arrays.
Two dimensional arrays as linear data structure: Memory representation with address computation, Computation of simultaneous equation using Gauss elimination procedure. **Stack:** Introduction as linear data structure, Memory representation of stacks, Push & Pop operations, Implementation of Push and Pop algorithms using arrays, and linked list, application of stack:

Unit 3: 16 Hrs

Linear Queue: Introduction as linear data structure, Memory representation of linear queue, Different operations on linear queue, insertion, deletion, implementation of insertion & deletion algorithms using arrays, Disadvantages of linear queue. Application of Queues.
Circular Queue: Introduction as linear data structure, Memory representation of circular data structure, Different operations on circular queue, insertion, deletion, Implementation of insertion & deletion algorithms using arrays. **Single Linked List:** Introduction as linear data structure, Memory representation of linked list, Different operations on linked list (inserting and deleting a node at front rear and at position), traversing, searching an item in linked list in sorted list and in unsorted list,

Unit 4: 16 Hrs

Double Linked List: Inserting a node into the linked list, Deleting a node from the linked list, Concept of garbage collection, Variations in linked list, difference between single and double linked list and application of linked list.
Trees : Introduction as nonlinear data structure ,Concepts of node, terminal node, depth, general tree, Definition for binary tree, left skewed tree, right skewed tree, Memory representation using arrays and linked list, Tree traversal algorithms (preorder, post order, in

order) using recursive method, Implementation of tree traversal algorithms using linked list representation, hashing.

Text books :-

1. Trembly and Sorenson- Data structure - Tata McGraw Hill Pub
2. Dromey - How to solve it by computer - PHI
3. Rajaraman. V – Data Structure Studies of Computer Science

Reference Books:

1. M.T. Goodrich, R. Tamassia and D. Mount, Data Structures and Algorithms in C++, John Wiley and Sons, Inc., 2004.
2. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, Introduction to Algorithms, 2nd Ed. Prentice-Hall of India, 2006.

DSC 2: Data Structure using C and python (Practical)

Part-A

1.Write a program to search an element (Sequential & Binary)
2.Write a program to sort the array using Bubble sort.
3.Write a program to sort the array selection sort.
4.Write a program to sort the array insertion sort.
5.Write a program to sort the array merge sort.
6.Write a program to implement the stack using arrays (push and pop).
7.Write a program to implement tower of Hanoi.
8.Write a program to implement Linear queue using arrays (insertion & deletion)
9.Write a program to implement Circular queue using arrays (insertion & deletion)
10. Write a program to solve the simultaneous equations using gauss elimination.

Part-B

1.Write a program to implement the stack using linked list (push and pop).
2.Write a program to implement Linear queue using linked list(insertion and deletion)
3.Write a program to implement circular queue using linked list (insertion and deletion)
4.Write a program to add and delete a node at the beginning in single linked list.
5.Write a program to add and delete a node at the end in single linked list.
6.Write a program to add and delete a node at the specified position in single linked list.
7.Write a program to search an element in single linked list.
8.Write a program to add and delete a node at the beginning in double linked list.
9.Write a program to add and delete a node at the end in double linked list.
10. Write a program to traverse the tree in order, preorder and postorder using recursive algorithms.

B.Sc III SEMESTER
DSC 3
Credit (L : T : P = 4 : 0 : 2)
Operating Systems and Software Engineering (Theory)

Unit - 1 **16 Hrs**

Introduction: Fundamentals of Operating System: An introduction, History, Types of operating system, multi-user, single user, batch systems, multitasking, multiprogramming, real time systems
Operating system functions/services: System calls, System programs
Process Management: Process concept, Process state, Process control block, CPU scheduling CPU-I/O burst cycle, CPU schedulers, Scheduling queues, Scheduling criteria
Scheduling algorithms: FIFS scheduling, SJF schedules, Priority scheduling, Round robin scheduling.
Deadlocks: Characterization, Methods for handling deadlocks, Deadlock Prevention, mutual exclusion, hold and wait, no pre-emption, circular wait, Deadlock avoidance, safe state, Banker's algorithm, Deadlock detection, single and several instances of resources type.

Unit - 2 **16 Hrs**

Shell introduction and Shell Scripting: What is shell and various type of shell, Various editors present in Linux, Different modes of operation in vi editor, What is shell script, Writing and executing the shell script, Shell variable (user defined and system variables), System calls, Using system calls, Pipes and Filters, Decision making in Shell Scripts (If else, switch), Loops in shell, Functions, Utility programs (cut, paste, join, tr , uniq utilities), Pattern matching utility (grep)

Unit - 3 **16 Hrs**

Software Engineering: Introduction, S/W Engineering Paradigm, life cycle models (water fall, incremental, spiral, evolutionary, prototyping, object oriented), **Software requirements:** Functional and non-functional, user, system, requirement engineering process, feasibility studies, requirements, elicitation, validation and management, software prototyping, prototyping in the software process, rapid prototyping techniques, user interface prototyping, S/W document.

Design Concepts and Principles: Design process and concepts, modular design, design heuristic, design model and document, Architectural design, software architecture, data design, architectural design, transform and transaction mapping, user interface design, user interface design principles. Real time systems, Real time software design, system design, real time executives, data acquisition system, monitoring and control system.

Unit - 4 **16 Hrs**

Testing: Taxonomy of software testing, levels, test activities, types of s/w test, black box testing, testing boundary conditions, structural testing, test coverage criteria based on data flow, mechanisms, regression testing, testing in the large. S/W testing strategies, strategic approach and issues, unit testing, integration testing, validation testing, system testing and debugging.
Trends in Software Engineering: Reverse Engineering and Re-engineering – wrappers – Case Study of CASE tools.

Text Books:

1.A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications 2008.
2.A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education 2007.
3.G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education 1997.
4.W. Stallings, Operating Systems, Internals & Design Principles , 5th Edition, Prentice Hall of India. 2008.
5.M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill 1992.

6.Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill
7.Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
8.Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.

DSC 3 Operating Systems (Practical):

Part A:

1.Usage of following commands: ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd.
2.Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date.
3.Usage of following commands: chmod, grep, tput (clear, highlight), bc.
4.Write a shell script to check if the number entered at the command line is prime or not.
5.Write a shell script to modify "cal" command to display calendars of the specified months.
6. Write a shell script to modify "cal" command to display calendars of the specified range of months.
7. Write a shell script to accept a login name. If not a valid login name display message Entered login name is invalid.
8.Write a shell script to display date in the mm/dd/yy format.
9. Write a shell script to display on the screen sorted output of "who" command along with the total number of users.
10. Write a shell script to display the multiplication table any number,
11. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
12. Write a shell script to find the sum of digits of a given number.
13. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
14. Write a shell script to find the LCD (least common divisor) of two numbers.
15. Write a shell script to perform the tasks of basic calculator.
16. Write a shell script to find the power of a given number.
17. Write a shell script to find the factorial of a given number.
18. Write a shell script to check whether the number is Armstrong or not.

Part B:
Manual and Automated Test Cases as Per the Syllabus

B.Sc IV SEMESTER
DSE 4
Credit L: T : P = 4 : 0 : 2
RDBMS and Visual Programming (Theory)

Unit - 1 16 Hrs

DBMS: Introduction, File V/s DBMS, Purpose of Database system, view of data, Database administrator, Database users, Database languages, Data Models: ER Model: Basic concepts, mapping constraints, mapping cardinalities, keys, Different types of keys (Primary key, Secondary key, Candidate key, foreign key and Alternate key) ER diagram, basic shapes, E-R diagram with some case-study (Strong entity weak entity)

Unit - 2 16 Hrs

RDBMS: DBMS V/S RDBMS Relational Model: structure of relational database, basic structure, database schema, query languages, relational algebra, extended relational algebra, tuple relational calculus, Normalization: Functional dependency, first NF, second NF, third normal form, BCNF.

Unit 3: SQL Commands 16 Hrs

SQL: Introduction, data types. SQL Operator (Arithmetic, Comparison, Logical operator) and table definition- constraints, (null primary key, Unique, check and Referential Integrity), SQL function, SET operator (Union, Union all, Intersect, Difference),

DDL – Create, Alter, Truncate, View, Drop command and different clauses where, order, group by, having

DML - Insert, Select with different clauses (Simple, Nested Queries), Update and Delete Command.

DCL – Grant privilege command, Revoke privilege command.

Transaction control Language- commit, save point, Rollback command.

Unit 4: 16 Hrs

Introduction to C#, Understanding C# environment, Overview of C#, Literals, variables, and Data types, operators and expressions, Decision making and branching, Decision making and looping, Methods in C#, Handling Arrays, Manipulating Strings.

Windows Forms: Control class, Standard controls and components (check box, radio button, comboBox, ListBox, Checked List Box, Label, Listview, picture box, textbox, rich text box, panel, flow layout panel and table lay out panel, tool strip, menu strip(Refer Wrox programmer to programmer only the mentioned standard controls))

ADO.Net overview, Using database connection, commands (Refer Wrox programmer to programmer page no. 846-860) **Fast Data Access:** Data Reader, Data Set class (Refer Wrox programmer to programmer page no. 863-870)

Text Book :

1. Programmer in C# A Primer by Balagurusamy E.
2. Wrox Programmer to Programmer Professional C# 2008
3. SQL, PL/SQL The programming language of oracle, 4th edition – Ivan Bayross
4. Database system concepts 4th edition by Korth, Sudarshan, Silberchatz.
5. ANALYSIS AND INFORMATION SYSTEMS - Raja Raman

DSC 4 RDBMS and Visual Programming (Practical):

Part A:

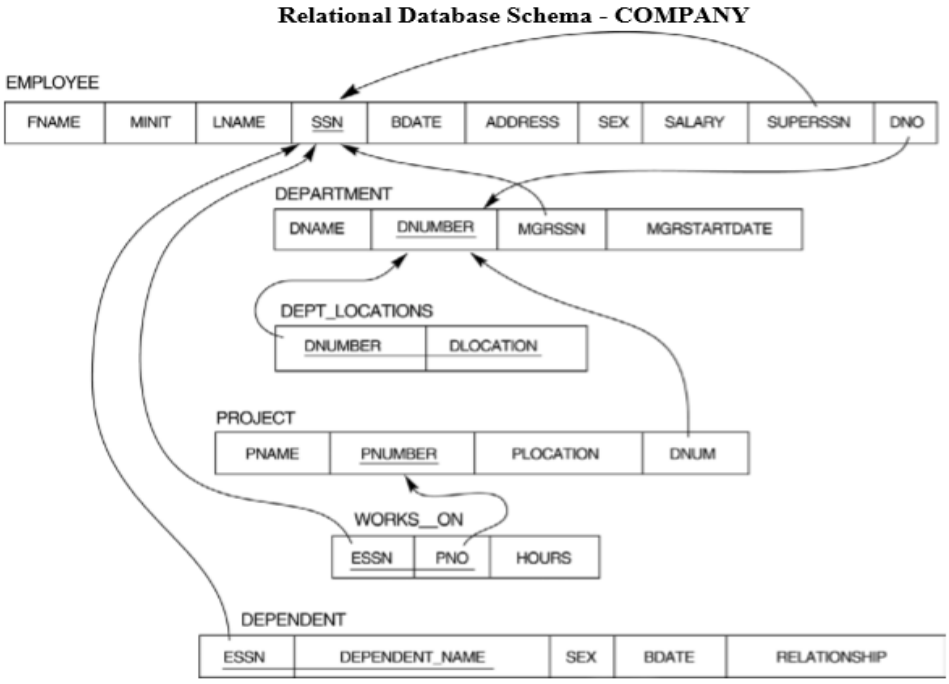
The following concepts must be introduced to the students: **Note:** MS Access / MySQL may be used.

DDL Commands

- Create table, alter table, drop table

DML Commands

- Select, update, delete, insert statements
- Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=)
- Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max)
- Multiple table queries (join on different and same tables) • Nested select statements
- Set manipulation using (any, in, contains, all, not in, not contains, exists, not exists, union, intersect, minus, etc.)
- Categorization using group by……..having
- Arranging using order by



1. Create tables with relevant foreign key constraints
2. Populate the tables with data
3. Perform the following queries on the database :

a. Display all the details of all employees working in the company.
b. Display ssn, lname, fname, address of employees who work in department no 7.
c. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong'

4. Retrieve the name and salary of every employee
5. Retrieve all distinct salary values
6. Retrieve all employee names whose address is in ‘Bellaire’
7. Retrieve all employees who were born during the 1950s
8. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
9. Retrieve the names of all employees who do not have supervisors
10. Retrieve SSN and department name for all employees
11. Retrieve the name and address of all employees who work for the 'Research' department
12. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
13. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
14. Retrieve all combinations of Employee Name and Department Name
15. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan’ either as a worker or as a manager of the department that controls the project. 16. Increase the salary of all employees working on the 'ProductX' project by 15%. Retrieve employee name and increased salary of these employees.
17. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
18. Select the names of employees whose salary does not match with salary of any employee in department.
19. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
20. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.
21. Find the sum of the salaries and number of employees of all employees of the ‘Marketing’ department, as well as the maximum salary, the minimum salary, and the average salary in this department
22. Select the names of employees whose salary is greater than the average salary of all employees in department 10.
23. For each department, retrieve the department number, the number of employees in the department, and their average salary.
24. For each project, retrieve the project number, the project name, and the number of employees who work on that project.
25. Change the location and controlling department number for all projects having more than 5 employees to ‘Bellaire’ and 6 respectively. 27. For each department having more than 10 employees, retrieve the department no, no of employees drawing more than 40,000 as salary.

26. Delete all dependents of employee whose ssn is '123456789'.
27. Delete an employee from Employee table with ssn = '12345'(make sure that this employee has some dependents, is working on some project, is a manager of some department and is supervising some employees). Check and display the cascading effect on Dependent and Works on table. In Department table MGRSSN should be set to default value and in Employee table SUPERSSN should be set to NULL 31. Perform a query using alter command to drop/add field and a constraint in Employee table.
28. Create different users by granting different privileges to them

Part B:

1. Design a calculator using windows application
2. Design a window application to calculate the NET SALARY of an Employee
3. Design a window application using check box and option button
4. Design a window application using list box and combo box
5. Design a window application using picture box.
6. Design a window application for edit menu and change the size of the font using menu strip and tool strip
7. Design a window application to use a frame control to navigate to web pages
8. design a window application to Display Content in a Multitabbed User Interface
9. Design a window application to insert, delete, update and search operation of a student information
10. Design a window application to bind data to combo box

B.Sc V SEMESTER
DSE 5.1: Elective
Credit L: T: P = 4: 0: 2
Elective: JAVA and Computer Networks (Theory)

Unit 1: Basic Concept of Object Oriented Programming **16 Hrs**

Java History and its features, Java Environment

Simple java program, java program structure, java tokens, java statements, Implementing a java program, java virtual machine, **Classes, Objects and methods** Defining a class, Fields declaration, methods declaration, creating objects, accessing class members, constructors, method overloading, static members, nesting of methods

Inheritance

Definition, types of Inheritance; overriding methods, final variables & methods, final classes, finalizer methods, abstract methods & classes, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface variables.

Unit 2: **16 Hrs**

Packages

Java packages, using system packages, naming conventions, creating packages, accessing a package, using a package, adding class to a package, hiding classes, wrapper class

Exception Handling Definition, types of errors, exceptions, syntax of exception handling code, multiple catch statements. Using finally statements

Applet programming: Introduction, Local and remote applets, how applets differ from applications, preparing to write applets, building applet code, Applet life cycle, creating an executable applet, designing a web page, more about html tags, displaying numeric values, getting input from the user, Event handling

Graphics programming: graphics class, lines and rectangles, circles and ellipses, drawing arcs, line graphs, drawing bar charts, introduction to AWT packages

Unit-3 **16 Hrs**

Data communication, Components & Basic Concepts Line Configuration: Point – to – Point, Multipoint. Topology: Mesh, Star, Tree, Bus, Ring, hybrid Topologies. Transmission Modes: Simplex, Half-Duplex, Full-Duplex. Categories of Networks: LAN, MAN, WAN, Internet Works.

Transmission Media

Guided Media: Twisted pair cable, Co-axial Cable, Optical Fibre. Unguided Media: Radio Frequency Allocation, Propagation of Radio Waves,

Terrestrial Microwaves, Satellite Communication, Cellular Telephony.

Unit-4 **16 Hrs**

The OSI Model

Model Layered Architecture Functions of Layers Physical Layer, Data Link Layer, Network Layer, transport Layer, Session Layer, Presentation Layer, and Application Layer.

TCP/IP

Overview of TCP/IP , TCP/IP & Internet , TCP/IP & OSI , Encapsulation , Network Layer , Internet work Protocol Other Protocols in the Network Layer , Transport Layer User Datagram Protocol (UDP) , Transmission Control Protocol (TCP) , , ICMP,IGMP, Application Layer , Domain Name system , Telnet , File Transfer Protocol (FTP) , File Transfer using NFS & RPC , Electronic Mail : SMPT , Simple Network Management Protocol(SNMP), Archie, Veronia, Wide area Information Service(WAIS), Hyper Text Transport Protocol (HTTP) .World Wide Web Uniform Resource Labor (URL), Browser Architecture.

Text book:

1. Programming in Java: E Balaguruswamy
2. Behrouz Forouzan: Introduction to Data Communication s & Networking

Reference:

Tannenbaum: Computer Networks.

Elective: JAVA and Computer Networks (Practical)

Part A:

1. Write a program to find the product of two matrices
2. Write a program to manipulate strings using string handling functions
3. Write a program to achieve multiple inheritance using interface
4. Write a program to create a user defined packages.
5. Write a program to implement wrapper classes
6. Write a program to assign the priority to a thread
7. Write a program to perform Array Index Out Of Bound Exception mechanism
8. Design a application to find the factorial of a number and check the number is a prime number using applet
9. Write a applet program for drawing a human face
10. Write a java program to demonstrate simple calculator
11. Write a applet program to create a bar charts

Part B:

1. Program to find the IP address of a website
2. Program to parse a URL address into its components
3. Program to translate an IP address to host name or vice-versa
4. Program to get all IP addresses by name of site
5. Program to find the IP address of the local machine
6. Program to accept an IP address and finds the host name
7. Program to download a file and file it as a file or display it on screen

B.Sc V SEMESTER
DSE 5.2: Elective
Credit L: T: P = 4 : 0: 2
Elective: Internet Programming (Theory)

Unit -1 **16 Hrs**

Fundamentals of HTML

Introduction to HTML, Origin and Evolution, Basic Syntax, Basic tags, Images, Hypertext Links, Lists, Tables, Frames, Forms.

More HTML5 Thinking HTML5 semantics, Why semantic markup?, Browser support for HTML5, Creating semantic HTML5 documents, Creating an HTML5 layout container, Controlling format by using the <*div*> element, Adding thematic breaks Annotating content, Working with lists. Working with tables, Table misuse, Creating a basic table, Adding header cells, Styling the table headers, Declaring the header, footer, and table body, Creating irregular tables, Adding a caption to a table, Styling columns

Unit-2 **16 Hrs**

HTML5 supports multimedia Playing video: Video formats, Implementing the <*video*> element, Setting the source, Configuring the <*video*> element, Accessing tracks, Playing audio: Audio formats, The <*audio*> element, Setting the source, Configuring the <*audio*> element, Lesson summary, Lesson review, Using the HTML Media Element object: Understanding the HTML Media Element methods, Using HTML Media Element properties, Subscribing to HTML Media Element event, Using media control

Drawing with HTML5 Drawing by using the <*canvas*> element, The <*canvas*> element reference, CanvasRenderingContext2D context object reference, Implementing the canvas, Drawing rectangles, Configuring the drawing state, Saving and restoring the drawing state, Drawing by using paths, Drawing text, Drawing with images, Using scalable vector graphics, Using the <*svg*> element, Displaying SVG files by using the <*img*> element

Unit-3 : JavaScript **16 Hrs**

Getting started with JavaScript

Introducing JavaScript, Understanding JavaScript, Understanding the role of dat, Using statements, Working with functions, Scoping variables, Nesting functions and nested local variable scoping, Converting to a different type, Conditional programming, Implementing code loops, Handling errors.

Writing, testing, and debugging JavaScript: Hello World from JavaScript, Using the script tag, Handling browsers that don't support JavaScript, Inline JavaScript vs. external JavaScript files, Placing your script elements, Using the Visual Studio .NET JavaScript debugger. **Working with objects:** Working with arrays, Accessing DOM objects

Unit-4 **Cas cading style sheet** **16 Hrs**

Getting started with CSS3 Introducing CSS3, Defining and applying a style, Adding comments within a style sheet, Creating an inline style, Creating an embedded style, Creating an external style sheet.

Understanding selectors, specificity, and cascading Defining selectors, Understanding the browser's built-in styles, Extending browser styles with user styles, Working with important styles, How do styles cascade?, Using specificity, Understanding inheritance, Working with CSS properties Working with CSS colors, Working with text ,Working with the CSS box model, Setting the border, padding, and margin properties, Positioning <*div*> elements, Using

the float property, Using the clear property, Using the box-sizing property, Centering content in the browser window

Reference Book:

HTML by Complete Reference

Programming in HTML5 with java script and css3 by Glenn Johnson

JavaScript step by step by Steve Suehring

Elective 5.2 Internet Programming (Practical):

Part -A

1. Develop a website of the college Information which contains at least 3 static Pages.
2. Write a program to generate the Time Table for the academic Year.
3. Write a HTML document that stimulates the working of a Simple Calculator.
4. Write an HTML program using Frameset which contains 3 WebPages.
5. Write a JavaScript program to create an Application Format to get admission to the college
6. Write a JavaScript program to generate a "Login Form" with login Name and Password. Use 'Submit' button in the form and allow for data entry to be made in the form. Along with proper CSS

PART –B

1. Write a JavaScript program to display a message "Welcome To Home Page" use the following commands once at a time. Alert (), Confirm (),Prompt ().
2. Develop and demonstrate a HTML document that illustrates the use external style sheet, ordered list, table, borders, padding, color, and the tag.
3. Develop and demonstrate a HTML file that includes Javascript for the following problems:
   a) Input: A number n obtained using prompt
      Output: The first n Fibonacci numbers
   b) Input: A number n obtained using prompt
      Output: A table of numbers from 1 to n and their squares using alert
4. Write an HTML document to display Student Information in a table.
5. Create a website for online shopping of particular one item with CSS and Java Script
6. Create a simple game website using HTML5
7. Create a webpage to display audio and video

B.Sc V SEMESTER
DSE 5.3: Elective
Credit L: T: P = 4: 0: 2
Elective: Multimedia Computing (Theory)

Unit 1: **16 Hrs**

what is multimedia: Definitions – CD-ROM and the Multimedia highway- where to use multimedia- **Introduction to Making Multimedia**: The stages of a project- what you need- **Multimedia skills and Training**: The terms – **Macintosh and windows production platforms**: Macintosh Versus PC – The Macintosh and Windows Computers- **Hardware Peripherals**: connection- Memory and storage Devices – Input Devices- Output Hardware- Communication Devices.

Unit-2: 16 Hrs

Basic Tools: Text Editing and Word Processing Tools – OCR Software- Painting and Drawing Tools – 3-D Modeling and Animation Tools – Image – Editing Tools – Sound Editing Tools – Animation, Video and Digital Movies Tools – Helpful Accessories **– Making Instant Multimedia :** Linking Multimedia Object – Office suites- Word Processors – spread sheets – Databases- presentation Tools. **Multimedia Authoring Tools :** Types of Authoring Tools – card and page Based Authoring Tools- Icon – Based Authorized Tools – Time Based Authoring Tools – Object – Oriented Authoring Tools – Cross – Platform Authoring Notes.

Unit 3: **16 Hrs**

Text: The Power of Meaning – About Fonts and Faces –Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext- **Sound:** The Power of Sound – Multimedia System Sounds- MIDI Versus Digital Audio – Digital Audio – Making MIDI Audio – Audio file formats – Working with sound on the Macintosh – Notation Interchange File Format (NIFF) – Adding Sound to your multimedia project – Towards professional sound – The Red Books standard production tips.

Unit 4: **16 Hrs**

Images: Making Still Images – color- Image File formats. **Animation:** The Power of motion – Principles of Animation - Making Animation That Work – Video : Using video – How video works – Broadcast Video Standards – Integrating Computers and Television – shooting and Editing Video – Video Tips – Recording Formats – Digital video.

Text Book:

1. Tay Vaughan - 1999– Multimedia : Making it work – Fourth Edition – Tata McGraw – Hill Edition.
2. Walterworth john A– 1991- Multimedia Technologies and Application - Ellis Horwood Ltd. – London.
3. John F koegel Buford – Multimedia Systems – Addison Wesley – First Indian Reprint.

Elective 5.3 Multimedia Computing (Practical):

Practical exercises based on concepts listed in theory using Presentation tools in office automation tool/ GIMP/Blender / Audacity/ Animation Tools/ Image Editors/ Video Editors.

Implement the followings using Blender -

1. Create an animation using the tools panel and the properties panel to draw the following – Line, pe , oval, circle, rectangle , square, pencil , brush , lasso tool
2. Create an animation using text tool to set the font , size , color etc.
3. Create an animation using Free transform tool that should use followings-
    - Move Objects
    - Skew Objects
    - Stretch Objects
    - Rotate Objects
    - Stretch Objects while maintaining proportion
    - Rotate Objects after relocating the center dot
4. Create an animation using layers having following features- Insert layer, Delete layer, guide layer, Mask layer.
5. Modify the document (changing background color etc.)using the following tools
    - Eraser tool
    - Hand tool
    - Ink bottle tool
    - Zoom tool
    - Paint Bucket tool
    - Eyedropper tool
6. Create an animation for bus car race in which both starts from the same point and car wins the race.
7. Create an animation in which text Hello gets converted into GoodBye (using motion/shape tweening).
8. Create an animation having five images having fade-in fade-out effect.
9. Create an scene to show the sunrise (using multiple layers and motion tweening)
10. Create an animation to show the ripple effect.
11. Create an animation (using Shape tweening and shape hints) for transforming one shape into another.
12. Create an animation for bouncing ball (you may use motion guide layer).

B.Sc V SEMESTER
SEC1: Elective
Credit L: T: P = 1: 0: 1
SEC 1.1: Office Automation (Theory)

Unit 1 **16 Hours**

Office Automation Tools

Introduction to open office/MS office/Libre office (2L)
Word Processing: Formatting Text, Pages, Lists, Tables (5L)
Spreadsheets: Worksheets, Formatting data, creating charts and graphs, using formulas and functions, macros, Pivot Table (6L)
Presentation Tools: Adding and formatting text, pictures, graphic objects, including charts, objects, formatting slides, notes, hand-outs, slide shows, using transitions, animations (4L)

Books Recommended:

1. Sushila Madan , Introduction to Essential tools,JBA,2009.
2. Anita Goel, Computer Fundamentals, Pearson, 2012

SEC1.1 Office Automation (Practical)

Practical List for WORD:
1. Create a **telephone directory**.

• The heading should be 16-point Arial Font in bold
• The rest of the document should use 10-point font size
• Other headings should use 10-point Courier New Font.
• The footer should show the page number as well as the date last updated.

2. Design a time-table form for your college.

• The first line should mention the name of the college in 16-point Arial Font and should be bold.
• The second line should give the course name/teacher's name and the department in 14-point Arial.
• Leave a gap of 12-points.
• The rest of the document should use 10-point Times New Roman font.
• The footer should contain your specifications as the designer and date of creation.
3. Create the following one page documents.

(a) Compose a note inviting friends to a get-together at your house, including a list of things to bring with them.

(b) Design a certificate in landscape orientation with a border around the document.

4. Create the following document: A newsletter with a headline and 2 columns in portrait orientation, including at least one image surrounded by text.

5. Convert following text to a table, using comma as delimiter

Type the following as shown (do not bold).
Color, Style, Item
Blue, A980, Van

Red, X023, Car
Green, YL724, Truck
Name, Age, Sex
Bob, 23, M
Linda, 46, F
Tom, 29, M

6. Prepare a grocery list having four columns (Serial number, the name of the product, quantity and price) for the month of April, 06.

- Font specifications for Title (Grocery List): 14-point Arial font in bold and italics.
- The headings of the columns should be in 12-point and bold.
- The rest of the document should be in 10-point Times New Roman.
- Leave a gap of 12-points after the title.

7. XYZ Publications plans to release a new book designed as per your syllabus. Design the first page of the book as per the given specifications. (a) The title of the book should appear in bold using 20-point Arial font.
(b) The name of the author and his qualifications should be in the center of the page in 16-point Arial font.
(c) At the bottom of the document should be the name of the publisher and address in 16-point Times New Roman.
(d) The details of the offices of the publisher (only location) should appear in the footer.

8. Create the following one page documents. a) Design a Garage Sale sign.
b) Make a sign outlining your rules for your bedroom at home, using a numbered list.
9. Consider the following employee worksheet:-

Full Name (First Last)	Grade 1/2/3	Basic Salary	HRA	PF	Gross	Net	(VA) Vehicle Allowance

HRA is calculated as follows:	
Grade	HRA %(of Basic)
1	40%
2	35%
3	30%

Gross = Basic + HRA + VA
Net = Gross –PF
PF is 8% for all Grades
VA is 15000, 10000 and 7000 for Grades 1, 2 and 3.
i) Find max, min and average salary of employees in respective Grade
ii) Count no. of people where VA>HRA
iii) Find out most frequently occurring grade.
iv) Extract records where employee name starts with “A” has HRA>10000
v) Print Grade wise report of all employees with subtotals of net salary and also grand totals. Use subtotal command.
vi) Extract records where Grade is 1 or 2 and salary is between 10000 and 20000 both inclusive.

B.Sc V SEMESTER
SEC1: Elective
Credit L: T: P = 1: 0: 1
SEC 1.2: XML Programming (Theory)

Unit-1 16 Hrs

Introduction: Understanding Mark-up Languages, Introduction to XML and its Goals

XML Basics: XML Structure and Syntax, Document classes and Rules.

Other XML Concepts: Scripting XML, XML as Data, Linking with XML.

XML with Style: XSL –Style Sheet Basics, XSL basics, XSL style sheets.

Reference Books:

1. William J. Pardi , XML in action web technology, Microsoft Press, 1999

2. Michael J. Young ,Step by Step XML , Microsoft Press, 2002

SEC 3.1: XML Programming (Practical): As per the syllabus

B.Sc VI SEMESTER
DSE 6.1: Elective
Credit L: T: P = 4: 0: 2
Elective: Advanced Visual Programming (Theory)

Unit 1: **16 Hrs**

Getting Started with ASP.Net: what is static web page, how are static web pages served, how are dynamic web pages served : Two ways of providing Dynamic Web Page content, An overview of the Technologies, What is ASP .NET, how does ASP.NET differ from ASP?.Anatomy of an ASP.NET: What is .NET: The .Net base class, How ASP.NET works Forms and HTML Server Controls: Simple web Theory, HTML Forms, How the <form> tag works in ASP.NET, Introducing XML: The format of XML, Examples of Markup Languages, creating an XML document, Styling XML.

Unit 2: **16 Hrs**

Event-driven programming and post back: What is an event?, What is event-driven programming, ASP.NET events, Events in html, server control events in ASP.Net, event-driven programming and post back.
Objects in ASP.NET: Namespaces, The page class, ASP.NET core objects. HTML5 & CSS3 Design with ASP.NET: HTML5 Overview, CSS3 Overview, Working with HTML and CSS in Visual Studio. ASP.NET Web Forms Structure: The ASP.NET Page Structure Options, ASP.NET 4.5 Page Directives, ASP.NET Page Events, Dealing with Postbacks. ASP.NET Server Controls and Client-Side Scripts: ASP.NET Server Controls, HTML Server Controls, Identifying ASP.NET Server Controls.

Unit 3: **16 Hrs**

ASP.NET Web Server Controls: An Overview of Web Server Controls: The Label Server Control, The Literal Server Control, The TextBox Server Control, The Button Server Control, The DropDownList Server Control, The RadioButton Server Control, AdRotator Server Control. Validation Server Controls: Understanding Validation, Client-Side versus Server-Side Validation, ASP.NET Validation Server Controls [page no 202 to 216]. Data Binding: Data Source Controls: SqlData Source Control, Access Data Source Control, Xml Data Source Control. Data-Bound Controls [page No 314 to 333].

Unit 4: **16 Hrs**

Working With Services: Communication between Disparate Systems, Building a Simple XML Web Service, Consuming a Simple XML Web Service, Overloading WebMethods, Caching Web Service Responses, Using SOAP Headers. State Management: Your Session State Choices, Understanding the Session Object in ASP.NET: Sessions and the Event Model, configuring Session State Management, In-Process Session State, Out-Process Session State, Cookieless session State. Application Object, Cookies. ASP.NET MVC: Defi ning Model-View-Controller, MVC on the Web Today, Model-View-Controller and ASP.NET, Understanding the Routes and URLs, Controllers, Views.

Text Books:
Beginning ASP.NET 1.0 with C# - Wrox
ASP.NET 4.5 in C# and VB – Wrox

Reference Books: ASP.NET Using C# - Black Book

DS3 5.3 Advanced visual programming (Practical):

PART A

1. Design a web application to find the sum of two numbers.
2. Design a web application to create user login page.
3. Design a web applicationto format the display message using radio button and checkbox.
4. Design a web application to create feedback form for asp.net textbook using radiobutton.
5. Design a web application to upload a file.
6. Design a web application to add selected employees from list box to text box.
7. Design a web application to create online shopping using adrotator.
8. Design a web application for online ticket booking using click event.
9. Design a web application to readdata from xml and bind to asp data grid.
10. Design a web application to create user details application using gridview.

PART B

1. Design a web application to bind data to listbox using databind.
2. Design a web application to bind datasource to asp radiobutton list.
3. Design a web application to add and display the event using calendar control.
4. Design a web application to develop phone book using database connectivity.
5. Design a web application to develop student admission form using database connectivity.
6. Design a webapplication to design an online shopping cart.
7. Design a webapplication to retain inforamtion from one page to another using session.
8. Design a web service program to perform arithmatic operations.
9. Design a web service to convert celsius to fahrenheit and fahrenheit to celsius.
10. Design aweb service to display employee salary information.

B.Sc VI SEMESTER
DSE 6.2: Elective
Credit L: T: P = 4: 0: 2
Elective: Object Oriented Analysis and Design (Theory)

Unit - 1 **16Hrs**

INTRODUCTION: An overview of Object-Oriented Systems Development, Two Orthogonal Views of the Software, Object-Oriented Systems Development methodology, Why an Object-Oriented? Overview of Unified Approach

Object Basics – Introduction, an Object-Oriented Philosophy, Objects, Objects are Grouped in Classes, Attributes: Objects State and Properties, Object Behavior and Methods, Object Response to Messages, Encapsulation and Information Hiding, Class Hierarchy – Inheritance and Multiple Inheritance, Polymorphism, Object Relationships and Associations, Aggregations and Object Containment.

Unit – 2 **16 Hrs**

Object-Oriented Systems Development Life Cycle – Introduction, the Software Development Process, Building High Quality Software, Object-Oriented Systems Development: A use case Driven Approach:- Analysis, Design, Prototyping, Implementation and Testing.

Object-Oriented Methodologies – Introduction: Towards Unification – Too many Methodologies

Survey of some of the Object-Oriented Methodologies, Rumbaugh et al.'s Object Modeling Technique, The Booch Methodology, The Jacobson et al. Methodologies, The United Approach

Unit – 3 **16 Hrs**

Unified Modeling Language – Introduction, Static and Dynamic Models, Why Modeling, Introduction to the UML, UML diagrams, UML Class Diagrams, Use case Diagrams, UML Dynamic Modeling, Model Management: Packages and Model Organization, UML Extensibility:-Model Constraints and Comments, Note, Stereotype, UML Meta – Model.

MODELING CONCEPTS: Modeling as a design technique- Modeling, Abstraction, the three models. Class modeling -object and class concepts, link and association concepts.

Unit – 4 **16 Hrs**

Object – Oriented Analysis Process: Identifying use cases – Introduction, Why Analysis is a Difficult Activity, Business Object Analysis: Understanding the business layer, Use – case driven Object Oriented Analysis: The Unified Approach, Business Process Modeling, Use – case Model, Developing Effective Documentation, Case Study: Analyzing the Via Net Bank ATM

View layer: Designing Interface Objects – Introduction, User Interface Design as a Creative Process, Designing View Layer Classes, Macro Level Process, Micro Level Process, The Purpose of View Layer Interface, Prototyping the User Interface, Case Study: Designing User Interface for the Via Net Bank ATM.

Text Book: Object Oriented Systems Development – Ali Bahrami [McGraw Hill]

Reference Books:

1. Object –oriented modeling and design- Michael R Blaha and James R Rumbaugh
2. Fowler, Martin and Scott, Kendall, UML Distilled:
3. Object Oriented Design with Applications – Menlo Park, Booch, Grady
4. Designing Flexible Object Oriented systems with UML – Charles Ritcher
5. Object Oriented Modeling and Design - James Rumbaugh
6. Object Oriented Analysis & Design, Sat/.inger. Jackson, BurdThomson
7. Teach Yourself UML in 24 Hours - Joseph Schmuilers

Object Oriented Analysis 2nd Ed. Englewood Chiffs.

Elective 6.2 Object Oriented Analysis and Design (Practical)

To develop a mini-project following the 12 exercises listed below.

1. To develop a problem statement.
2. Develop an IEEE standard SRS document. Also develop risk management and project plan (Gantt chart).
3. Identify Use Cases and develop the Use Case model.
4. Identify the business activities and develop an UML Activity diagram.
5. Identity the conceptual classes and develop a domain model with UML Class diagram.
6. Using the identified scenarios find the interaction between objects and represent them using UML Interaction diagrams.
7. Draw the State Chart diagram.
8. Identify the User Interface, Domain objects, and Technical services. Draw the partial layered, logical architecture diagram with UML package diagram notation.
9. Implement the Technical services layer.
10. Implement the Domain objects layer.
11. Implement the User Interface layer.
12. Draw Component and Deployment diagrams.

Suggested domains for Mini-project.

1. Passport automation system.
2. Book bank
3. Exam Registration
4. Stock maintenance system.
5. Online course reservation system
6. E-ticketing
7. Software personnel management system
8. Credit card processing
9. e-book management system
10. Recruitment system
11. Foreign trading system
12. Conference Management System
13. BPO Management System

B.Sc VI SEMESTER
DSE 6.3: Elective
Credit L: T: P = 4: 0: 2
Elective: Mobile Application

Unit -1 **16 Hrs**

Introduction: What is Android, Android Ecosystem, Why Android? Android Versions, Android activity, Features of Android, Android Architecture, Application framework, libraries, android runtime, Configuration of Android Environment, Operating System, Java JDK, Android SDK, Android Development tools (ADT), Android Virtual Devices (AVDs), Emulators, Dalvik Virtual Machine, Difference between Java Virtual Machine (JVM) and Dalvik Virtual Machine (DVM), Create the first Android Application: Directory Structure, Android User Interface: Understanding the components of a screen, Linear Layout, Absolute Layout, Frame Layout, Relative Layout, Table Layout.

Unit 2 **16 Hrs**

Designing your user Interface with view: Text view, Button – A standard push button, Image Button, Edit Text, checkbox, Toggle Button, Radio Button and Radio Group, Progress Bar, Auto complete Text view, Spinner, List view, Grid view, Image view, Scroll view, Custom Toast Alert, Time and Date picker

Introduction, Intent, Intent – filter, Activity life cycle, broadcast life cycle, Service, Multimedia: Android System Architecture, Play Audio and Video: Play audio, Text to speech,

Unit 3 **16 Hrs**

Sqlite Database in Android: SQLite Database, why is SQLite? Creation and connection of the database, Extracting value from a cursors, Transactions

Telephoning and Messaging, SMS Telephony, creating the project, Getting the maps API Key: displaying the zoom control, changing views, Navigating to a specific location, adding markers, getting the location which was touched, geo coding and Reverse Geo coding, Getting location Data, Monitoring a location

Unit 4 **16 Hrs**

JSON: What is JSON? XML and JSON, use of JSON, syntax and rule of JSON, SSON Name / value pairs, JSON values, JSON objects, JSON Arrays, how to JSON uses Javascript syntax, Parsing JSON and XML, Parsing JSON and XML, Parsing JSON Http Response, Parsing XML Http Response

Text Book:

Android by Prasanna kumar Dixit, Vikas Publishing House Pvt Ltd.

DS3 6.3 Mobile Applications (Practical):

Part A:

1. Create an android application to set text, text color, image in Android using java
2. Create an android application to display numbers from 1 to 100 in scrollview
3. Create an android application to change image when we click on buttons
4. Create an android application to Change image using single button using
5. Create an android application to edit text numbers and display on text view
6. Create an android application for Temperature conversion application

Part B:

1. Create list and perform action in android
2. Create menu in android using xml
3. Create menu in android using java
4. Android Dialogue box example
5. Develop an application to access call dialer screen, camera and web pages in Android
6. Develop an android application to play video file, audio file from sd card in android

B.Sc VI SEMESTER
SEC 2: Elective
Credit L: T: P = 1: 0: 1
SEC 1.3: R Programming (Theory)

Unit-1 **16 Hrs**

Introduction: Overview and History of R, Getting Help, Data Types, Subsetting, Vectorized Operations, Reading and Writing Data.**)**

Control Structures, Functions, lapply, tapply, split, mapply, apply, Coding Standards.

Scoping Rules, Debugging Tools, Simulation, R Profiler.

Reference Book
W. N. Venables, D. M. Smith, An Introduction to R, R-core team,2015

SEC 2.1 Software Lab Based on R Programming:

1. Write a program that prints 'Hello World' to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n
3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement the following sorting algorithms: Selection sort, Insertion sort, Bubble Sort
8. Implement linear search.
9. Implement binary search.
10. Implement matrices addition, subtraction and Multiplication

B.Sc VI SEMESTER
SEC 2: Elective
Credit L: T: P = 1: 0: 1
SEC 1.4: Tally (Theory)

Unit - 1 **16 Hrs**

Introduction to accounting: Meaning of Accounts, Accounting, Accountancy and Accountant, meaning and objectives of Book keeping Basic terms; transaction Capital Drawing Assets Liabilities debtor creditor Revenue debit and credit

Accounting Principles Standards Concepts and Conventions

Meaning types objectives of Accounting principles standards concepts and conventions

Double Entry System of Book keeping

Meaning features objectives advantages and limitations of Double entry system of book keeping kinds of accounts; personal real and nominal rules of debiting and crediting accounts. Journal journalizing business transactions ledger and balancing (problems on journal entry and ledger)

Trial Balance

Purchase, sales returns Cash (three columns) B/R and B/P books journal proper Meaning importance of trial balance preparation and types of Errors Suspense account

(problems on purchase sales and returns and cash book with 3 columns and Rectification of Errors

Final Accounts of Sole trader and Non-trading concerns

Simple problem only with the following adjustment/s expenses and incomes, prepaid, depreciation bad debts and RBD and loss of stock and preparation of Income and Expenditure account from R and P accounts only excluding opening balance sheet

SEC 1.4: Tally (Practical): Implementation using Tally

Question Paper Pattern
Theory (4 Credits)

Time: 3 Hours Max. Marks: 70

Part – A

I. Answer any Eleven Question out of given Twelve Questions. 11 X 2 = 22

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.

Note: Three Questions each from the Units 1, 2, 3, and 4

Part - B

II. Answer any Two Sub Questions from each main Question.

13.	**A)**	**2 X 6 = 12**
	B)	
	C)	
14.	**A)**	**2 X 6 = 12**
	B)	
	C)	
15.	**A)**	**2 X 6 = 12**
	B)	
	C)	
16.	**A)**	**2 X 6 = 12**
	B)	
	C)	

Note: Each Main questions contains 3 sub questions carries 06 Marks (may have internal Split-ups) and from Units 1, 2, 3 and 4 respectively

Question Paper Pattern

Theory (1 or 2 Credits)

Time: 2 Hours Max. Marks: 40

Part – A

I. Answer all Questions. 05 X 02 = 10

1.
2.
3.
4.
5.

Part - B

II. Answer any Four Questions out of given Five Questions. 4 X 10 = 40

6.
7.
8.
9.