Placed at the meeting of Academic Council held on 28.03.2016

APPENDIX – I

MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

Revised Syllabus for
B.Sc. Information Technology (IT)
(CBCS - Semester Pattern)
This will be effective from the academic year 2016-17

REGULATIONS :

1. **Course Objective:**

   To prepare the students to manage the software components in a computer independently and to be a Programmer. To motivate the students to take up higher studies in Information Technology and other streams.

2. **Eligibility for Admission:**

   A Candidate should have studied +2 level Mathematics in the 10 + 2 stream.

3. **Duration of the Course:**

   The students shall undergo the prescribed course of study for a period of not less than three academic year (Six semesters).

4. **Medium of Instruction :** English

5. **Subjects/ Structure of Course Study :** See Appendix – IT1

6. **Scheme of Examinations/ Structure of Question Paper:** : See Appendix - IT2

7. **Detailed Syllabus:** See Appendix – IT3

8. **Eligibility for the Degree:**

   i) A Candidate shall be eligible for the award of the degree on completion of the prescribed course of study and passing all the prescribed external examinations.

   ii) Attendance progress, internal examinations, conduct certificate from the Head of the Institution shall be required for taking the external examination.

   iii) The passing minimum and the ranking are as per the existing rule of the Choice Based Credit System for the affiliated college of the University.

Appendix – IT1
(Subject/Structure of Course Study)
MADURAI KAMARAJ UNIVERSITY
B.Sc. Information Technology (I.T)
(Semester)
Choice Based Credit System

With Effect from 2016-2017 and afterwards.

Sem.	Subjects							Total Hours	Total Credits
I	T1(6) [3]	E1(6) [3]	CS1(4) [4]	CS2(6) [4]	AS1(4) [4]	SBS1(2) [2]	NME1(2) [2]	30	22
II	T2(6) [3]	E2(6) [3]	CS3(4) [4]	CS4(6) [4]	AS2(4) [4]	SBS2(2) [2]	NME1(2) [2]	30	22
III	T3(6) [3]	E3(6) [3]	CS5(4) [4]	CS6(4) [3]	CS7(4) [4]	AS3(4) [4]	SBS3(2) [2]	30	23
IV	T4(6) [3]	E4(6) [3]	CS8(4) [4]	CS9(4) [3]	CS10(4) [4]	AS4(4) [4]	SBS4(2) [2]	30	23
V	CS11(5) [4]	CS12(5) [4]	CS13(5) [4]	CS14(6) [4]	ES1(5) [4]	EVS(2) [2]	SBS5(2) [2]	30	24
VI	CS15(5) [4]	CS16(6) [4]	CS17(5) [4]	ES2(5) [4]	ES3(5) [5]	VE(2) [2]	SBS6(2) [2]	30	25
							Extension Activity		1
							TOTAL CREDITS		140

Abbreviations:

( )	–	Number of Hours	[ ]	–	Number of Credits
T	-	Tamil;	E	-	English
CS	-	Core Subject	AS	-	Allied Subject
SBS	-	Skill Based Subject	NME	-	Non Major Elective
ES	-	Elective Subject	VE	-	Value Education
EVS	-	Environmental Studies	EA	-	Extension Activity

I SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T1	Tamil	6	3	25	75
2	E1	English	6	3	25	75
3	CS1	Introduction to IT and HTML	4	4	25	75
4	CS2	**Lab 1** : HTML and Office Automation	6	4	40	60
5	AS1	Mathematical Foundations	4	4	25	75
6	SBS1	**Lab 2** :Linux Programming	2	2	40	60
7	NME1	Introduction to Information Technology	2	2	25	75
		Total	30	22		

II SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T2	Tamil	6	3	25	75
2	E2	English	6	3	25	75
3	CS3	Programming in C	4	4	25	75
4	CS4	**Lab 3:** Programming in C	6	4	40	60
5	AS2	Resource Management Techniques	4	4	25	75
6	SBS2	**Lab 4**: Desktop Publishing	2	2	25	75
7	NME2	Internet and its Applications	2	2	25	75
		Total	30	22		

III SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T3	Tamil	6	3	25	75
2	E3	English	6	3	25	75
3	CS5	Object Oriented Programming using C++	4	4	25	75
4	CS6	**Lab 5:** Programming using C++	4	3	40	60
5	CS7	Data Structures and Computer Algorithms	4	4	25	75
6	AS3	Digital Principles and Computer Organization	4	4	25	75
7	SBS3	**Lab 6:** Multimedia	2	2	40	60
		Total	30	23		

IV SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	T4	Tamil	6	3	25	75
2	E4	English	6	3	25	75
3	CS8	Relational Data Base Management Systems	4	4	25	75
4	CS9	Lab 7: Relational Data Base Management Systems	4	3	40	60
5	CS10	Operating Systems	4	4	25	75
6	AS4	Numerical Methods	4	4	25	75
7	SBS4	Lab 8: PHP & MY SQL	2	2	40	60
8	EA	Extension Activities		1	100	
		Total	30	24		

V SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	CS11	Data Communication and Computer Networks	5	4	25	75
2	CS12	Software Engineering	5	4	25	75
3	CS13	Java Programming	5	4	25	75
4	CS14	**Lab 9** : Java Programming	6	4	40	60
5	ES1	1. Mobile Computing 2. Computer Graphics 3. Information Security	5	4	25	75
6	EVS	Environmental Studies	2	2	25	75
7	SBS5	**Lab 10** :Networking	2	2	40	60
		Total	30	24		

VI SEMESTER

S No	CODE	Subject	Hours	Credits	Internal Marks	External Marks
1	CS15	Android Programming	5	4	25	75
2	CS16	**Lab 11** : Web Programming	6	4	40	60
3	CS17	Software Testing	5	4	25	75
4	ES2	1. Introduction to Unified Modeling Language 2. Compiler Design 3. Cryptography & Network Security	5	4	25	75
5	ES3	Project Work / Viva-Voce	5	5	25	75
6	VE	Value Education	2	2	25	75
7	SBS6	Quantitative Aptitude	2	2	25	75
		Total	30	25		

Non-Major Elective Courses to be offered to the students other than Department of Information Technology

NME1 -Introduction to Information Technology

NME2 – Internet and its Applications

Appendix – IT2
Scheme of Examination /Question Paper Pattern

For Theory Subjects:

Question Paper Pattern:

Time: 3 Hours **Max. Marks: 75**

Part – A

Answer all the questions **(10*1=10)**

Ten Questions, two questions from every unit: *Multiple Choice questions.*

Part – B

Answer all the questions **(5*7=35)**

Five Questions, one question set from every unit: *Either ...Or... type*

Part – C

Answer any three questions **(3*10=30)**

Five Questions, one question from every unit

The following list of parameters taken into account for the evaluation of the Practical examination and Project work.

For Practical Subjects:

A candidate has to prepare Algorithm / Procedure for both the questions covering both the parts. The following list of parameters taken into account for the evaluation of practical examination.

Total Marks: 100 (Internal: 40 marks, External: 60 Marks)

Parameters:

For Internal Marks:

i.	Average of two tests:	25
ii.	Record Work:	10
iii.	Seminar / Quiz / Viva:	5
	Total:	**40**

For External Marks:

i.	Aim, Procedure / Algorithm and Program:	15
ii.	Coding and Compilation :	10
iii.	Debugging :	15
iv.	Results :	10
v.	Viva:	10
	Total	**60**

Note: The External Examiner can fix other exercises also other than those found in the list *(Syllabus)* in consultation with the Internal Examiner without violating the scope of the prescribed syllabus.

For Project Work:

The combined project shall be undertaken by the students as a team of two.

Total Marks: 100 (Internal: 25 marks, External: 75 Marks)

Parameters:

For Internal Marks: Two review meetings : 2 X 7.5 = 15 Marks

Overall Performance : = 10 Marks

For External Marks: Project Report : = 25 Marks

Project demo & Presentation : = 30 Marks

Viva-Voce : = 20 Marks

Appendix – IT3
(Detailed Syllabus)

CS1: INTRODUCTION TO IT & HTML

(4 Hours – 4 Credits)

UNIT I:

Introduction to Computers: Introduction – Importance of Computers – Characteristics of Computer – Uses of Computers – Overview of Computer System – Parts of a Computer – Importance of Hardware – **Classification of Computers:** Introduction – Portable computers – Personal Computers – Workstations – minicomputers – mainframes – Super Computer – Comparison of Computers – **Central Processing Unit**: Introduction – CPU – Memory – Registers – Instruction set – Machine Cycle – How the CPU and Memory work.

UNIT II:

Computer Memory: Introduction –Random Access Memory – Read Only Memory – **Secondary Storage Devices:** Introduction – Classification of Secondary Storage Devices – Advantages of Secondary Storage Devices – Magnetic Disks – Optical Disks – Magnetic Tape – Zip Disk – Jaz Disk – Super Disk – MO Disk – **Input Devices and Technologies**: Introduction –

keyboard – Mouse – Trackball – Game Controllers – Scanners – Barcode Reader –OCR – Dgitizer – Voice Recognition – web Cams – Digital Camera – Video Cameras.

UNIT III:

Output Devices and Technologies: Introduction – Monitor – Printer – Plotter – **Computer Software :** Introduction – What is Computer Software? – Hardware / Software Interaction – Software Categories – Classification of Software – Operating Systems – Utilities – Compilers and Interpreters – **Telecommunications and Networks:** Introduction -Types of Networks – Network Topology – Network Protocols – Network Architecture – Network Standardization – **Internet and WWW:** Introduction – Evolution of Internet – What can I do in the Internet – Internet Addressing – WWW – Web pages and HTML – Web Browsers - Searching the Web.

UNIT IV:

Introduction to HTML: Designing a Home Page - History of HTML - HTML Generations & Documents - Anchor Tag - Hyperlinks. **Head and Body Sections.** Header Section - Title - Prologue - Links - Colorful web page - Comment lines. **Designing the Body Section:** Heading printing - Aligning the Headings - Paragraph - Tab settings - Images and Pictures - Embedding PNG format images. **Ordered and Unordered Lists:** Lists - Unordered List - Headings in a list - Ordered List - Nested List.

UNIT V:

Table Handling: Tables - Table creation in HTML - Width of the table and cells - Cells Spanning Multiple Rows/Columns - Coloring cells - Column Specification. **Frames:** Frameset Definition - Frame Definition - Nested Framesets. **A web page design project:** Frameset definition - Animals - Birds - Fish. **Forms:** Action, Method and Enctype Attribute - Drop Down List.

Text Books:

1. Introduction to Information Systems, Alexis Leon and Mathews Leon, Mc-Graw Hill Education. Reprint 2008.
   Unit I : Chapters 2,3,4
   Unit II : Chapters 5,6,7
   Unit III : Chapters 8,9,12,13
2. World Wide Web design with HTML, C.Xavier, Tata McGraw Hill,2007.
   Unit IV : Chapter 4-7
   Unit V : Chapter 8,10-12

Reference Books:

1. Introduction to Computers, Peter Norton, sixth edition, Mc-Graw Hill Companies.
2. HTML Introduction to Web Page Design and Development, David Mercer, Tata Mc-Graw Hill Publishing Company Limited.

CS2: LAB 1: HTML & OFFICE AUTOMATION

(6 Hours – 4 Credits)

Program List

HTML:

1. a. Write HTML code to develop a web page having the background in red and body "My First Page" in any other color.
   b. Create a HTML document giving details of your name, age, telephone, address, roll no. using align tag.
   c. Write HTML code to design a page containing a text in a paragraph give suitable heading style. 4. Design a page having background color given text color red and using all the attributes of font tab.
2. a. Write HTML code to create a WebPage that contains an Image at its center.
   b. Create a web Page using href tag having the attribute alink, vlink.
   c. Write a HTML code to create a web page of pink color and display moving message in red color.
3. a. Create a web page, showing an ordered list of name of your five friends.
   b. Create a HTML document containing a nested list showing the content page of any book
   c. Create a web page, showing an unordered list of name of fruits
4. Create a table in HTML with Dummy Data Name of Train Place Destination Train No Time Fare Arrival Departure
5. Write HTML code to create a web page that displays your class time table.
6. a. Create a web page with Table using Frame concept
   b. Create a web page having two frames one containing links and another with contents of the links. When link is clicked appropriate contents should be displayed on Frame2.
7. Design an application form using all input types.
8. Design a website of your own by using all html tags.

MS Word:

1. Open a word document to prepare your "RESUME" by performing the following operations.
   Formatting the test, alignment and font style.
   Page setup(margin, alignment, page height and width).
2. Create a word document to prepare an application form for college.
3. Create a student mark sheet using table, find out the total and average marks and display the result.
4. Design an invitation of your course inauguration function using different fonts, font sizes, bullets and word art/ clip art.
5. Mail merge
   i) Prepare a business letter for more than one company using mail merge.
   ii) Prepare an invitation and to be sent to specify address in the data source.

MS Excel

6. Create a suitable worksheet with necessary information and use data sort to display the results. Also use data filters to answer at least five different criteria.
7. Create a suitable worksheet with necessary information and make out a suitable chart showing gridlines, legends and titles for axes.

8. Prepare salary bill in a worksheet showing Basic pay, DA, HRA, Gross salary, PF, Tax and Net Salary using suitable Excel functions.
9. Create, display and interact with the data using pivot tables and pivot charts of Excel features.

MS PowerPoint

10. Create a presentation to explain various aspects of your college using auto play
11. Create a presentation to explain the sales performance of a company over a period of five years. Include slides covering the profile of the company, year wise sales and graph with gridlines, legends and title for axes. Use clipart and animation features.
12. Create a presentation from various design templates
13. Prepare a presentation using auto content wizard and your content to auto content wizard.
14. Create a presentation with the audio and video effect.

MS Access

15. Create a "Student details" table for storing marks of N students. The fields of the table are: Reg.no., name, mark1, mark2, mark3 , assignment mark, seminar mark. Set the following constrains in the table.
    i) Set primary key in the Reg.no. field
    ii) Assignment marks should be of maximum 5
    iii) Seminar marks should be of maximum 10
16. Create a query for calculating total and average marks in the student table
17. Create a "Book Details" table with the fields book name, author name, price, name of the publisher, year of publication. Prepare the following queries by using this table:
    i) use "like" function to filter the author names beginning with the letter 'A'
    ii) list those books which are published after the year 2010.
    iii) Make a new table with the fields author name and book name.

AS1: MATHEMATICAL FOUNDATIONS

(4 Hours – 4 Credits)

UNIT I:

Logic - introduction - connectives - truth table - Tautology implication and equivalence of formulae.

UNIT II:

Set theory - Relations, equivalence relations - partial order - Function - binary operations - groups: Definition and examples - elementary properties.

UNIT III:

Matrices: Elementary transformations - Inverse of a matrix - Rank of a matrix - Simultaneous linear equations - Cayley Hamilton theorem.

UNIT IV:

Graph theory: Introduction -Definition and examples - degrees and sub graphs - matrices-connectedness: walks, trials and paths, connectedness and components.

UNIT V:

Eulerian graphs - Hamilton graph - **Trees**: characteristics of trees, centre of a tree.

Text books:

1.Modern Algebra by S.Arumugam & A. Thangapandi Isaac,Scitech publications 2005.

2.Discrete Mathematics by Dr.M.K.Venkatraman, Dr.N.Sridharan, Dr.N.Chandrasekaran, National Publishing Company,2000.

3.Invitation to Graph Theory by S.Arumugam and S.Ramachandran, Scitech Publications,2005,Chennai.

UNIT I: (Text Book 1)Chapters 1,2,3.1,3.2
UNIT II: (Text Book 2)Chapter 9
UNIT III: (Text Book 1)Chapters 7.3 - 7.7
UNIT IV: (Text Book 3) Chapters 2.0,2.1, 2.2, 2.3, 2.8, 4.0, 4.1, 4.2
UNIT V : (Text Book 3)Chapters 5,6

SBS1: LAB 2 : LINUX PROGRAMMING

(2 Hours – 2 Credits)

Section-A

1. Write a Linux script (WLS) to find the number of users who have logged in.
2. WLS to see the current date, user name and current directory.
3. WLS to print the numbers 5,4,3,2,1 using While loop.
4. WLS to set the attributes of a file.
5. WLS to convert lowercase to uppercase using tr utility.
6. WLS to copy and rename a file.
7. WLS to add 5 numbers and find the average.
8. WLS to convert a decimal number to hexadecimal conversion.
9. WLS to find the factorial of a number.
10. WLS to check for palindrome.

Section-B

1. WLS to display "Hello World" in Bold, Blink effect and in different colors like red, green etc.
2. WLS to display a multiplication table.
3. WLS to perform arithmetic operations using case.
4. WLS to add two real numbers.
5. WLS to display the following pattern:

```
1
22
333
4444
55555
```

6. WLS to find the sum of digits and reversing of a given number.
7. WLS to display the student mark details.
8. WLS to prepare electricity bill.
9. WLS to sort the numbers in ascending order.
10. WLS (i) To create and append a file (ii) To compare two files..

NME1: INTRODUCTION TO INFORMATION TECHNOLOGY

(2 Hours – 2 credits)

UNIT I:

Introduction to computers: Introduction – Importance of computers- characteristics of computers- uses of computers – overview of the computer system – parts of a computer – importance of hardware. **Classification of computers:** Introduction – Portable computers- Personal computers(PCs)- workstations- minicomputers- mainframes-supercomputer- comparison of computers.

UNIT II:

Central Processing Unit(CPU): Introduction – Central Processing Unit(CPU)-memory-registers – Factors affecting processor speed- instruction set- machine cycle- How the cpu and memory work. **Computer Memory:** Introduction – evaluation of memory requirements- Random Access Memory(RAM) – Read Only Memeory(ROM).

UNIT III:

Secondary storage devices: Introduction- classification of secondary storage devices- advantages of secondary storage- magnetic disks-Optical disk- magetic tape- zip disk-jaz disk- super disk-magneto-optical (MO) disk. **Input devices and Technologies:** Introduction – keyboard- mouse- trackball-game controllers-scanners- barcode reader- Optical Character Recognition(OCR)-digitizer- voice recognition – web cams- digital cameras- video cameras.

UNIT IV:

Output devices and technologies: Introduction – Monitor-Printer-plotter. **Computer software:**Introduction- what is computer software?- hardware/software interaction- software categories-classification of software-operating systems-utilities-compilers and interpreters.

UNIT V:

Telecommunication and Networks: Types of networks- network toplogies- network protocols- network architecture- networks standardization. **Internet and WWW:** What can I do on the internet?- Internet addressing- The World Wide Web (WWW) – web pages and HTML- web browsers-searching the web.

Text Book:

Introduction to Information Systems, Alexis Leon, Mathews Leon, McGraw- Hill Education (India) PVt. LTd.,Second Reprint 2008.

Unit I : Chapters 2, 3
Unit II: Chapters 4, 5
Unit III: Chapters 6, 7
Unit IV: Chapter 8, Chapter 9(Pg. No. 101- 106)
Unit V: Chapter 12(Pg. No. 156-163), Chapter 13 (Pg. No. 168- 170, 177- 187)

Reference Book:
Fundamentals of Information Technology, Alexis Leon, Mathews Leon , Second Edition, Leon Vikas Pvt LTd, Chennai.

CS3: PROGRAMMING IN C

(4 Hours - 4 credits)

UNIT I:

Overview of C: History of C – Importance of C – Basic Structure of C Programs – Programming Style – Character Set – C Tokens – Keywords and Identifiers – Constants, Variables and Data Types – Declaration of Variables – Defining Symbolic Constants – Declaring a variable as a constant – overflow and underflow of data – Operators and Expressions: Arithmetic, relational, logical, assignment operators – increment and decrement operators, conditional operators, bitwise operators, special operators – Arithmetic Expressions- Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity – Mathematical functions.

UNIT II:

Managing I/O Operations: Reading and Writing a Character – Formatted Input, Output – Decision Making & Branching: if statement - if else statement - nesting of if else statements - else if ladder – switch statement – the ?: operator – goto statement – the while statement – do statement – the for statement – jumps in loops.

UNIT III:

Arrays: One-Dimensional Arrays – Declaration, Initialization – Two-Dimensional Arrays – Multi-dimensional Arrays – Dynamic Arrays – Initialization. Strings: Declaration, Initialization of string variables – reading and writing strings – string handling functions.

UNIT IV:

User-defined functions: need – multi-function programs – elements of user defined functions – definition – return values and their types – function calls, declaration, category – all types of arguments and return values – nesting of functions – recursion – passing arrays, strings to functions – scope visibility and life time of variables. Structures and Unions: Defining a structure – declaring a structure variable – accessing structure members – initialization – copying and comparing – operation on individual members – array of structures – arrays within structures – structures within structures – structures and functions – unions – size of structures – bit fields.

UNIT V:

Pointers: Accessing the address of a variable – declaring, initialization of pointer variables – accessing a variable through its pointer – chain of pointers – pointer increments and scale factors – pointers and character strings – pointers as function arguments – pointers and structures. Files: Defining, opening, closing a file – IO Operations on files – Error handling during IO operations – command line arguments.

Text Book:

Programming in ANSI C, E.Balagurusamy, 6rd Edition, Tata McGraw Hill Publishing Company, 2012.

Unit I: Chapter 1 (Except 1.3-1.7, 1.10-1.12),
Chapter 2 (Except 2.9, 2.13),
Chapter 3 (Except 3.13)
Unit II: Chapters 4 – 6
Unit III: Chapter 7,
Chapter 8 (Except 8.5, 8.6, 8.7, 8.9, 8.10)
Unit IV: Chapter 9 (Except 9.20),
Chapter 10
Unit V: Chapter 11 (Except 11.8, 11.10, 11.12, 11.14, 11.15, 11.17),
Chapter 12 (Except 12.6)

Reference Books:

1. Programming with C,Schaum's Outline Series, Gottfried, Tata McGraw Hill, 2006
2. Programming with ANSI and Turbo C ,Ashok N.Kamthane , Pearson Education, 2006
3. H. Schildt, C: The Complete Reference, 4th Edition, TMH Edition, 2000.
4. Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.

CS4: LAB 3: PROGRAMMING IN C

(6 Hours - 4 credits)

Section A

1. Write a C Program (WCP) to find the sum of digits
2. WCP to check whether a given number is Armstrong or not
3. WCP to check whether a given number is Prime or not
4. WCP to generate the Fibonacci series
5. WCP to display the given number is Adam number or not
6. WCP to print reverse of the given number and string
7. WCP to find minimum and maximum of 'n' numbers using array
8. WCP to arrange the given number in ascending order
9. WCP to add, subtract and multiply two matrices
10. WCP to calculate NCR and NPR

Section B

1. WCP to find the grade of a student using else if ladder
2. WCP to implement the various string handling function
3. WCP to create an integer file and displaying the even numbers only
4. WCP to calculate quadratic equation using switch-case
5. WCP to implement the various string handling function
6. WCP to generate student mark list using array of structures
7. WCP to create and process the student mark list using file
8. WCP to create and process pay bill using file
9. WCP to create and process inventory control using file
10. WCP to create and process electricity bill using file

AS2: RESOURCE MANAGEMENT TECHNIQUES

(4 Hours – 4 Credits)

UNIT I:

Development of OR: Definition of OR – Modeling- Characteristics and Phases-Tools, Techniques& Methods-scope of OR.

UNIT II:

Linear Programming Problem: Formulation - Slack & surplus variables-Graphical solution of LPP.

UNIT III:

Simplex Method: Computational Procedure-Big-M method- Concept of duality in LPP-Definition of primal dual problems-General rules for converting any primal into its dual.

UNIT IV:

Duality Theorems: (without proof) Primal dual correspondence-Duality and Simplex method-Mathematical formulation of assignment problem-Method for solving assignment problem.

UNIT V:

Mathematical formulation of Transportation Problem: Methods for finding IBFS for the Transportation Problems.

Text Book:

Operations Research, S.D.Sharma, KedarNath Ram Nath& Co.

Unit I:Chapter-1(1.1, 1.2, 1.4,1.,1.8,1.9,1.10,1.11)
Unit II:Chapter-3 (3.1, 3.2, 3.3,3.3.1,3.3.2,3.3.3.,3.3.4,3.4,3.5)
Unit III: Chapter-5 (5.1,5.2,5.2.1,5.3,5.4,5.5.4)
Chapter- 7 (7.1,7.2,7.3,7.4)
Unit IV: Chapter-7 (7.5) (Statements only); 7.6, 7.7
Chapter 11(11.2,11.3,11.4)
Unit V: Chapter-12 (12.2 to 12.8)

Reference Books:

1. Operation Research,Nita H.Shah, Ravi M.Gor and Hardiksoni,Prentice-Hall of India Pvt. Ltd.,New Delhi 2008.
2. Operation Research, R.Sivarethinamohan, Tata McGraw Hill,2005.

SBS2 : LAB 4: DESKTOP PUBLISHING

(2 Hours – 2 Credits)

1. Use Adobe PageMaker for

   a. Creating and opening publications, use of toolbox, palettes, text and graphics, templates, saving publications – create a notice for an exhibition

   b. Tutorial positioning ruler guides, typing text, formatting graphics, creating columns, creating styles, changing typestyle and alignment, rotating and moving text and graphics, tabs, creating leaders, positioning and resizing logos. – create a tabulated invoice for a company

   c. Constructing a publication with the following features: set-up pages, edit master pages, choosing measurement system and setup ruler, alignment, layout, page-numbers, rearrange pages, apply header/footer, import text, thread text blocks, balance columns, edit story, use frames and layers, lock objects, wrap text around graphics, crop graphics, assemble publications into a book, Proof corrections with comment. – create a story book.

2. Using a scanner, scan an illustration, line drawing or picture, configure settings, manipulate scanned images by adjusting color, tone, contrast, brightness, resolution, shadow, make color corrections, crop scanned image and manage images in folders.

3. Use CorelDraw for

   a. Creating a drawing, set rulers, grid, guidelines, and view document.

   b. Drawing, moving, shaping objects, lines and curves, dimension line, working with style and templates

   c. Grouping/ungrouping, locking/unlocking objects, using layers, aligning and editing objects – pattern/texture fills, editing/applying end shapes, splitting/erasing portions, positioning, moving, stretching, and rotating objects

   d. Formatting text and paragraph, creating and adding blends, envelopes, extrusions, 3D special effects, different formats and layouts, previewing, sizing and printing a job.

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NME2 : INTERNET AND ITS APPLICATIONS

(2 Hours – 2 Credits)

UNIT I:

Introduction to Internet

Introduction - Some Statistics-What is Internet-How does Internet Work?-What is Special about the Internet?-A Brief History of Internet-You Don't Have to be a Mechanic to Drive a Car!.

Getting Connected

Introduction-Dial-up Connection-Dedicated Lines-ISDN-DSL-Cable Modem-Satellite Internet-Cellular broadband-Wireless broadband-Wired and Wireless Broadband Internet Access-Choosing the best Internet Connection-Web Workout.

UNIT II:

World Wide Web (WWW)

Introduction-Internet and Web-How the Web Works?-A Brief History of WWW-Web Workout.

Web Browsers and Web Browsing

Types of Browsers-Graphical Browser-Bookmarks or Favorites-Browser Plug-Ins-Browser Add-ons and Extensions-Text Based Browsers-Web Browsing-Web Browsing Tips-Keyboard Shortcuts-Keep Track of Your Time-Use Bookmarks of Favorites-Browse Offline-Use a Faster Connection-Use a Download Manager-Use the Right Mouse Button-Use the Back and Forward Buttons-Cut and Paste URLs-Use the History-Web Workout.

Searching the Web

Introduction-Information Sources-Organizations-Companies-Newspapers and the Media-Electronic Books-Library Catalogs and Bookshops-Reference-Finding Information on the Internet-Searching the Web-Web Index-Web Directory-Search Engines-Mete-search Engines-Making Your Search-Improve Your Searching-Tips for Internet Research-Invisible Web-Web Workout.

UNIT III:

Internet

Introduction-IP Address-Domain Names-Domain Name System (DNS)-Uniform Resource -Locator (URL)-Electronic Mail Addresses-Web Workout.

Internet Protocols

Introduction-Transmission Control Protocol/Internet Protocol(TCP/IP)-File Transfer Protocol(FTP)-Hypertext Transfer Protocol(HTTP)-Telnet-Gopher-WAIS-Web Workout.

UNIT IV:

E-mail

Introduction-How E-mail works?-Why use E-mail-E-mail—Names and Addresses-Mailing Basics-Address Book-File Attachments- Signature-Setting Priority-Replying and Forwarding E-Mail Messages-Customizing your E-Mail Program-How private is the E-mail-E-mail Ethics-Spamming-E-mail—Advantages and Disadvantages-Tips for effective e-mail use-E-mail Safety Tips -Smileys (Emotions)-Free E-mail Providers-Web Workout.

Websites and web Pages

Introduction-Web Design- Creating a website- Web Hosting-Website Promotion-Web Workout.

UNIT V:

Electronic Publishing

Introduction- Electronic Publishing-E-book Readers-Economics of E-Publishing-Applications of E-Publishing- E-Publishing-Advantages and Disadvantages-Web Workout

Social Networking

Introduction- Social Networking Timeline- Why Social Networking?-Dangers of Social Networking-Getting Connected-Finally-Web Workout

Newsgroups, Mailing Lists and Discussion Forums

Newsgroups- Newsgroup Organization-Working of Newsgroups- The Usenet Network-Accessing a –Newsgroup-How to behave?-Mailing Lists-Classification of Mailing Lists-Announcement vs. Discussion Lists-Public vs. Private Lists-Moderated vs. Un-moderated Lists-Operation of a Mailing List-Subscribing to a Mailing List-Mailing List Archives-Mailing List Software-Discussion Forums-Discussion Forum Software-Discussion on the Internet-Web Workout.

Chat, Instant Messaging (IM), Internet Telephony (VoIP) and Videoconferencing

Internet Chat-Internet Relay Chat (IRC)-Working of IRC-IRC Clients-Chatting on Web-Instant Messaging-How IM Works?-IM from the Web-Internet Telephony-Advantage of Internet Telephony-Internet Telephony Service Providers-Videoconferencing-Web Workout.

Text Book:

INTERNET for EVERY ONE, Alexis Leon Mathews Leon, Leon Press Chennai,2012

Unit 1: Chapters 1, 2, 3
Unit 2: Chapters 4, 5, 6
Unit 3: Chapters 8, 9
Unit 4: Chapters 10, 11
Unit 5: Chapters 14, 15, 16, 17

Reference Book:

Internet & Web Technologies, Raj Kamal, TMH Pvt. Ltd., 2011.

CS5: OBJECT ORIENTED PROGRAMMING WITH C++

(4 Hours - 4 credits)

UNIT I:

Software Crisis – Software Evolution – Basic Concepts of Object-Oriented Programming – Benefits of OOP – Object-Oriented Languages - Applications of OOP – Application of C++ - Structure of a C++ Program – Tokens – Keywords – Identifiers – Basic Data Types – User-defined Data types – Derived data types – Symbolic constants – Type compatibility – Declaration of variables – Dynamic initialization of variables –Reference variables – Operators in C++ - Manipulators – Type cast operator – Expressions and their types-Implicit conversions – Control structures – The main function – Function prototyping – inline functions – Function overloading.

UNIT II:

Specifying a class – Defining member functions – Making an outside function inline – Nesting of member functions – Private member functions – Array within a class – Memory allocation for objects – Static data members – Static member functions – Array of objects - Objects as function arguments – Friendly functions – Returning objects – Constant member functions – Constructors – Parameterized constructor – Multiple constructors in a class – Constructors with default arguments – Dynamic initialization of objects – Copy constructor – Destructors.

UNIT III:

Defining operator overloading – Overloading unary operators – Overloading binary operators – Overloading binary operators using friend function – Rules for overloading operators - Defining derived classes – Single inheritance – Making a private member inheritable – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance - Virtual base classes – Constructors in derived class – Member classes: Nesting of classes.

UNIT IV:

Pointer to objects – this pointer – Pointers to derived classes – Virtual functions – Pure virtual functions – C++ Stream classes – Unformatted I/O operations – Managing output with manipulators.

UNIT V:

Classes of file stream operations – Opening and Closing files – Detecting end of file – More about open() function – File modes, File pointers and their manipulation – Sequential input and output operations – Command-line arguments- Templates: class templates and function templates.

Text Book:

Object Oriented Programming with C++, E. Balagurusamy,McGraw Hill Education (India) Private Limited, New Delhi, *Sixth Edition*-2013

Unit I – Chapter 1 (Except 1.3, 1.4),
Chapter 2 (Only 2.6),
Chapter 3 (Except 3.20, 3.21, 3.22),
Chapter 4
Unit II – Chapter 5 (Except 5.18, 5.19),
Chapter 6 (Except 6.8, 6.9, 6.10)
Unit III – Chapter 7
Chapter 8
Unit IV – Chapter 9,
Chapter 10
Unit V – Chapter 11 (Except 11.8),
Chapter 12 (Only 12.2, 12.3 and 12.4)

Reference Books:

1. C++ - The Complete Reference, Herbert Schildt, TMH, 1998
2. C++ How to Program, Paul Deitel, Harvey Deitel, PHI, Ninth edition (2014)
3. Ashok N.Kamthane, Object Oriented Programming with ANSI & Turbo C ++, Pearson Education, 2006
4. Object-Oriented Programming With C++, PoornachandraSarang, 2nd Edition, PHI Learning Private Limited, New Delhi, 2009
5. Object-Oriented Programming Using C++, Alok Kumar Jagadev, Amiya Kumar Rath And Satchidananda Dehuri, Prentice-Hall of India Private Limited, New Delhi, 2007.

CS6: LAB 5: OBJECT ORIENTED PROGRAMMING WITH C++

(4 Hours - 3 credits)

Section A

1. Printing Prime numbers between two given numbers.
2. Printing 3 digit numbers as a series of words. *(Ex. 543 should be printed out as Five Four Three).*
3. Finding area of geometric shapes using function overloading.
4. Inline functions for simple arithmetic operations.
5. Demonstrating the use of Pre-defined Manipulators.
6. Demonstrating the use of friend function.
7. Creating student mark list using array of objects,
8. Demonstrating constructor overloading.
9. Overloading the unary – operator.
10. Demonstrating single inheritance.

11. Demonstrating the use of **"this"** pointer.
12. Designing our own manipulator.
13. Illustrating function templates.
14. Illustrating class templates.

Section B

1. Overloading the binary + operator.
2. Demonstrating Multiple inheritance.
3. Demonstrating Multilevel inheritance.
4. Demonstrating Hierarchical inheritance.
5. Demonstrating Virtual functions.
6. Processing mark list using binary file.
7. Count number of objects in a file.
8. Demonstrating the use of Command-line arguments.

CS7: DATA STRUCTURES AND COMPUTER ALGORITHMS

(4 Hours - 4 credits)

UNIT I:

Introduction to data structure: The need for data Structure-Definitions-Data Structures-Arrays: Introduction, range of an array-one dimensional array-two dimensional array-special types of matrices-linked lists: Introduction - benefits and limitations of linked list-Types-singly linked lists-circular linked lists-doubly linked lists.

UNIT II:

Stack: Introduction-ADT stack-implementation of stack- application of stack-**Queue:** Introduction - implementation of basic operations on array based and linked list based queue - circular Queues.

UNIT III:

Trees: Introduction – binary Trees-representation of binary trees-Binary tree Traversals-Recursive procedures of traversal methods-Expression Trees-Threaded Trees-Application of Trees.

UNIT IV:

Algorithms: Introduction: What is an Algorithm? – Algorithm Specification – Performance Analysis – Divide and Conquer: General method – Binary Search – Finding the maximum and minimum – Merge Sort – Quick Sort – Selection –Strassen's Matrix Multiplication.

UNIT V:

The Greedy **Method:** General Method – Knapsack problem – Job Sequencing with deadlines – Minimum **cost spanning trees:** Prim's Algorithm – Kruskal Algorithm – Optimal Storage on tapes – Optimal merge patterns – single source shortest path.

Text Books:

1. Data Structures, A. Chitra, P. T. Rajan, Vijay Nicol Imprints Pvt Ltd, McGrawHill Education of India Pvt Ltd.,2006.
   Unit I – Chapter 1, 3 (Except Multi-dimensional Arrays) and 4 (Except Simple Algorithms on linked lists, Circular doubly linked lists, multiple linked lists, applications, polynomial representation, polynomial addition, representation of polynomials)
   Unit II – Chapters 5, 6 (Except Tower of Hanoi, Dequeue)
   Unit III – Chapters (Except Priority Queues)
2. Fundamentals of Computer Algorithms, Ellis Horrowitz, SaratajSahni, Galgottia Publications Pvt Ltd, New Delhi
   Unit IV – Chapter 1 (Except 1.4), Chapter 3 (Except 3.2, 3.9)
   Unit V – Chapter 4 (Except 4.2, 4.6.3)

Reference Books:

1. Data Structure and Algorithm Analysis in C – Mark Allen Weiss – Second Edition, Addison Wesley publishing company, 1997.
2. C and C++ Programming concepts and Data Structures, P.S.Subramanyam, BS Publications, 2013.
3. Data Structures and Algorithms, Alfred V.Aho, John E.Hopcraft and Jeffrey D.Ullman, Pearson Education, Fourteenth Impression, 2013.

AS3: DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

(4 Hours – 4 credits)

UNIT I :

Number Systems and Codes: Binary Number system – Binary to decimal –decimal to binary – hexa decimal – ASCII code – Excess-3 Code – Gray code.
Digital Logic: The Basic Gates – NOT, OR, AND - Universal Logic Gates – NOR, NAND.

UNIT II:
Combinatorial Logic Circuits: Boolean Laws and Theorems. - Sum of Products method - Truth table to Karnaugh Map – Pairs, Quads, Octets – Don't Care Conditions- Product-of sums method -Product-of sums Simplifications.
Data Processing Circuits: Multiplexers – Demultiplexers-1-of-16 Decoder – BDC-to-decimal Decoders – Seven-segment Decoders – Encoders – Exclusive-OR Gates- Parity Generators and Checkers.

UNIT III:
Arithmetic Circuits: Binary Addition- Binary Subtraction – 2'S Complement Representation - 2'S Complement Arithmetic – Arithmetic Building Blocks.

UNIT IV:

Basic Computer organization and Design: Instruction codes - stored program organization - Computer registers and common bus system - Computer instructions - Timing and control - *Instruction cycle:* Fetch and Decode - Register reference instructions.

Micro programmed Control: Control memory organization - Address sequencing, micro instruction format and symbolic microinstructions - symbolic micro-program - binary micro-program.

UNIT V:

Central Processing UNIT: General register organization - stack organization - instruction formats - addressing modes - Data transfer and manipulation - Program control.

CISC and RISC - Parallel processing - Pipeline- general consideration.

Input-output organization: Peripheral devices - I/O interface - *Memory organization:* Memory hierarchy - Main memory - Auxiliary memory.

Text Book:

1. Digital Principles and Applications – Donald P Leach, Albert Paul Malvino, Goutam Saha, 8th edition , McGraw-Hill Education, 3rd reprint 2015.
2. Computer System Architecture, M. Morris Mano, Pearson Education, 3rd edition.,2007

UNIT I	5: (5.1 to 5.9) and 2: (2.1 to 2.3)	Text Book 1
UNIT II	3: (3.1 to 3.8) and 4: (4.1 to 4.7)	Text Book 1
UNIT III	6: (6.1 to 6.8)	Text Book 1
UNIT IV	5 (5.1 to 5.5) and 7 (7.1 to 7.3)	Text Book 2
UNIT V	8 (8.1 to 8.8), 9 (9.1 to 9.2), 11 (11.1 to 11.5) and 12(12.1 to 12.3)	Text Book 2

Reference Books:

1. Digital design, R.Anantha Natarajan, PHI Learning, 2015.
2. Principles of digital Electronics, K.Meena, PHI Learning, 2013.
3. Digital Computer Fundamentals, Thomas C. Bartee TMH 2007.
4. Digital Circuits and Design, S. Salivahanan and S. Arivazhagan, Vikas Publishers, 2005.
5. Computer Organization and Architecture, V.Rajaraman and T.Radhakrishnan, PHI learning, 5th Print, 2015.
6. Computer Organization, Carl Hamacher Zvonko Vranesic Safwat Zaky, McGraw Hill Education, 5th Edition, 11th reprint, 2015.
7. Computer Organization and Architecture, Smruti Ranjan Sarangi, McGraw Hill Education.

SBS3: LAB 6: MULTIMEDIA

(2 Hours – 2 credits)

Photoshop:

1. Basic tools used in Photoshop.
2. Design an image by cutting the objects from 3 files and organize them in a single file and apply feather effects.
3. Design an image by applying mirror effect.
4. Design an image by extracting flower only from given photographic image
5. Design an image by applying Text and Transform Tool.
6. Design an image by using patch or healing brush tool to remove damaged parts of an image.
7. Design an image by applying Color Balance to change the color of an image.
8. Design an image by using Clone Stamp Tool, Smudge Tool.
9. Design an image by applying Blur Filter.
10. Design an image by applying Lighting effect Filter.
11. Design an image by applying Blending options to make a text effect.
12. Design an image by applying rainbow effect.
13. Design an image by applying text masking effect.
14. Design a college id card using any tools.
15. Design a banner for your college with images and text.

Flash:

1. Basic tools used in Flash.
2. Develop a Flash application using motion tween.
3. Develop a Flash application using shape tween.
4. Develop a Flash application for ball bouncing using motion guide path.
5. Develop a Flash application for masking effect.
6. Develop a Flash application using layer based animation.
7. Develop a Flash application to represent the growing moon
8. Write action script to play and stop an animation.
9. Write action script to find the biggest of three numbers.
10. Write action script to find the factorial of a number

CS8: RELATIONAL DATABASE MANAGEMENT SYSTEMS

(4 Hours- 4 Credits)

UNIT I:

Overview of database systems: Managing Data – A Historical Perspective – File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases.

Introduction to database design: Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model – Conceptual Design With the ER Model.

UNIT II:

The relational model: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering Tables and Views.

Relational algebra and calculus: Preliminaries – Relational Algebra: Selection and Projection – Set Operations –Renaming – Joins - Division Relational Calculus: Tuple Relational Calculus – Domain Relational Calculus

UNIT III:

SQL queries, constraints, triggers: The Form of a Basic SQL Query - UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases – Designing Active Databases

UNIT IV:

Schema refinement and normal forms: Introduction to Schema Refinement – Functional Dependencies – Reasoning about FD's – Normal Forms – Properties of Decompositions – Normalization – Schema Refinement in Database Design – Other Kinds of Dependencies

UNIT V:

Overview of transaction management: The ACID Properties – Transactions and Schedules – Concurrent Execution of transactions – Lock Based Concurrency Control – Performance of Locking – Transaction Support in SQL – Introduction to Crash Recovery.

Security and authorization: Introduction to Database Security - Access Control – Discretionary Access Control – Mandatory Access Control – Security for Internet Applications – Additional Issues Related to Security.

Text book:

Database Management Systems, Raghu Ramakrishnan and Johannes Gehrke, McGraw Hill International Edition, Third Edition, 2003.

UNIT – I : Chapters:1.1 – 1.9, 2.1 – 2.5
UNIT – II : Chapters:3.1 – 3.7, 4.1 – 4.3
UNIT – III : Chapters:5.2 – 5.9
UNIT – IV : Chapters:19.1 – 19.8
UNIT – V : Chapters:16.1 – 16.7, 21.1 – 21.6

Reference Books:

1. Database Management Systems - Alexis Leon and Mathews Leon, Vikas Publishing, Chennai, 2002.
2. Database Management Systems- G.K. Gupta, McGraw Hill Education, 4th reprint 2015, Pearson Education Asia, 2001.

3. Database System Concepts – Abraham Silberschatz, Henry F.Korth, S.Sudarshan, 6th Edition, McGraw Hill, 2010.
4. Database Management Systems – R.Pannerselvam, 2nd Edition, PHI Learning, 2015.
5. Database Systems Models, Languages, Design and application Programming - R.Elmasri and S.B.Navathe, 6th Edition, Pearson Education, 2013.
6. Teach yourself SQL in 21 days - Ryan K.Stephens, Ronald PlewBryan Morgan and Jeff Perkins, 2nd Edition, SAMS Publishing.

CS9: LAB 7: RELATIONAL DATABASE MANAGEMENT SYSTEMS

(4 Hours- 3 Credits)

The following concepts must be introduced to the students:

DDL Commands

- Create table, alter table, drop table

DML Commands

- Select, update, deleteand 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

I. Create a table Student-master with the following fields client_no,name, address, city, state,pincode,remarks,bal_due with suitable data types.

a. Create another table supplier_table from client_master. Select all the fields and rename client_no with supplier_no and name with supplier_name.
b. Insert data into client_master
c. Insert data into supplier_master from client_master.
d. Delete the selected row in the client_master.

II. Create a table sales_order with s_order_no and product_no as primary key. Set other fields to store client number, delivery address, delivery date,order status.

a. Add a new column for storing salesman number using ALTER Command.
b. Set the s_order_no as foregin key as column constraints.
c. Set the s_order_no as foreign key as table constraints.
d. Enforce the integrity rules using CHECK.

III.Create a table student_master with the following fields name, regno, dept and year with suitable data types. Use Select command to do the following.

a. Select the student's name column.
b. Eliminate the duplicate entry in table.
c. Sort the table in alphabetical order.
d. Select all the Students of a particular department.

IV. Create a table sales_order_details with the s_order_no as primary key and with the following fields: product_no, description, qty_ordered, qty_disp,product_rate, profit_percent, sell_price, supplier_name.

a. Select each row and compute sell_price*.50 and sell_price*1.50 for each row selected.
b. Select product_no, profit_percent, Sell_price where profit_per is not between 10 and 20 both inclusive.
c. Select product_no, description, profit_percent, sell_price where profit_percent is not between 20 and 30.
d. Select the suppliername and product_no where suppliername has 'r' or 'h'as second character.

V. Create and use the following database schema to answer the given queries

EMPLOYEE			
DEFAULT			
Field	**Type**	**Null**	**Key**
Eno	Char(3)	No	Primary
Ename	Varchar(50)	No	
Job_type	Varchar(50)	No	
Manager	Char(3)	Yes	Foreign
Hiredate	Date	No	
Dno	Integer	Yes	Foreign
Commission	Decimal(10,2)	Yes	
Salary	Decimal(7,2)	No	

DEPARTMENT			
DEFAULT			
Field	**Type**	**Null**	**Key**
Dno	Integer	No	Primary
Dname	Varchar(50)	Yes	

Perform the following queries:

a. Query to display Employee Name, Job, Hire Date, Employee Number; for each employee with the Employee Number appearing first.

b. Query to display unique Jobs from the Employee Table.

c. Query to display the Employee Name concatenated by a Job separated by a comma.

d. Query to display all the data from the Employee Table. Separate each Column by a comma and name the said column as THE_OUTPUT.

e. Query to display the Employee Name and Salary of all the employees earning more than $2850.

f. Query to display Employee Name and Department Number for the Employee No= 7900.

g. Query to display Employee Name and Salary for all employees whose salary is not in the range of $1500 and $2850.

h. Query to display Employee Name and Department No. of all the employees in Dept 10 and Dept 30 in the alphabetical order by name.

i. Query to display Name and Hire Date of every Employee who was hired in 1981.

j. Query to display Name and Job of all employees who don't have a current Manager.

k. Query to display the Name, Salary and Commission for all the employees who earn commission.

l. Sort the data in descending order of Salary and Commission.

m. Query to display Name of all the employees where the third letter of their name is _A'.

n. Query to display Name of all employees either have two _R's or have two _A's in their name and are either in Dept No = 30 or their Manger's Employee No = 7788.

o. Query to display Name, Salary and Commission for all employees whose Commission Amount is 14 greater than their Salary increased by 5%.

p. Query to display Name, Hire Date and Salary Review Date which is the 1st Monday after six months of employment.

q. Query to display Name and calculate the number of months between today and the date each employee was hired.

r. Query to display Name with the 1st letter capitalized and all other letter lower case and length of their name of all the employees whose name starts with 'J', 'A' and 'M'.

s. Query to display Name, Department Name and Department No for all the employees.

t. Query to display Unique Listing of all Jobs that are in Department # 30.

u. Query to display Name, Job, Department No. And Department Name for all the employees working at the Mumbai location.

v. Query to display Name, Dept No. And Salary of any employee whose department No. and salary matches both the department no. and the salary of any employee who earns a commission.

w. Query to display the Highest, Lowest, Sum and Average Salaries of all the employees

x. Query to display the Employee No. And Name for all employees who earn more than the average salary.

y. Query to display Employee Number and Name for all employees who work in a department with any employee whose name contains a 'T'.

VI. Create a table master_book to contain the information of magazine code, magazine nameand publisher. Weekly/biweekly/monthly, price. Write PL/SQL block to perform insert, update and delete operations on the above table.

VII. Create a table to contain phone number, user name, address of the phone user. Write a function to search for a address using phone numbers.

VIII. Create a table stock to contain the item-code, item-name, current stock, date of last purchase. Write a stored procedure to seek for an item using item-code and delete it, if the date of last purchase is before 1 year from the current date. If not, update the current stock.

IX. Create a table to store the salary details of the employees in a company. Declare the Cursor to contain employee number, employee name and net salary. Use Cursor to update the employee salaries.

X. Create a table to contain the information about the voters in a particular constituency. Write a proper trigger to update or delete a row in the table.

XI. Create a table to store the details of the alumnus in an institution. Write a PL/SQL block to change address of particular alumni. Write proper exceptions and appropriate error messages.

CS10: OPERATING SYSTEM

(4 Hours- 4 Credits)

UNIT I:

Introduction to Operating Systems: Introduction, What is an Operating systems, Operating system components and goals, Operating systems architecture. Process Concepts: Introduction, Process States, Process Management, Interrupts, Interprocess Communication.

UNIT II:

Asynchronous Concurrent Execution: Introduction, Mutual Exclusion, Implementing Mutual Exclusion Primitives, Software solutions to the Mutual Exclusion Problem, Hardware solution to the Mutual Exclusion Problem, Semaphores. Concurrent Programming: Introduction, Monitors.

UNIT III:

Deadlock and Indefinite Postponement: Introduction, Examples of Deadlock, Related Problem Indefinite Postponement, Resource concepts, Four Necessary conditions for Deadlock, Deadlock solution, Deadlock Prevention, Deadlock Avoidance with Dijkstra's Banker's algorithm, Deadlock Detection, Deadlock Recovery. **Processor Scheduling:** Introduction, Scheduling levels, Preemptive Vs Non-Preemptive Scheduling Priorities, Scheduling objective, Scheduling criteria, Scheduling algorithms.

UNIT IV:

Real Memory Organization and Management: Introduction, Memory organization, Memory Management, Memory Hierarchy, Memory Management Strategies, Contiguous Vs Non-Contiguous Memory allocation, Fixed Partition Multiprogrammimg, Variable Partition multiprogramming. **Virtual Memory Management:** Introduction, Page Replacement, Page Replacement Strategies, Page Fault Frequency (PFF) Page replacement, Page Release, Page Size.

UNIT V:

Disk Performance Optimization: Introduction, Why Disk Scheduling is necessary, Disk Scheduling strategies, Rotational optimization. **File and Database Systems:** Introduction, Data Hierarchy, Files, File Systems, File Organization, File Allocation, Free Space Management, File Access control.

Text Book:

Operating Systems,Deitel&Deitel Choffnes, Pearson education, Third edition, 2008.

UNIT I:Chapter 1: 1.1, 1.2, 1.12, 1.13 & Chapter 3: 3.1, 3.2, 3.3, 3.4, 3.5

UNIT II:Chapter 5: 5.1, 5.2, 5.3, 5.4(up to 5.4.2), 5.5, 5.6 & Chapter 6: 6.1, 6.2

UNIT III:Chapter 7: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10

Chapter 8: 8.1, 8.2, 8 3, 8.4, 8.5, 8.6, 8.7

UNIT IV:Chapter 9: 9.1, 9 2, 9.3, 9 4, 9.5, 9.6, 9.8, 9.9

Chapter 11: 11.1, 11.5, 11.6, 11.8, 11.9, 11.10

UNIT V:Chapter 12: 12.1, 12.4, 12.5, 12.6

Chapter 13: 13.1, 13 2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8

Reference Books:

1.An introduction to Operating systems concepts and Practice,Pramod Chandra P. Bhatt, PHI,Second Edition, 2008.

2. Operating System Concepts, Abraham Silberschatz Peter Galvin Greg Gagne, 6th edition Windows XP Update, Wiley India edition, 2007.

3. Operating Systems Principles and Design, Pal Choudhury, PHI Learning, 2011.

4. Operating Systems, A Concept Based Approach DhananjayM.Dhamdhere Tata McGraw Hill, 3rd Edition, 2012.

AS4: NUMERICAL METHODS

(4 Hours – 4 Credits)

UNIT I:

Algebraic and Transcendental Equations: Errors in numerical computation-Iteration method-Bisection method-Regula-Falsi method-Newton-Raphson method-Horner's method.

UNIT II:

Simultaneous Equations: Introduction-Simultaneous equations-Back substitution-Gauss Elimination method-Gauss –Jordan Elimination method-Calculation of Inverse of a matrix-Crout's method-Iterative methods-Gauss-Jacobi Iteration method-Gauss seidal Iteration method-Newton Raphson's method for simultaneous equations.

UNIT III:

Interpolation&Introduction: Newton's interpolation Formulae-Central difference Interpolation formulae-Gauss forward, Gauss backward, Lagrange's interpolation formulae-Divided differences-Newton's divided difference formula-Inverse Interpolation.

UNIT IV:

Numerical Differentiation and Integration: Introduction-Derivates using Newton's forward difference formula-Derivates using Newton's backward difference formula-Numerical Integration-Newton-cotes quadrature formula-Trapezoidal Rule-Simpson's one third rule-Simpson's 3/8 th rule.

UNIT V:

Numerical Solution of Ordinary Differential Equations: Introduction-Taylor series method-Picard's method-Euler's method-Runge-kutta method of second, third, fouth order-Predictor & corrector methods-Mile's method.

Text Book:

Numerical Methods, Second Edition, S.Arumugam, A.ThangapandiIssac, A.Somasundaram, SCITECH publications.

Unit I: Chapter-3

Unit II: Chapter-4 (excluding Relation method and its related problems)

Unit III: Chapter-7 (Sections: 7.0, 7.1, 7.2((i), (ii) and related problems); 7.3,7.4,7.5,7.6)

Unit IV: Chapter-8 (Sections: 8.0,8.1,8.2 related problems,8.5 (excluding Weddles rule, Booles rule, Romberg's method and related problems))
Unit V: Chapter-10 (Sections : 10.0,10.1,10.2,10.3(excluding modified Euler's method & its related problems) 10.4,10.5,10.6)

Reference Book:
Mathews J.H. Numerical Method for Maths, Science and Engineering; PHI, New Delhi, 2001.

SBS4: LAB 8 : PHP & MYSQL

(2 Hours – 2 Credits)

1. Write a program to display three marks of five students in a table
2. Write a PHP program to design a client page to get two numbers and add, subtract, multiply and divide then in server and display
3. Write a PHP program to design a page to get age of a person and display he/she is eligible for vote or not in server page.
4. Write a PHP program to design a client page to get five marks of a student and display total, Average, Grade in server page
5. Write a PHP program to Get 'n' value in the client page and display multiplication table of n in the server page.
6. Write a PHP program to Get two text value in client page, done string manipulation and display in server page(Any five functions)
7. Write a PHP program to find Sum of digits
8. Write a PHP program to find Biggest number using Function
9. Write a PHP program to display Book details using Foreach Loop
10. Write a PHP program to display registration Form
11. Write a PHP program to Copy from one file to another file
12. Write a PHP program to Multiples of 7 using REQUIRE
13. SELECT commands in MY-SQL
14. DML/TCL commands in MY-SQL
15. Retrieve and process Employee Pay-bill calculation using PHP & MY-SQL
16. Retrieve and process EB-Bill calculation using PHP & MY-SQL

CS11: DATA COMMUNICATIONS AND COMPUTER NETWORKS

(5 Hours – 4 Credits)

UNIT I :

Introduction: A Brief History – Applications – Computer Networks – Categories of Networks – Standards and Standards Organizations – Network Architecture – Open Systems and OSI Model – TCP/IP Architecture.

Communication Media and Data Transmission: Fourier Analysis – Analog and Digital Data Transmission – Modulation and Demodulation – Transmission Media – Wireless Communications – Data Transmission Basics – Transmission Mode – Interfacing – Multiplexing **Error Detection and Correction:** Types of Errors – Error Detection – Error Correction. **Data Link Control and Protocol Concepts:** Flow Control – Error Control – Asynchronous Protocols – Synchronous Protocols – High-Level Data Link Control (HDLC).

UNIT II :

Local Area Networks: Types of Networks and Topology –LAN Transmission Equipment – LAN Installation and Performance. **Ethernet:** IEEE Standard 802.3 **Token Bus:** IEEE Standard 802.4 **Token Ring:** IEEE Standard 802.5 – Fiber Distributed Data Interface (FDDI) – **Distributed Queue Dual Bus (DQDB):** IEEE Standard 802.6 – LAN Operating Systems and Protocols – Ethernet Technologies.

Wide Area Networks: WAN Transmission Methods – WAN Carrier Types – WAN Transmission Equipments – WAN Design and Multicast Considerations – WAN Protocols.

UNIT III:

Integrated Services and Routing Protocols: Integrating Services – ISDN Services – ISDN Topology – ISDN Protocols – Broadband ISDN – Asynchronous Transfer Mode (ATM) – Principal Characteristics of ATM – Frame Relay – Comparison of ISDN, ATM and Frame Relay.

Wireless LANS: WLAN Applications – Wireless LAN Requirements – Planning for Wireless LANs – Wireless LAN Architecture – IEEE 802.11 Protocol Layer – IEEE 802.11 Physical Layer – Designing the Wireless LAN Layout – WAP Services.

UNIT IV:

Internet Working: Principles of Internet Working – Routing Principles – Internetwork Protocols (IP) – Shortcomings of IPv4 – IP Next Generation.

TCP Reliable Transport Service: Transport Protocols – The Service TCP Provides to Applications – End –to-End Service and Datagrams – Transmission Control Protocol – User Datagram Protocol.

UNIT V:

Network Applications: Client-Server Model – Domain Name System (DNS) – Telnet – File Transfer and Remote File access – Electronic Mail – World Wide Web (WWW).

Network Management: Goal of Network Management – Network Management Standards – Network Management Model – Infrastructure for Network Management – Simple Network Management Protocol (SNMP).

Text Book:.

Data Communications and Computer Networks, Brijendra Singh,Second Edition, PHI, 2006.

UNIT I: Chapter - 1,2,3,5
UNIT II: Chapter - 6, 7
UNIT III: Chapter - 8, 9
UNIT IV: Chapter - 10, 11
UNIT V: Chapter – 12

Reference Books:

1. **Computer Networks,** Andrew S Tanenbaum, 4th Ed, Prentice Hall of India, 2006.
2. **Data Communications and Computer Networks** , Prakash C. Gupta, Prentice Hall of India, 2005.
3. **Data and Computer Communications,** William Stallings, PHI, 2007.
4. **Data Communication and Networking** ,Behrouz A. Forouzan, TMH, 2005.
5. **Data Communications and Networks** , Achyut S Godbole, Tata McGraw Hill, 2005.

CS12: SOFTWARE ENGINEERING

(5 Hours- 4 Credits)

UNIT I:
Introduction to Software Engineering: Some Definitions – Some Size factors – Quality and Productivity Factors – Managerial Issues.**Planning a Software Project:** Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

UNIT II:
Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

UNIT III:
Software Requirements Definitions: The Software Requirements Specification – Formal Specification Techniques – Languages and Processors for Requirements Specification.

UNIT IV:
Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-Time and Distributed System Design – Test Plans – Milestones, Walkthroughs, and Inspections - Design Guidelines.

UNIT V:
Verification and Validation Techniques: Quality Assurance – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification.
Software Maintenance: Enhancing Maintainability During Development – Managerial Aspects of Software Maintenance – Configuration Management – Source-Code Metrics – Other Maintenance Tools and Techniques.

Text book:

Software Engineering Concepts, Richard Fairley, Tata McGrawHill Publishing Company Limited, NewDelhi, 1997.

UNIT – I : Chapters: 1.1 – 1.4, 2.1-2.5
UNIT – II : Chapters: 3.1 - 3.4
UNIT – III : Chapters: 4.1 – 4.3
UNIT – IV : Chapters: 5.1 – 5.9
UNIT – V : Chapters: 8.1, 8.3 – 8.7, 9.1 – 9.5

Reference books:

1. Software Engineering – K.L.James, Prentice Hall of India Pvt. Ltd., New Delhi, 2009.
2. Fundamentals of Software Engineering – Rajib Mall, Prentice Hall of India Pvt. Ltd., New Delhi, 2003.

CS13:JAVAPROGRAMMING

(5 Hours – 4 Credits)

UNIT I:

Introduction : Features of Java Language – Types of Programs – Java Architecture – Literals – Data types – Variables – Structure of Java Program – Comments – Expression and Statements – Type Conversion – Arithmetic Operators – Bitwise Operators – Relational Operators – Logical Operator – Ternary Operator – Operator Precedence.

UNIT II:

Control Structure and Arrays: If...else Statement – Switch Statement – while Statement – do...while Statement – for Statement – Break in Loop – One Dimensional Array – Multi Dimensional Array.

UNIT III:

Class and Interface: Definition – new operator and objects – dot operator – Method Declaration and Calling – Constructors – Instance Variable – this in Constructor – Method Overloading – Passing Objects as Parameters – Sub Class – Method Overriding – Final Class – Method – Variable – Object destruction – Static Class – Method – Variable – Abstract Class – Package – Import Statement – Access modifier – Interfaces .

UNIT II:

String,Wrapper&Exception classes: Number Class – Character Class – Boolean Class – String Class – String Buffer Class – Types Of Exception – Catching Exception – Rethrowing Exception – User Exception – Finally Block – Checked and Unchecked Exceptions.

UNIT III:

I/O and Multithreading: I/O Streams – File Class – Byte Stream – Disk File Handling – Memory Handling – Filtered Byte Stream – Random access File – Character Stream – Multithreading – Creations – Thread States – Multithreaded Programming – Thread Priorities – Waiting For Thread – Join Method – Controlling Threads.

Text Book:

Programming in Java2, By Dr.K.Somasundaram , Publisher : First Edition JAICO Publishing House,2008.

UNIT I: Chapters 1.2 to 1.4, 2.1 To 2.3, 3.1 To 3.4, 4.1 To 4.6
UNIT II: Chapters 5.1 to 5.7, 6.1, 6.2
UNIT III: Chapters 7.1 to 7.9,8.1 To 8.9,9.1 To 9.4
UNIT IV: Chapters 10.1 to 10.3, 12.1 To 12.4, 12.6, 12.7, 14.1, 14.2
UNIT V: Chapters 13.1 to 13.6, 13.10, 13.11, 15.1 To 15.7

Reference Books:

1. Programming with java, E.Balagurusamy TMH, 4th Edition.
2. Java 2- The Complete Reference , Herbert Schildt , 5th Edition(2002),McGraw Hill Education (India) Private Limited.
3. Programming with Java (Schaum's Outline Series) , John R.Hubbard, , 2nd Edition(2004), McGraw-Hill International Editions.

CS14 : LAB 9: JAVA PROGRAMMING

(6 Hours – 4 Credits)

Section: A

Write Programs in Java for the following:

1. To implement a simple temperature conversion program.
2. To perform addition and subtraction of complex numbers using class and objects.
3. To perform volume calculation using method overloading.
4. Using command line arguments, test if the given string is palindrome or not.
5. String manipulation using String Methods (Use of any five String methods are preferred).
6. Write a program to fill names into a list .Also, copy them in reverse order into another list. If the name contains any numeric value throw an exception "Invalid Name"
7. Program to demonstrate the use of any two built-in exceptions in Java.

Section: B

8. To perform multiplication of matrices using class and objects.
9. Using multilevel inheritance process student marks.
10. Implement multiple inheritance for payroll processing.
11. Implement interface for area calculation for different shapes.
12. Create a package called "Arithmetic" that contains methods to deal with all arithmetic operators. Also write a program to use the package.
13. Create two threads such that one of the thread generate Fibonacci series and another generate perfect numbers between two given limits.

14. Define an exception called": **Marks Out of bound:"** Exception, that is thrown if the entered marks are greater than 100.
15. Program to demonstrate the use of Wrapper class methods.
16. File Processing using Byte stream.
17. File Processing using Character Stream.
18. Write applets to draw the following Shapes:
    (a). Cone **(b).**Cylinder **(c).** Square inside a Circle **(d).** Circle inside a Square
19. Write an applet Program to design a simple calculator.
20. Write an Applet Program to animate a ball across the Screen.

ES1. 1: MOBILE COMPUTING

(5 Hours – 4 Credits)

UNIT I:

INTRODUCTION : Mobile Computing – Mobile Computing Vs wireless Networking – Mobile Computing Applications – Characteristics of Mobile computing – Structure of Mobile Computing Application. MAC Protocols – Wireless MAC Issues – Fixed Assignment Schemes – Random Assignment Schemes – Reservation Based Schemes.

UNIT II:

MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER: Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – route Optimization. Overview of TCP/IP – Architecture of TCP/IP- Adaptation of tCP Window – Improvement in TCP Performance.

UNIT III:

MOBILE TELECOMMUNICATION SYSTEM : Global System for Mobile Communication (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunication System (UMTS).

UNIT IV :

MOBILE AD-HOC NETWORKS: Ad-Hoc Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols –Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security.

UNIT V:

MOBILE PLATFORMS AND APPLICATIONS : Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – M- Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.

Text book:

Fundamentals of Mobile Computing - Prasant Kumar Pattnaik, Rajib Mall, PHI Learning Pvt. Ltd, New Delhi – 2012.

Unit I: Chapters 2.5 – 2.5, 3.1 - 3.6
Unit II :Chapters 4.3 – 4.6 , 5.1,5,3,5,7,5.8
Unit III: Chapters 2.7 – 2.9
Unit IV: Chapters 7.1 – 7.9
Unit V: Chapters 9.2 - 9.4, 11.1 – 11.6

Reference Books:

1. Mobile Communications, Jochen H. Schller, Second Edition, Pearson Education, New Delhi, 2007.
2. Introduction to Wireless and Mobile systems, Dharma PrakashAgarval, Qing and An Zeng, Thomson Asia Pvt Ltd, 2005.
3. Principles of Mobile Computing, UweHansmann, LotharMerk, Martin S. Nicklons and Thomas Stober, Springer, 2003.

ES1. 2: COMPUTER GRAPHICS

(5 Hours – 4 Credits)

UNIT I:

A survey of computer graphics: Computer-Aided Design - Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces. **Overview of Graphics Systems:** Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices.

UNIT II:

Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms – Ellipse Generating Algorithms – Filled Area primitives.

UNIT III:

Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions – Antialiasing.

UNIT IV:

Two–Dimensional Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations Between Coordinate Systems.

UNIT V:

Two –Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Text Book:
Computer Graphics, Donald Hearn and M. Pauline Baker, Prentice Hall Of India Pvt. Ltd., New Delhi, Second Edition, 1994.

UNIT – I : Chapters 1.1 – 1.8, 2. 1-2.3, 2.5, 2.6
UNIT – II : Chapters 3.1, 3.2, 3.5-3.7, 3.11
UNIT – III : Chapters 4.1 – 4.8
UNIT – IV : Chapters 5.1 – 5.5
UNIT – V : Chapters 6.1 – 6.11

Reference Books:

1. Computer Graphics, Multimedia and Animation – Malay K. Pakhira, Prentice Hall Of India Pvt. Ltd. , New Delhi – 2008
2. Fundamentals Of Computer Graphics And Multimedia – D. P. Mukherjee, Prentice Hall Of India Pvt. Ltd. , New Delhi – 1999

ES1. 3: INFORMATION SECURITY

(5 Hours – 4 Credits)

UNIT I:

Introduction: History of Information security - What is Security? - CNSS Security Model - Components of an Information System - Balancing Information security and Access – Approaches to Information security implementation - The SDLC - The Security SDLC.

UNIT II:

Security Investigation: Need for Security, Business Needs, Threats, Attacks, Professional, Legal and Ethical Issues in Information security.

UNIT III:

Managing IT Risk: An overview of Risk Management - Risk Identification – Risk Assessment - Risk Control Strategies- Selecting Risk Control Strategy – Quantitative Versus Qualitative Risk Control Practices.ling Risk.

UNIT IV:

How to plan for security: Information security Planning and Governance - Information Security Policy, Standards and Practices - ISO 17799/BS 7799. NIST Models, VISA International Security Model, Design of Security Architecture – Continuity strategies.

UNIT V :

Security Technology: Introduction – Intrusion detection and prevention systems - Scanning and Analysis Tools – Biometric access controls – Cipher methods – Cryptographic algorithms – Cryptographic tools – Protocols for secure communication- Attacks on Cryptosystems.

Text book:

Principles of Information Security, Michael E Whitman and Herbert J Mattord, Fourth Edition, CENGAGE Learning, 6th Indian Reprint, 2013.

UNIT I: Chapter 1
UNIT II: Chapter 2, Chapter 3
UNIT III: Chapter 4
UNIT IV: Chapter 5
UNIT V: Chapter 7, Chapter 8

Reference books:

1. Handbook of Information Security Management, Micki Krause, Harold F. Tipton, Vol. 1-3, CRC Press LLC, 2004.
2. Hacking Exposed, Stuart Mc Clure, Joel Scrambray, George Kurtz, TMH, 2003
3. Computer Security Art and Science, Matt Bishop, Pearson/PHI, 2002.

SBS5: LAB 10: NETWORKING

(2 Hours – 2 Credits)

1. Get detailed IP address of a system
2. Send data from client to server using UDP
3. Send data from client to server using TCP
4. Use Threads to receive multiple connections for a single server socket
5. Send a file from server to multiple clients
6. Create a Chat room using TCP and UDP
7. Using RMI do mathematical operations by sending data from client to server
8. Using RMI do banking transaction between client and server
9. Using RMI prepare EB bill
10. Using RMI do payroll processing
11. Using RMI perform inventory processing
12. Router Configuration using CISCO Packet Tracer
    A. Static Routing
    B. Dynamic Routing
    C. Link State Routing Protocols

CS15: ANDROID PROGRAMMING

(5 Hours – 4 Credits)

UNIT I:

Hello Android: A little background – What Android Isn't -Android: An open Platform for Mobile Development –Native Android Applications –Android SDK Features – Introducing the Open Handset Alliance –What does Android run on? –Why develop for Mobile? –Why develop for Android? –Introducing the Development Framework. **Getting Started:** Developing for

Android –Developing for Mobile and Embedded Devices –Android Development Tools. **Creating Applications and Activities:** What Makes an Android Application? –Introducing the Application Manifest File –Using the Manifest Editor –Externalizing Resources –The Android Application Lifecycle –Introducing the Android Application Class –A closer Look at Android Activities.

UNIT II:

Building User Interfaces: Fundamental Android UI Design –Android User Interface Fundamentals –Introducing Layouts –Introducing Fragments –Creating New Views –Introducing Adapters. **Intents and Broadcast Receivers:** Introducing Intents –Creating Intent Filters and Broadcast Receivers. **Using Internet Resources:** Downloading and Parsing Internet Resources –Using the Download Manager.

UNIT III:

Expanding the User experience: Introducing the Action Bar –Creating and Using Menus and Action Bar Action Items –Introducing Dialogs –Introducing Notifications **Advanced User Experience:** Working with Animations –Enhancing your views.

UNIT IV:

Invading the home screen: Introducing Home Screen Widgets –Creating App Widgets – Creating Live Wallpaper **Audio, Video, and Using the Camera:** Playing Audio and Video – Using the camera for Tasking Pictures –Recording Video.

UNIT V:

Databases and Content Providers: Introducing Android Databases –Introducing SQLite – Content Values and Cursors –Working with SQLite Databases –Creating Content Providers – Using Content Providers.**Maps, Geocoding, and Location-Based services:** Using Location-Based Services –Using the Emulator with Location-Based Services –Selecting a Location Provider –Finding your Current Location. **Monetizing, Promoting, and distributing Applications:** Signing and Publishing Applications –Distributing Applications.

Text book:

Professional Android 4 Application Development , Reto Meier,Wiley India Pvt Ltd., 2012.

UNIT I: Chapter 1,2,3
UNIT II: Chapter 4,5,6
UNIT III: Chapter 10,11
UNIT IV: Chapter 14,15
UNIT V: Chapter 8,13,19

Reference book:

1. The Busy coders Guide to Android Development, Mark.L.Murphy, Commonsware LLC, 2016.
2. Android Apps for Absolute Beginners – Wallace Jackson, Apress Publishing, 2014.

CS16: LAB 11: WEB PROGRAMMING

(6 Hours – 4 Credits)

(Select one question from JavaScript and ASP.net)

JavaScript& JSP

1. Write a JavaScript Program To Generate Fibonacci Series
2. Write a JavaScript Program For Checking Palindrome Or Not
3. Write a JavaScript Program To Validate Form
4. Write a JavaScript Program To Create Popup Window
5. An Html Form With A JavaScript Event Handler
6. Write a JavaScript Program To Remove Items From A Dropdown List
7. Write a JavaScript Program To Display A Random Image
8. Write a JavaScript Program To Valid An Email Address.
9. Write a JSP to add the contents of another JSP file using **@include** directive.
10. Write a JSP to check whether the given number is prime or not.
11. Write a JSP to forward one JSP file to another JSP file using **forward** action.

ASP.Net

12. Working with Page and Forms Using Asp .Net.
13. To Create An Account Registration Form And Perform The Following Validation
    a) User Name
    b) Password
    c) Retype Password
    d) Gender
    e) Email-Id
    f) Date Of Birth
    g) Mobile
14. To Read Student Details From Xml File
15. To Display Vehicle Details In Tree View Control From Xml File
16. Create Any Application Program Using Menu Server Control
17. To Process Student Database Using **Sqldatasource** Control
18. To Display Employee Details From The Database Using **Sitemapdatasource**
19. To Read And Display Personal Database Using **Xmldatasource** Control
20. Create A Web Page For Your Department
21. Send An Mail

CS17: SOFTWARE TESTING

(5 Hours – 4 Credits)

UNIT I:

SETTING THE CONTEXT: Principles of Testing – Software Development Life Cycle Models: Phases of Software Project – Quality, Quality Assurance, and Quality Control – Life cycle models. **TYPES OF TESTIING:** White Box testing – Black Box Testing.

UNIT II:

SOME MORE TYPES OF TESTING: Integration Testing – System and Acceptance Testing. Performance Testing – Regression Testing.

UNIT III:

SPECIALIZED TESTING: Testing of Object-Oriented Systems – Usability and Accessibility .

UNIT IV:

PEOPLE AND ORGANIZATIONAL ISSUES IN TESTING: Common people issues – Organization for Testing Teams.

UNIT V:

TEST MANAGEMENT AND AUTOMATION: Test planning, Execution and Reporting – Software Test Automation - Test Metrics and Measurements.

Text Book:

Software Testing – Principles and Practices Srinivasan Desikan and Gopalaswamy Ramesh,Pearson Education, 2012.

Unit I: Chapter 1,2,3,4
Unit II: Chapter 5,6,7,8
Unit III: Chapter 11,12
Unit IV: Chapter 13,14
Unit V: Chapter 15,16,17

Reference Books:

1. Effective Methods of Software Testing, William Perry, Third Edition,Wiley Publishing 2007.
2. Software Testing Principles and Practices ,Naresh Chauhan, Oxford University Press , New Delhi, 2010. 1995.

ES2. 1:INTRODUCTION TO UNIFIED MODELING LANGUAGE

(5 Hours – 4 Credits)

UNIT I:

Object Oriented Methodologies: Introduction – Survey of some of the Object oriented methodologies – Rumbaugh et al's Object modeling technique – The booch methodology – The Jacobean et al. methodologies – patterns – frameworks – the Unified approach.

UNIT II:

Unified Modeling language – Introduction – Static and Dynamic models – why modeling – Introduction to the Unified modeling language – UMS diagrams – UML class diagram – user-case diagram – UML dynamic modeling – model management – UML extensibility – UML meta model.

UNIT III:

Object oriented analysis process – introduction – Why analysis is a difficult activity – Business object analysis – use-case driven object oriented analysis – business process modeling – use-case model – developing effective documentation – case study.

UNIT IV:

Object analysis: classification – classification theory – approaches for identifying classes – noun phrases approach – common class patterns approach – use-class driven approach – classes, responsibilities and collaborators – naming classes.

UNIT V:

Identifying object relationships, attributes and methods – associations – super-sub class relationships – A part of relationships aggregation – case study – class responsibility – defining attributes for ViaNet Bank objects – Object responsibility – Defining methods for Vianet Bank objects.

Text book:

Object oriented systems development using Unified Modeling Language – Ali Bahrami – TMH edition, 2008.

UNIT I: Chapter 4
UNIT II: Chapter 5
UNIT III: Chapter 6
UNIT IV: Chapter 7
UNIT V: Chapter 8

Reference book:

Object oriented analysis and design using UML – Mahesh P Matha – PHI, 2008

ES2. 2: COMPILER DESIGN

(5 Hours – 4 Credits)

UNIT I :

Introduction to Compliers: Compliers and Translator – Need of Translator – The structure of a Complier – Lexical analysis – Syntax analysis – Intermediate code generation – optimization – code generation – Complier – writing tools. Finite automata and lexical Analysis: The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the number of states of a DFA.

UNIT II :

The Syntactic specification of programming languages: context free grammars – derivations and parse trees – capabilities of context free grammars. Basic parsing techniques: Parsers – shift – reduce parsing – operator – precedence parsing – top down parsing – predictive parsers.

UNIT III:

Syntax – directed translation: syntax – directed translation schemes – implementation of syntax – directed translators – intermediate code – postfix notation – parse trees and syntax trees – 3 address code – quadruples and triples – translation of assignment statements – Boolean expressions – statements that alter the flow of control. Symbol tables: the contents of a symbol table – data structures for symbol table – representing scope information.

UNIT IV:

Run time storage administration: Implementation of a simple stack allocation scheme – implementation of block-structured languages – storage allocation in block structured languages. Error deduction and recovery: errors – lexical phase errors – syntactic phase errors – semantic errors.

UNIT V:

Introduction of code optimization: The principle sources of optimization – loop optimization – the DAG representation of basic blocks – value numbers and algebraic laws – Global data flow analysis. Code generation: Object programs – problems in code generation – a machine model – a simple code generator – register allocation and assignment – code generation from DAG's – peepholes optimization.

Text Book

Principles of Complier Design,Alfred V.Aho, Jeffrey D.Ullman , Narosa Publishing House.25th Reprint, 2001.

Unit I : Chapters 1.1 – 1.11, 3.1 – 3.6
Unit II: Chapters 4 & 5
Unit III: Chapters 7.1 – 7.9 , & 9
Unit IV: Chapters 10(excluding 10.3) & 11
Unit V: 12 & 15

Reference Book

Compiler Principles, Techniques and Tools by Alfred V.Aho, Monica S.Lam, Ravi Sethi, Jeffrey D. Ullman, Second edition, Pearson Publications, 2007.

ES2: 3.CRYPTOGRAPHY & NETWORK SECURITY

(5 Hours – 4 Credits)

UNIT I:

Security Trends - The OSI security architecture –Security Attacks – Security Services - Security mechanism – A model for network security – Symmetric Cipher model – Substitution techniques – transposition techniques – Block cipher principles – The Data Encryption Standard - The strength of DES - Block cipher design principles.

Unit II

Evaluation Criteria for AES – The AES Cipher – Multiple Encryption and Triple DES – Block Cipher Modes of Operation – Stream Ciphers and RC4 - Confidentially using symmetric encryption – introduction to number theory – public – key cryptography and RSA.

Unit III

Key management – Diffle Hellman key exchange – message authentication and hash function – hash algorithm – digital signature and authentication protocols – digital signature standard.

Unit IV

Authentication application – Electronic mail Security – IP security – Web security.

Unit V

Intruders –Malicious software – Firewalls.

Text Book

Cryptography and Network Security, Principles and Practices - William Stallings Fourth edition, PHI Education Asia,2006.

Unit I : Chapters 1.1 to 1.6; 2.1 to 2.3; 3.1 to 3.3& 3.5
Unit II : Chapters 5,6,7,8,9
Unit III : Chapters 10.1,10.2; 11, 12
Unit IV : Chapters 14,15,16,17
Unit V : Chapter 18.19.20

Reference Books

1. Cryptography and Network Security, Atul kahate - Second edition, TMH.
2. Cryptography and Network Security, Behrouz A.forouzan ,TMH.

SBS6: QUANTITATIVE APTITUDE

(2 Hours -2 Credits)

UNIT I:

Numbers-HCF & LCM of numbers – Decimal Fractions.

UNIT II :

Square roots & Cube roots- Average – Problems on Numbers – Problems on Ages.

UNIT III:

Percentage – Profit & Loss – Ratio & Proportion.

UNIT IV:

Time & Work – Time & Distance.

UNIT V:

Simple Interest – Compound Interest – Area –Volume & Surface areas.

Text Book

Quantitative Aptitude, R.S.Aggarwal, S.Chand & Company Ltd.,2011

Unit I : Page nos.3-29, 30-45, 46-66.

Unit II : Page nos.117-138,139-160,161-181,182-194

Unit III : Page nos.208-250,251-293,294-310

Unit IV : Page nos. 341-370,384-404

Unit V : Page nos.445-465,466-486, 499-548,549-587

Reference Books:

1. Quantitative Aptitude and reasoning, R.V. Praveen, PHI Learning, 2nd Edition 2013.
2. Magical book on Quicker Maths, M.Tyra, BSC Publishing Co. Pvt.Ltd, Delhi. Reprint, 2011.
3. Quantitative Aptitude for Competitive Exams, Abhijit Guha, 4th Edition, Tata Mc Graw Hill Company, New Delhi.