# B.Sc. Computer Science: Syllabus (CBCS)

## Thiruvalluvar University

### Bachelor of Science

#### B.Sc. COMPUTER SCIENCE

#### Degree Course

CBCS Pattern

(With effect from 2012 - 2013)

### The Course of Study and the Scheme of Examinations

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3
## B.Sc. Computer Science: Syllabus (CBCS)

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THIRUVALLUVAR UNIVERSITY

BACHELOR OF SCIENCE

B.SC. COMPUTER SCIENCE

SYLLABUS
UNDER CBCS
(with effect from 2012-2013)

SEMESTER I

PAPER - 1

DIGITAL LOGIC AND MICROPROCESSOR

UNIT-I: Binary Systems:


UNIT-II: Boolean Algebra and Logic Gates:

Basic Definitions of Boolean Algebra - Axiomatic Definition of Boolean Algebra - Basic Theorems and Properties of Boolean Algebra - Boolean Functions - Canonical and Standard Forms - Digital Logic Gates.

UNIT-III: Simplification of Boolean Functions

The Map Method - Two and Three Variable Maps - Four Variable Map - Product of Sums Simplifications - Don't Care Conditions.

UNIT-IV: Combinational Logic

Adders - Subtractors - Binary Adder – Encoder - Decoders – multiplexure and demultiplexure - Flip Flops - Registers - Shift registers-Ripple counters- Synchronous Counters - The Memory Unit.

UNIT-V: Microprocessor

Microprocessors and Assembly Languages – History of Micro Processor - Micro Processor Architecture and its operations – 8085 MPU.
Text Book:


Reference Books:

Digital Logic Design – Lloyd
ALLIED - 1
PAPER - 1

A. MATHEMATICS – I

Objectives of the Course:
To Explore the Fundamental Concepts of Mathematics

UNIT-I: ALGEBRA
Partial Fractions - Binomial, Exponential and logarithmic Series (without Proof) -Summation - Simple problems

UNIT-II : THEORY OF EQUATIONS
Polynomial Equations with real Coefficients - Irrational roots - Complex roots- Transformation of equation by increasing or decreasing roots by a constant - Reciprocal equations - Newton’s method to find a root approximately - Simple problems.

UNIT-III : MATRICES
Symmetric - Skew-Symmetric - Orthogonal and Unitary matrices - Rank of a matrix -Consistency of equations - Eigen roots and eigen vectors - Cayley-Hamilton theorem (without proof)-Verification and computation of inverse matrix

UNIT-IV: TRIGONOMETRY
Expansions of \( \sin^n \theta, \cos^n \theta, \sin n \theta, \cos n \theta, \tan n \theta \) - Expansions of \( \sin \theta, \cos \theta, \tan \theta \) in terms of \( \theta \) - Hyperbolic and inverse hyperbolic functions - Logarithms of complex numbers.

UNIT-V: DIFFERENTIAL CALCULUS
n-th derivatives - Leibnitz theorem (without proof) and applications – Jacobians -Concepts of polar co-ordinates-Curvature and radius of curvature in Cartesian co-ordinates.

Recommended Text:
Reference Books:


ALLIED – 1

PAPER - 1

B. MATHEMATICAL FOUNDATIONS I

Objectives

To know about logical operators, validity of arguments, set theory and set operations, relations and functions, binary operations, Binary algebra, Permutations & Combinations, Differentiation, Straight lines, pair of straight lines, Circles, Parabola, Ellipse, Hyperbola.

UNIT-I : SYMBOLIC LOGIC

propositions, Logical operators, conjunction, disjunction, negation, conditional and bi-conditional operators, converse, Inverse, Contra Positive, logically equivalent, tautology and contradiction. Arguments and validity of arguments.

UNIT-II : SET THEORY

Sets, set operations, venndiagram, Properties of sets, number of elements in a set, Cartesian product, relations & functions,

Relations: Equivalence relation. Equivalence class, Partially and Totally Ordered sets,

Functions: Types of Functions, Composition of Functions.

UNIT-III : BINARY OPERATIONS


UNIT-IV : DIFFERENTIATION

Simple problems using standard limits,

\[ \lim_{x \to a} x^n - a^n, \lim_{x \to 0} \sin x, \lim_{x \to 0} \tan x, \lim_{x \to 1} e^x - 1, \lim_{(1+1/n)^n} (1+n)^{1/n}, \lim_{x \to \infty} n \to 0 \]

Differentiation, successive differentiation, Leibnitz theorem, partial differentiation, Applications of differentiation, Tangent and normal, angle between two curves, Maximum and Minimum values (Second derivative test), Curvature and radius of Curvature (Cartesian coordinates), Envelopes.
UNIT-V : TWO DIMENSIONAL ANALYTICAL GEOMETRY

Straight Lines - Pair Straight Lines – Circles.

Reference Books

2. U. Rizwan, Mathematical Foundation - SciTech, Chennai
SEMESTER II
PAPER – 1
PROGRAMMING IN C

UNIT-I


UNIT-II

Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

UNIT-III

Functions -Definition - prototypes - Passing arguments – Function within a function-Recursion.

UNIT-IV

Storage Classes - Automatic, External, Static, Register Variables .Arrays - Defining and Processing - Passing arrays to functions - Multi-dimension arrays - Structures - User defined data types.-unions-bitwise operators.

UNIT-V

Pointers - Declarations - Passing pointers to Functions - Operation on Pointers - Files: Creating, Processing, Opening and Closing a data file.

Text Book:


Reference Books:

M.T.Somashekara ,Problem Solving in C, PHI.
CORE PRACTICAL – I

PC SOFTWARE LAB

WORD

Prepare a resume
Prepare an application for a job
Prepare an advertisement for a product
Prepare a letter head
Prepare a leave letter

From Newspaper “appointment pages” take one Advt and type
Mail Merge Concept
Copying Text and Picture From Excel
Creation of Tables, Formatting Tables
Inserting Symbols in Documents

EXCEL

Aligning , Editing Data in Cell
Excel Function (Date, Time, Statistical, Mathematical, Financial Functions)
Changing of Column Width and Row Height (Column and Range of Column)
Moving, copying, Inserting and Deleting Rows and Columns
Creation of Charts
Import information
Export information
POWER POINT

Create slides with Headers and footers.

Create a slide show with minimum 5 slides to Advertise a product.

Create slides with different fonts and bullets.

Create a slide show with animation effect.

Create a organization chart for a college.
CORE PRACTICAL – II

PROGRAMMING IN C LAB

(Internal assessment 30 marks includes the record mark 10. The Practical External Examination is for 45 marks 30+45 = 75 marks. The External practical examination does not include the mark for Record note book).

Summation of Series: Sin(x) (Compare with built in functions)
Summation of Series Cos(x) (Compare with built in functions)
Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines
Reverse a string & check for palindrome.
\(^nP_r, ^nC_r\) in a single program.
GCD of two Numbers
Bubble Sort
Linear Search
Demonstration of pointer Arithmetic
Finding the maximum number in a set
Finding the minimum number in a set
Merge two arrays of integers both with their elements in ascending order into a single ordered array.
ALLIED – 1

PAPER – 2

A. MATHEMATICS – II

Objectives of the Course

To Explore the Fundamental Concepts of Mathematics

UNIT-I : Integral Calculus

Bernoulli’s formula for integration by parts - Reduction formulae

for: \( \int x^m e^{ax} \, dx \), \( \int \sin^n x \, dx \), \( \int \cos^n x \, dx \) (with proof & problems),

\( \frac{\pi}{2} \)

\( \int \sin^m x \cos^n x \, dx \) (no proof, problems only), properties of definite integrals and simple problems.

UNIT-II: Application of Integration

Evaluation of double, triple integrals - Simple applications to area, volume - Fourier series for functions in \((0, 2\pi)\) and \((-\pi, \pi)\).

UNIT-III: Partial Differential Equations

Formation, complete integrals and general integrals - Four standard types, Lagrange’s equations.

UNIT-IV : Laplace Transforms

Laplace Transformations of standard functions and simple properties - Inverse Laplace transforms - Applications to solutions of linear differential equations of order 1 and 2 - simple problems

UNIT-V: Vector Analysis

Scalar point functions - Vector point functions - Gradient, divergence, curl - Directional derivatives - Unit to normal to a surface - Line and surface integrals - Gauss, Stoke’s and Green’s theorems (without proofs) - Simple problem based on these Theorems.
Recommended Text


Reference Books:


Isaac, Allied Mathematics. New Gamma Publishing House, Palayamkottai
ALLIED - 1

PAPER - 2

B. MATHEMATICAL FOUNDATIONS II

Objectives


UNIT-I : MATRICES

Multiplication of matrices, Singular and Non-Singular matrices, Adjoint of a Matrix, Inverse of a matrix Symmetric and Skew-Symmetric, Hermitian and Skew-Hermitian, Orthogonal and unitary matrices, Rank of a matrix, Solution of Simultaneous Linear equations by

(i) Cramer’s rule.
(ii) Matrix Inversion Method.

UNIT-II: MATRICES

Test for Consistency and Inconsistency of linear equations, (Rank Method), characteristic roots and characteristic vectors, Cayley - Hamilton theorem, matrix of linear transformations: reflection about the x, y axes and the line y=x, rotation about the origin through an angle, expansion or compression, shears, translation.

UNIT-III

Integration Simple problems, integration of rational function involving algebraic expressions of the form

\[
\frac{1}{ax^2+bx+c}, \quad \frac{1}{\sqrt{ax^2+bx+c}}, \quad \frac{px+q}{\sqrt{ax^2+bx+c}}, \quad \frac{\sqrt{px+q}}{\sqrt{ax^2+bx+c}}
\]

integrations using simple substitutions integrations involving trigonometric functions of the form

\[
\frac{1}{a+b \cos x}, \quad \frac{1}{a^2 \sin^2 x + b^2 \cos^2 x}
\]

Integration by parts.

UNIT-IV

Properties of definite integrals. Reduction formulae for

\[
\int x^n e^{ax} \, dx, \quad \int \sin^n x \, dx, \quad \int \cos^n x \, dx, \quad \int x^m (1-x)^n \, dx,
\]

applications of integration for (i) Area under plane curves, (ii) Volume of solid of revolution.
UNIT-V: ANALYTICAL GEOMETRY OF THREE DIMENSIONS

Planes, straight lines, spheres.

Reference Books

2. U. Rizwan, Mathematical Foundation - SciTech, Chennai
SEMESTER III
PAPER – 3
PROGRAMMING IN C++

UNIT-I
Principles of object oriented programming (oop)-Evolution of C++ -key concepts of oop.
Input and Output in C++-Streams-Stream classes Unformatted console I/O operations-Member
functions of istream class-manipulators-manipulators with parameters

UNIT-II
Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control
Structures: If,If..Else, Switch - Repetitive Statements- for,while,do..while - Pointers and arrays

UNIT-III
Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values
Return by Functions - inline Functions - Function Overloading
Classes and Objects; Constructors and Destructors; and Operator Overloading - Type of
Constructors

UNIT – IV
Inheritance : Single Inheritance - Multilevel inheritance - Multiple inheritance - Hierarchical
Inheritance - Hybrid Inheritance - Virtual Functions and Polymorphism

UNIT-V
Working with Files : Classes for File Stream Operations - Opening and Closing a File - End-of-File
Detection - Updating a File - Error Handling during File Operations -

Text Books
Bala gurusamy, c++ programming, TMH.
PRACTICAL – III

C++ AND DATA STRUCTURE LAB

(Internal assessment 30 marks includes the record mark 10. The Practical External Examination is for 45 marks 30+45 = 75 marks. The External practical examination does not include the mark for Record note book).

Program to implement classes, object, constructors and member functions for calculating area and perimeter of a circle.

Program to implement the concept of function overloading to compute the volume of a geometric primitive (eg: cylinder, sphere etc)

Program to implement the concept of operator overloading to compute addition and subtraction of matrices.

Program to incorporate the concept of single, multiple inheritance.

Program to create, write, read a sequential file using error handling functions.

Implement PUSH, POP operations of stack using Arrays.

Implement add, delete operations of a queue using Arrays.

Creation, insertion, and deletion in Singly linked list.

Binary Search tree traversals (in-order, pre-order, and post-order) using Recursion.

Polynomial addition.
ALLIED – 2

PAPER – 3

A. PHYSICS – I

UNIT – I: PROPERTIES OF MATTER


Surface Tension: Surface Tension – Excess of pressure inside a curved surface – Synclatic system – Surface Tension and interfacial surface tension by the method of drops.

UNIT – II: HEAT


UNIT – III: ELECTRICITY AND MAGNETISM


UNIT – IV: SOUND AND ACOUSTICS OF BUILDING


Ultrasonics – Production by Piezo – electric method – properties and uses.

Acoustics of buildings: Reverberation – Reverberation time – Sabine’s formula (definition only) – Sound absorption co-efficient of surface – conditions for the perfect acoustics.
UNIT – V: GEOMETRICAL OPTICS AND PHYSICAL OPTICS

Defects of Images (Lens): Spherical aberration – minimizing spherical aberration by using two thin lenses in contact – chromatic aberration – Achromatic combination of two thin lenses in contact.

Physical Optics: Interference – Air Wedge – Description – Test for optical flatness of glass plate – Determination of diameter of a thin wire by air wedge.


Polarisation: Optical activity – Specific rotatory power – Polarimeter – Determination of specific rotatory power of a solution using the polarimeter.

Books for Study & REFERENCE

2. Allied Physics – Dr. K. Thangaraj, Dr. D. Jayaraman Popular Book Department, Chennai.
3. Allied Physics – Prof. Dhanalakshmi and others.
B. SC. Computer Science: Syllabus (CBCS)

PAPER – 3

B. STATISTICAL METHODS AND THEIR APPLICATIONS I

Objective

To understand and computing statistical aspects.

UNIT-I


UNIT-II

Measures of location: Arithmetic mean, median, mode, geometric mean and Harmonic mean and their properties.

UNIT-III

Measures of dispersion: Range, Quartile deviation, mean deviation, Standard deviation, combined standard deviation, co-efficient of variation.

UNIT-IV

Measures of Skewness Karl Pearson’s, Bowley’s, kelly’s and co-efficient of Skewness and kurtosis based on moments.

UNIT-V


Note: The proportion between theory and problems shall be 20:80
Books for Reference:

1. Fundamental of Mathematical Statistics - S.C. Gupta & V.K. Kapoor - Sultan Chand
2. Statistical Methods - Snedecor G.W. & Cochran W.G. oxford & +DII
4. Statistical Methods - Dr. S.P. Gupta - Sultan Chand & Sons
SKILL BASED SUBJECT

PAPER – 1

DATA STRUCTURE

UNIT-I

Definition of a Data structure - primitive and composite Data Types, Arrays, Operations on Arrays, Ordered lists.

UNIT-II

Stacks - Operations - Applications of Stack - Infix to Postfix Conversion.

UNIT-III


UNIT-IV

Trees: Binary Trees - Operations - Recursive Tree Traversals.

UNIT-V

Graph - Definition, Types of Graphs, Graph Traversal - DFS and BFS.

Text Books

NON MAJOR ELECTIVE

PAPER – 1

INTRODUCTION TO INFORMATION TECHNOLOGY

UNIT-I


UNIT-II

Microsoft Word - Microsoft Excel - Microsoft PowerPoint

UNIT-III


UNIT-IV

Introduction to Internet - Working of Internet - Internet Services - Internet Addressing - E-Mail Basics - Web Development Tools - Introduction to HTML

UNIT-V

Information System - Management Information concepts - Planning Issues and the MIS - Organizing Issues and the MIS - Control Issues and the MIS.

References:

ITL Edn Solutions,”Introduction to Computer Science “,Pearson Education.
SEMESTER IV

PAPER – 4

JAVA PROGRAMMING

UNIT- I

Introduction to Java - Features of Java - Object Oriented Concepts - Data Types - Variables - Arrays - Operators - Control Statements - Input and output - Scanner and System class - print(), println(), and printf() methods.

UNIT- II


UNIT- III

GUI components – Common GUI Event types and Listener Interfaces - JOptionPane - JLabel, JTextField, JButton, JCheckBox, JTextarea, JComboBox, JList, JPanel. – Mouse Event Handling - Adapter Classes - Key Event Handling.

UNIT- IV


UNIT- V


Text Books

Programming in Java – 2nd Edition by C.Muthu, TMH Publication
PRACTICAL – IV
JAVA PROGRAMMING LAB

(Internal assessment 30 marks includes the record mark 10. The Practical External Examination is for 45 marks \(30+45 = 75\) marks. The External practical examination does not include the mark for Record note book). (Students can use eclipse IDE or Netbeans)

Finding area and Perimeter of a circle. Use Scanner class.
Determining the order of numbers generated randomly using Random Class.
String Manipulation (Substring removal, string replacement etc.,)
Drawing Rectangles, Ovals etc using Applet.
Implementing Thread based applications & Exception Handling.
Application using synchronization such as Thread based, Class based and synchronized statements.
Implementing GUI based applications using swing components (Jlabel, Jbutton, JtextField)
Implementing GUI based application using Layout managers and menus.
Application using file streams(sequential file)
Application using file streams(Random file)
ALLIED – 2

PAPER – 4

A. PHYSICS – II

UNIT – I: WAVE MECHANICS


UNIT – II: NUCLEAR PHYSICS


Biological effects of radiation – control of radiation hazards.

UNIT – III: ENERGY PHYSICS


UNIT – IV: CRYSTALLOGRAPHY AND FIBRE OPTICS


UNIT – V: ELECTRONICS


Digital Electronics : AND, OR, NOT, NAND and NOR gates – NAND and NOR as universal building blocks – Fabrication of a Integrated circuit by monolithic technology – Advantages and limitations of an integrated circuit – LSI, MSI and VLSI.
Books for Study & REFERENCE

2. Allied Physics – Dr. K. Thangaraj, Dr. D. Jayaraman Popular Book Department, Chennai.
3. Allied Physics – Prof. Dhanalakshmi and others.
10. Renewable & Sustainable energy sources – Agarwal.
ALLIED PRACTICAL

PAPER – 1 & 2

PHYSICS
(Any 15 Experiments)

1. Youngs modulus – non uniform bending – pin and microscope.
5. Surface Tension and Interfacial Tension – By drop weight method.
7. Sonometer – Determining A.C. Frequency. (Screw Gauge is given).
8. Sonometer – frequency of tuning fork.
10. Air Wedge – Determination of thickness of thin wire.
16. Figure of merit and voltage sensitiveness of table galvanometer.
17. Construction of AND, OR gates using diodes and NOT by transistors.
19. NAND / NOR as universal gate.
20. Demorgan’s theorem verification.
B. STATISTICAL METHODS AND THEIR APPLICATIONS II

Objective
To apply statistical techniques in real life situations
(The proportion between theory and problems shall be 20:80)

UNIT-I
Curve fitting by the methods of least squares -
\[ Y = a x + b \], \[ Y = a x^2 + b x + c \], \[ Y = a x^b \], \[ Y = a e^{bx} \]

UNIT-II
Sample Space - events - probability - Addition and Multiplication Theorem - conditional probability - Baye’s Theorem. Mathematical expectation Addition and Multiplication theorem, Chebychev’s Inequality.

UNIT-III
Standard distributions - Binomial, Poisson, normal distribution and fitting of these distributions.

UNIT-IV
Test of Significance small sample and large sample test based on mean, S.D. correlation and proportion - confidence interval.

UNIT-V
Analysis of variance - one and two way classifications - Basic principle of design of Experiments - randomisation, replication and local control - C.R.D., R.B.D. and L.S.D.

Books for Reference:
1. Fundamental of Mathematical Statistics - S.C. Gupta & V.K. Kapoor - Sultan Chand
ALLIED PRACTICAL II

STATISTICAL METHODS AND THEIR APPLICATIONS PRACTICAL

Note:

Use of Scientific Calculator shall be permitted for Practical Examination. Statistical and Mathematical Tables are to be provided to the students in the Examination Hall.

ALLIED PRACTICAL

1. Formation of uni-variate and bi-variate frequency distribution
2. Diagrams and Graphs
3. Measures of Location
4. Measures of Dispersion
5. Skewness and Kurtosis
6. Correlation and Regression
7. Curve Fitting : \( y = ax + b, y = ax^2 + bx + c, y = ax^b, y = ae^{bx} \)
8. Fitting of distributions - Binomial, Poisson, Normal
9. Test of significance small sample and large sample tests
10. Analysis of Variance: one way classification, Two way classification Design of Experiments - C.R.D, R.B.D, L.S.D

BOOKS FOR REFERENCE:

1. Practical Statistics
2. Statistical Methods by S.P. Gupta, Sultan chand & Sons
SKILL BASED SUBJECT

PAPER – 2

PROBLEM SOLVING STRATEGIES

UNIT-I

Algorithm – General problem solving strategies-Efficiency of algorithms- Exchanging The values of two variables-counting- Summation of a set of numbers—Factorial computation.

UNIT-II

Sine function computation- Generation of the Fibonacci Sequence – Compute the n th Fibonacci number-Reversing the digits of an integer- Finding the square root of a number- The smallest divisor of an integer-the greatest common divisor of two integers-Generating prime numbers.

UNIT-III

Raising a number to a large power ( \( p= x^n \))—rearrange the elements in an array so that they appear in reverse order.

UNIT-IV

Finding the maximum number in a set - Finding the minimum number in a set – Merge two arrays of integers both with their elements in ascending order into a single ordered array.

UNIT-V


Text Book:

R.G.dromey -- “ How to solve it by Computer “--- Printice Hall of India.
NON MAJOR ELECTIVE

PAPER – 2

INTERNET AND ITS APPLICATIONS

UNIT - I

Introduction to Computers Programming Language types History of Internet Personal Computers History of World Wide Web - Micro software .NET Java-Webresources.

UNIT – II

Web Browsers- Internet Explorer- connecting to Internet Features of Internet explorer6 Searching the Internet- online help and tutorials- File Transmission Protocol (FTP) Browser settings.

UNIT - III

Attaching a file, Electronic mail Creating an E-mail id Sending and Receiving mails-attaching a file- Instance messaging- other web browsers.

UNIT - IV

Introduction to HTML headers - Linking- Images-special characters and line breaks- unordered lists- simple HTML programs.

UNIT - V

E-marketing consumer tracking Electronic advertising search engine-CRM- credit card Payments- Digital cash – e wallets – smart card.

Textbook
Internet and World Wide Web Third edition H.M.Deital, P.J. Deital and A.B.Goldberg PHI

Book for Reference
The Internet- Complete Reference Harley hahn, Tata McGraw hill
SEMESTER V
PAPER – 5
DATABASE MANAGEMENT SYSTEMS

UNIT-I

UNIT-II
Relational Model - Structure - Formal Query Language - Relational Algebra - Tuple and Domain Relational Calculus.

UNIT-III
Structured Query Language - Basic Structure - Set Operations - Aggregate Functions - Date, Numeric, and Character Functions - Nested Sub queries - Modification Of Databases - Joined Relations-DDL - Embedded SQL.

UNIT-IV
Relational Database Design - Pitfalls - Normalisation Using Functional Dependencies - First Normal Form - Second Normal Form - Third Normal Form - Fourth Normal Form And BCNF.

UNIT-V

Text Books
Singh-Database systems: Concepts, Design & applications, Pearson Education.
Abraham Silberschatz, H.F.Korth And S.Sudarshan-Database System Concepts Mcgraw Hill Publication
Gerald V.Post - DBMS-Designing And Business Applications - Mcgraw Hill Publications
Michael Abbey And Michael.J.Corey-Oracle- A Beginners guide TMH
PAPER – 6

OPERATING SYSTEM

UNIT-I
Introduction - types of operating systems - operating system services - system calls and system programs

UNIT-II
Process management - Process concepts - process scheduling - operation on process Inter process communication - CPU scheduling - scheduling algorithms - Deadlocks

UNIT-III
Memory Management - Single and multiple partitioned allocation – paging -segmentation - Virtual Memory Management - Demand paging and Page Replacement Algorithms

UNIT-IV

UNIT-V
UNIX: Unix system - A Case Study.

Text Book
Abraham Silberschatz and P. B. Galvin - Operating system concepts - Addison Wesley Publication.
PRACTICAL – V
RDBMS LAB

(Internal assessment 30 marks includes the record mark 10. The Practical External Examination is for 45 marks 30+45 = 75 marks. The External practical examination does not include the mark for Record note book).

Table creation and simple queries.
Constraints (Primary key, foreign key, Not Null, Referential integrity).
Joins (left, right and equi joins).
Sub queries.
Built-in functions (Date & time, mathematical functions).
Procedures.
Functions.
Functions with exception handling capability.
Cursors.
Triggers.
PRACTICAL – VI

VISUAL PROGRAMMING LAB

(Internal assessment 30 marks includes the record mark 10. The Practical External Examination is for 45 marks 30+45 = 75 marks. The External practical examination does not include the mark for Record note book).

Building simple application
Application with multiple forms
Application with dialogues
Application with menus
Application using data control
Application using format dialogues
Drag and Drop events
Database Management
Creating ActiveX controls
ELECTIVE

PAPER – 1

A. COMPUTER GRAPHICS

UNIT-I


UNIT-II

Attributes of output Primitives - line attributes - Color and Grayscale style - Area filling algorithms - Character attributes inquiry functions - Two dimensional transformation - Basic transformation - Composite transformation - Matrix representation - other transformations.

UNIT-III

Two - dimensional viewing - window- to view port co-ordinate transformation - clipping algorithms - Interactive input methods - Physical input devices - logical classification of input devices - interactive picture construction methods.

UNIT- IV

Three - dimensional concepts - Three dimensional display methods - parallel Projection - Perspective Projection - Depth Cueing - Visible line and surface identification - Three dimensional transformation.

UNIT-V

Three dimensional viewing - Projection - Viewing transformation - implementation of viewing operations - Hidden surface and Hidden line removal - backface removals.

Text Books

Malay k pakhira ,Computer graphics, Multimedia and Animation - Printice Hall India.
B. DATA MINING

UNIT-I

Introduction - What is Data mining, Data mining - important Data mining - various kind of data mining Functionalities – Various kinds of Patterns Pattern Interesting Classification of Data mining Systems Data mining Task Primitives Integration of Data Mining System Major issues in Data Mining

UNIT-II

Data Processing - Process the Data Descriptive Data Summarization – Measuring Central Tendency Dispersion of Data Graphic Displays of Basic Descriptive Data Summaries Data Cleaning Data Integration and Transformation data Reduction-Data Discriminatio - Concept Hierarchy Generation.

UNIT-III

Data Warehouse OLAP Technology An overview - Data Warehouse Multidimensional Data Model Data Warehouse Architecture Data Warehouse Implementation From Data Warehouse to Data mining

UNIT-IV

Mining – Frequent Patterns Associations Correlations - Basic Concepts Road Map Efficient Scalable Frequent Item set Mining methods Mining – Various Kinds of Association rules Analysis - Association mining to Correlation Constrain Based Association mining

UNIT-V

Applications Trends - Data mining Applications Data mining – System Products Research Prototype Additional Themes on Data Mining Social impact of Data mining Trends in Data mining

Text Book :
1. Data Mining (Concepts and Techniques) Second Ed (Chapter 1,2,3,5,11)
Author : Jiawei Han and Micheline Kamber Publishers : Morgan Kaufmann Publishers (An imprint of Elsevier)
N.P.Gopalan,B.Sivaselvan ,Data Mining Techniques and Trends ,PHI,2009.
Reference Books:

1. Data Mining (Next Generation Challenges and Future Directions) Author: Karguta, Joshi, Sivakumar & Yesha Publishers: Printice Hall of India (2007)
UNIT-I


UNIT-II


UNIT-III

IMAGE ENHANCEMENT: Point operations – contrast stretching, clipping and these holding density slicing, Histogram equalization, modification and specification, spatial operations – spatial averaging, low pass, high pass, band pass filtering, direction smoothing, medium filtering, generalized cestrum and homomorphism filtering, edge enhancement using 2-D IIR and FIR filters, color image enhancement.

UNIT-IV

IMAGE RESTORATION: Image observation models, sources of degradation, inverse and Wiener filtering, geometric mean filter, non linear filters, smoothing splines and interpolation, constrained least squares restoration.

UNIT-V

IMAGE DATA COMPRESSION AND IMAGE RECONSTRUCTION FROM PROJECTIONS: Image data rates, pixel coding, predictive techniques transform coding and vector DPCM, Block truncation coding, wavelet transform coding of images, color image coding. Random transform, back projection operator, inverse random transform, back projection algorithm, fan beam and algebraic restoration techniques.
Book for Study:


Anil Jain, Fundamentals of Digital Image Processing - Printice Hall India.

Madineri A. Joshi – DIP an algorithmic approach - Printice Hall India.

Malay K. Pakhira – DIP and pattern Recognition - Printice Hall India.

B. Chanda & D. Dutta Majumder, Digital Image Processing, PHI.
ELECTIVE

PAPER – 2

A. NETWORK SECURITY AND CRYPTOGRAPHY

UNIT-I


UNIT-II


UNIT-III


UNIT-IV


UNIT-V

Text Books:

10. V.k.panchgare, Cryptography and information Security, PHI,
UNIT-I


UNIT-II


UNIT-III


UNIT-IV


UNIT-V

Game playing – Minimax search procedure – Alpha beta cutoffs – additional refinements – Planning – Components of planning – Goal stack planning – Hierarchical planning.

Books for Study:


Reference Books:

Eugene Charniak, Drew McDermott, “Introduction to Artificial Intelligence”, Addison Wesley.
PAPER – 2

C. DATA AND COMMUNICATION NETWORKS

UNIT-I

A communications model - Data Communications - Data Communications Networking - computer communication architecture - Analog and Digital - Transmission - Transmission Impairments - Transmission media.

UNIT-II

Data encoding - Digital data Digital signals - Digital data Analog signals - Analog data Analog signals Data Communications Interface: Asynchronous and synchronous Transmission.

UNIT-III


UNIT-IV


UNIT-V


Text Books


Reference Books:

Prakash C.Gupta, Data Communications, Prentice Hall of India, 1996.
SKILL BASED SUBJECT

PAPER – 3

VISUAL PROGRAMMING

UNIT-I


UNIT-II

Displaying information - Determinate loops, indeterminate loops - Conditionals Built in function - Function and Procedure.

UNIT-III

Arrays - List - Sorting and searching record - Control arrays - Grid control - Project with multiple form - Do events and sub main - Error trapping.

UNIT-IV


UNIT-V

File and handling - File system control - File system objects.

Books for Study :

Gary Cornell - Visual Basic 6.0 From the ground up – Tata McGraw Hill – 1999
SEMESTER VI

PAPER – 7

OPEN SOURCE SOFTWARE

UNIT-I : HTML

Introduction to HTML- List- Creating Table- Linking document frames-Graphics to HTML Doc –Style sheet –Style sheet basic-Adding style to document-Style sheet properties-Font-text-list-color and background color-box-Display Properties.

UNIT-II : LINUX


UNIT-III : JAVA SCRIPT


UNI- IV : MYSQL

Introduction to MY SQL – The show Databases and Table – The USE command – Create Database and Tables – Describe Table – Select, Insert, Update, and Delete statement – Some Administrative detail – Table Joins – Loading and Dumping a Database.

UNIT-V : PHP


Deitel & Deitel, internet & world wide web How to program, Pearson Education


J. Jaworski, Mastering Javascript, BPB Publications, 1999

T. A. Powell, Complete Reference HTML (Third Edition), TMH, 2002
PAPER – 8

MULTIMEDIA

UNIT- I

Definition - Classification - MM application - MM H/w - MM s/w - CDROM - DVD.

UNIT-II

MM Audio: Digital medium - Digital audio technology - sound cards - recording - editing - MP3 - MIDI fundamentals - Working with MIDI - audio file formats - adding sound to MM project.

UNIT-III

MM TEXT: Text in MM - MM graphics: coloring - digital imaging fundamentals - development and editing - file formats - scanning and digital photography

UNIT-IV

MM Animation : Computer animation fundamentals - Kinematics - morphing - animation s/w tools and techniques.

UNIT-V

MM Project : stages of project - MM skills - design concept - authoring - planning and costing – MM team

Reference Books:

Multimedia Magic - S.Gokul revised and updated second edition - BPB
Kiran Thauras,Prabhu t.andleigu – Multimedia System Design - Printice Hall India.
Malay k pakhira ,Computer graphics,Multimedia and Animation - Printice Hall India.
PRACTICAL – VI
OPEN SOURCE SOFTWARE LAB

(Internal assessment 30 marks includes the record mark 10. The Practical External Examination is for 45 marks 30+45 = 75 marks. The External practical examination does not include the mark for Record note book).

Create a web page with Frames and Tables.
Create a web page incorporating CSS (Cascading Style Sheets)
Write a shell program to find the factorial of an integer positive number
Write a shell program for checking whether a given string is a palindrome or not.
Create a simple calculator in Java script.
Write a javascript program to scroll your name in the scroll bar.
Develop a program and check message passing mechanism between pages.
Develop a program and check file system functions, date & time functions.
Create a student database table in MYSQL and manipulate records (insert, delete, update) records in a web browser.
Develop a program using cookies and session.
PRACTICAL – VIII
MULTIMEDIA LAB

(Internal assessment 30 marks includes the record mark 10 i.e. 20+10=30. The Practical External Examination is for 45 marks i.e. 30+45 = 75 marks. The External practical examination does not include the mark for Record note book. (use Flash & photo shop)

1. Photo Effects:
Decolouring, Changing cloth texture and pattern, Changing background, Applying soft light effect.

Photo Retouching:
2. Colour correction, Blending Images, smooth skin effects, adding blur effects to background.
Converting black and white photo to colour photo.

Text Effect:
Creating Metatie text, Shining text, Illumines text, Transparent glass text, Marquee, Digital banner.

Image Editing :
D. Creating simple Images.

Editing – resize, change colour depth, resolution, file format, brightness, add and edit layer style, add text.
Stitch and edit two images into single using selection, Lasso and elone stamp tools (masking).

Web Graphics:
a. Creating a gif image using image ready for web
b. Create a web navigation Image

Animation : Text:
Text floating into screen from outside the screen.
Animated Banner using image ready/any other software.
Fade in fade out banners.

7. Animation : Image:

Animated lightening strike.
Mobile wall paper

8. Create a digital clock Animation.
ELECTIVE
PAPER – 3
A. SOFTWARE ENGINEERING

UNIT-I

UNIT-II

UNIT-III

UNIT-IV
Modern programming Language Features: - Type Checking - Separate Compilation - User Defined Data Types - Data Abstraction - Scoping Rules - Exception Handling - Currency Mechanism - Verification And Validation Techniques.

UNIT-V

Text Books
PAPER – 3

B. DESIGN OF ALGORITHMS

UNIT-I

Algorithms- Types of problem-Types of Solution Procedure/Algorithm. Components of Algorithm-
Graphs: Terminologies of graph-network-Stack data structure-Queue data structure-Linked link data
structure- Binary tree data structure.

UNIT-II

Distance based Network Algorithms-Dijkstra’s Algorithm-Floyd’s Algorithm-Minimum spanning tree
problem.

UNIT-III

Search Algorithms: Variable based search algorithms-Branch and Bound Algorithms.

UNIT-IV

Heuristics: Travelling salesman problem-Single machine scheduling problem – Heuristic for total
covering problem.

UNIT-V

Dynamic Programming : Terminologies –Dynamic programming Algorithm-Application Areas of
Dynamic Programming-Comparision of Alggorithm using optimal solution.

Text Book :

PAPER – 3

C. INTERNET AND ITS APPLICATIONS

UNIT- I

Connecting to the Internet – Domain Name System - Exchanging E-mail – Sending and Receiving Files - Fighting Spam, Sorting Mail and avoiding e-mail viruses – types of viruses – Harmful effects of virus - Chatting and Conferencing on the Internet – Online Chatting.

UNIT-II


UNIT-III


Unit-IV:


UNIT-V

What is Intranet – Advantages and disadvantages of intranet – components of intranet – Connecting a small LAN to the intranet.

Textbook:

1. Internet and World Wide Web  Third edition  H.M.Deital, P.J. Deital and A.B.Goldberg-PHI
3. The Internet- Complete Reference  Harley hahn, Tata McGraw hill
SKILL BASED SUBJECT

PAPER – 4

MOBILE COMPUTING

UNIT-I


UNIT-II


UNIT-III


UNIT-IV


UNIT-V


TEXT BOOK:

2. www.awl.com/cseng
3. www.dect.ch
DEMO – INTERNET AND ITS APPLICATIONS

Creating an e-mail ID (create two e-mail ID with two different service provider) ~ Sending e-mail to your friend ~ Receiving e-mail from your friend ~ delete a e-mail ~ Attach a word file to Your e-mail and send to your friend ~ Attach a spread sheet file to Your e-mail and send to your friend ~ Attach a graph file to Your e-mail and send to your friend ~ Attach your photograph to Your e-mail and send to your friend ~ Redirect the mail you receive in your e-mail ID to some other e-mail ID.

Search the internet with two different search engines other than google ~ Search for the blog ~ Search for a news item ~ Search the internet to find the road route from vellore to Chennai and find out what is the distance in Km. ~ Access the internet with two different browser other than internet explorer ~ Use yahoo messenger ~ Start a chatting session by inviting your friend online ~ Accept others invitation for chatting ~ Access the facebook.

Access the internet and read two newspaper ~ Access the internet and read two news websites ~ Access the website of any one bank in India and find out what is the rate of interest for three years fixed deposit ~ Access the website of any one online bookstore and find out the price, author name, publisher name for a particular book ~ Download music from internet and play ~ Download video from internet and play ~ Access the website of Indian railways and find out the train timings between any two railway stations ~ Access the website of any one Indian car company website and one multinational car company website and write down the difference between them with respect to design, color, menus, user friendliness and content.

**********
QUESTION PAPER PATTERN FOR PRACTICAL EXAMINATIONS:

Answer any **TWO** questions out of three (2/3) for each question 25 marks. 2x25=50 marks. 10 marks for record note book. Total 60 marks.

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