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

S.NO.	Part	Study Components Course Title		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
SEMESTER I							**CIA**	**Uni. Exam**	**Total**
1	I	Language	Paper-1	6	4	Tamil/Other Languages	25	75	100
2	II	English	Paper-1	6	4	English	25	75	100
3	III	Core Theory	Paper-1	6	5	Digital Logic & Microprocessor	25	75	100
4	III	Core Practical	Practical-1	3	0	PC software Lab	0	0	0
5	III	ALLIED 1	Paper-1	7	4	**(to choose 1 out of 2)** A. Mathematics I B. Mathematical Foundations I	25	75	100
6	IV	Environ. Studies		2	2	Environmental Studies	10	40	50
				30	**19**		**110**	**340**	**450**
SEMESTER II							**CIA**	**Uni. Exam**	**Total**
7	I	Language	Paper-2	6	4	Tamil/Other Languages	25	75	100
8	II	English	Paper-2	4	4	English	25	75	100
9	III	Core Theory	Paper-2	6	4	Programming in C	25	75	100
10	III	Core Practical	Practical-1	0	2	PC software Lab	40	60	100
11	III	Core Practical	Practical-2	3	2	Programming in C Lab	40	60	100
12	III	Allied 1	Paper-2	7	6	**(to choose 1 out of 2)** A. Mathematics II B. Mathematical Foundations II	25	75	100
13	IV	Soft skill		2	1	Soft skill	10	40	50
14	IV	Value Education		2	2	Value Education	10	40	50
				30	**25**		**200**	**500**	**700**

S.NO.	Part	Study Components / Course Title		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
SEMESTER III							**CIA**	**Uni. Exam**	**Total**
15	I	Language	Paper-3	6	4	Tamil / Other Languages	25	75	100
16	II	English	Paper-3	6	4	English	25	75	100
17	III	Core Theory	Paper-3	3	3	Programming in C++	25	75	100
18	III	Core Practical	Practical-3	3	3	C++ and Data Structure lab	40	60	100
19	III	Allied II	Paper-3	4	4	**(to choose 1 out of 2)** A. Physics I B. Statistical Methods and their Applications I	15	60	75
20	III	Allied II	Practical	3	0		0	0	0
21	IV	Skill Based Subject I	Paper-1	3	3	Data Structure	15	60	75
22	IV	Non-Major Elective I	Paper-1	2	2	Introduction to Information Technology	10	40	50
				30	**23**		**155**	**445**	**600**
SEMESTER IV							**CIA**	**Uni. Exam**	**Total**
23	I	Language	Paper-4	6	4	Tamil/Other Languages	25	75	100
24	II	English	Paper-4	6	4	English	25	75	100
25	III	Core Theory	Paper-4	3	3	Java Programming	25	75	100
26	III	Core Practical	Practial-4	3	3	Java Programming Lab	40	60	100
27	III	Allied II	Paper-4	4	4	**(to choose 1 out of 2)** A. Physics II B. Statistical Methods and their Applications II	15	60	75
28	III	Allied Practical	Practical	3	2	Allied Practical	10	40	50
29	IV	Skill Based Subject II	Paper-2	3	3	Problem Solving Strategies	15	60	75
30	IV	Non-Major Elective II	Paper-2	2	2	Internet and its Applications	10	40	50
				30	**25**		**165**	**485**	**650**

S.NO.	Part	Study Components / Course Title		Ins. hrs /week	Credit	Title of the Paper	Maximum Marks		
SEMESTER V							**CIA**	**Uni. Exam**	**Total**
31	III	Core Theory	Paper-5	6	5	Database Management Systems	25	75	100
32	III	Core Theory	Paper-6	6	5	Operating System	25	75	100
33	III	Core Practical	Practical-5	4	3	RDBMS (Oracle Lab)	40	60	100
34	III	Core Practical	Practical-6	4	3	VB lab	40	60	100
35		Core	Demo	4	0	Internet	0	0	0
36	III	Elective I	Paper-1	3	3	A. Computer Graphics B. Data Mining C. Digital Image Processing	25	75	100
37	IV	Skill Based Subject III	Paper-3	3	3	Visual Programming	15	60	75
				30	**22**		**170**	**405**	**575**
SEMESTER VI							**CIA**	**Uni. Exam**	**Total**
38	III	Core Theory	Paper-7	7	5	Open Source Software	25	75	100
39	III	Core Theory	Paper-8	6	5	Multimedia	25	75	100
40	III	Core Practical	Practical-7	4	3	Open Source Software Lab	40	60	100
41	III	Core Practical	Practical-8	4	3	Multimedia Lab	40	60	100
42	III	Elective II	Paper-1	3	3	A. Network Security& cryptography B. Artificial Intelligence C. Data Communication &network	25	75	100
43	III	Elective III	Paper-3	3	3	A. Software Engineering B. Design of algorithms C. Internet and its Applications	25	75	100
45	IV	Skill Based Subject IV	Paper-4	3	3	Mobile Computing	15	60	75
46	V	Extension Activities		0	1		50	0	50
				30	**26**		**245**	**480**	**725**

Part	Subject	Papers	Credit	Total credits	Marks	Total Marks
Part I	Languages	4	4	16	100	400
Part II	English	4	4	16	100	400
Part III	Allied (Odd Semester)	2	4	8	100+75 (I + III SEM)	175
	Allied (Even Semester)	2	6+4	10	100+75 (II + IV SEM)	175
	Allied Practical	1	2	2	50	50
	Electives	3	3	9	100	300
	Core	8	(3-7)	35	100	800
	Core Practical	8	4	22	100	800
Part IV	Environmental Science	1	2	2	50	50
	Soft skill	1	1	1	50	50
	Value Education	1	2	2	50	50
	Lang. & Others/NME	2	2	4	50	100
	Skill Based	4	3	12	75	300
Part V	Extension	1	1	1	50	50
	Total	**42**		**140**		**3700**

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 :

Digital Computers and Digital Systems - Binary Numbers - Number Base Conversion - Octal and Hexadecimal Numbers - Compliments - Binary Codes - Binary Logic - Integrated Circuits.

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 demultiplexture - 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:

M. Morris Mano, "Digital Logic and Computer Design", PHI, 1996

Reference Books :

Louis Neshelsky, "INTRODUCTION TO DIGITAL TECHNOLOGY", John Wiley & Sons, Third Edition, 1983.
Digital Logic Design – Lloyd
R.S.Gaonkar, Microprocessor Architecture – Programming and Application with 8085/8080A, Wiley Eastern Limited, 1990.
A.Mathur, Introduction to Microprocessor, Third Edition, Tata McGrawHill Publishing Co.Ltd.,1993.

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 θ - 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:

P.Duraipandian and S.Udayabaskaran,(1997) *Allied Mathematics,* Vol. I & II. Muhil Publishers, Chennai.

Reference Books:

P.Balasubramanian and K.G.Subramanian,(1997) *Ancillary Mathematics.* Vol. I & II. Tata McGraw Hill, New Delhi.

S.P.Rajagopalan and R.Sattanathan,(2005) *Allied Mathematics* .Vol. I & II. Vikas Publications, New Delhi.

P.R.Vittal (2003) *Allied Mathematics* . Marghan Publications, Chennai

P.Kandasamy, K.Thilagavathy (2003) Allied Mathematics Vol-I, II S.Chand & company Ltd., New Delhi-55.

Isaac, Allied Mathematics. New Gamma Publishing House, Palayamkottai.

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, linary operations, Binary algebra, Permutations & Combinations,Differentiation, Straight lines, pair of straight lines, Circles, Parabola, Ellipse, Hyperbola.

UNIT-I : SYMBOLIC LOGIC

proposition, 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

Types of Binary Operations: Commutative, Associative, Distributive and identity, Boolean algebra: simple properties. Permutations and Combinations.

UNIT-IV : DIFFERENTIATION

Simple problems using standard limits,

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

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

1. P.R.Vittal, Mathematical Foundations - Margham Publication, Chennai.
2. U. Rizwan, Mathematical Foundation - SciTech, Chennai
3. V.Sundaram & Others, Dircrete Mathematical Foundation - A.P.Publication, sirkali.
4. P.Duraipandian & Others, Analytical Geometry 2 Dimension - Emerald publication 1992 Reprint.
5. Manicavachagom pillay & Natarajan. Analytical Geometry part I - Two Dimension - S.Viswanathan (printers & publication) Put Ltd., 1991.

SEMESTER II

PAPER – 1

PROGRAMMING IN C

UNIT-I

C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical , Assignment and Conditional Operators - Library functions.

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:

Ashok N.Kamthane ,Programming with ANSI and Turbo C , Pearson Education, 2006

Reference Books:

B.W. Kernighan and D.M.Ritchie, The C Programming Language, 2nd Edition, PHI, 1988.
H. Schildt, C: The Complete Reference, 4th Edition, TMH Edition, 2000.
Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.
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.

Cretae slide s 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.

${}^{n}P_{r}$, ${}^{n}C_{r}$ 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),

$\pi/2$

$\int \sin^m x \cos^n x\, dx$ (no proof , problems only), properties of definite

0

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 - Guass, Stoke's and Green's theorems(without proofs) - Simple problem based on these Theorems.

Recommended Text

P.Duraipandian and S.Udayabaskaran,(1997) *Allied Mathematics*, Vol. I & II. Muhil Publishers, Chennai

Reference Books:

P.Balasubramanian and K.G.Subramanian,(1997)*Ancillary Mathematics*. Vol. I & II. Tata McGraw Hill, New Delhi.

S.P.Rajagopalan and R.Sattanathan,(2005) *Allied Mathematics* .Vol. I & II. Vikas Publications, New Delhi.

P.R.Vittal(2003). *Allied Mathematics* . Marghan Publications, Chennai.

P.Kandasamy, K.Thilagavathy (2003) Allied Mathematics Vol-I, II S.Chand & company Ltd., New Delhi-55.

Isaac, Allied Mathematics. New Gamma Publishing House, Palayamkottai

ALLIED - 1

PAPER - 2

B. MATHEMATICAL FOUNDATIONS II

Objectives

To know about Matrix Operations, Symmetric, Skew-Symmetric, Hermitian, Skew-Hermitian, Orthogonal, Unitary Matrices. Rank of a Matrix Solutions of linear equations Consistency and Inconsistency, Characteristic roots and Characteristics Vectors, Cayley - Hamilton Theorem, Integration of rational functions, Integration by parts, Reduction formulae, Area and volume using integration, Planes, Straight lines, Spheres, Curves, Cylinders.

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-Hermition, 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

$$\frac{1}{ax^2+bx+c}\ ,\ \frac{1}{\sqrt{ax^2+bx+c}}\ ,\ \sqrt{ax^2+bx+c}\ \ \frac{px+q}{ax^2+bx+c}\ \ \frac{px+q}{\sqrt{ax^2+bx+c}}\ ,\ \sqrt{px+q}$$

integrations using simple substitutions integrations involving trigonometric functions of the form

$$\frac{1}{a+b\cos x}\ ,\ \frac{1}{a^2\sin^2 x+b^2\cos^2 x}\ ,$$

Integration by parts.

UNIT-IV

Properties of definite integrals. Reduction formulae for
$\int x^n e^{ax}dx$, $\int \sin^n x dx$, $\int \cos^n x dx$, $\int x^m (1-x)^n dx$, applications of integration for (i) Area under plane caurves, (ii) Volume of solid of revolution.

UNIT-V: ANALYTICAL GEOMETRY OF THREE DIMENSIONS

Planes, straight lines, spheres.

Reference Books

1. P.R.Vittal, Mathematical Foundations - Margham Publication, Chennai.
2. U. Rizwan, Mathematical Foundation - SciTech, Chennai
3. V.Sundaram & Others, Dircrete Mathematical Foundation - A.P.Publication, sirkali.
4. P.Duraipandian & Others, Analytical Geometry 3 Dimension – Emerald publication 1992 Reprint.
5. Manicavachagom pillay & Natarajan. Analytical Geometry part II - three Dimensions - S.Viswanathan (printers & publication) Put Ltd., 1991.

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

Ashok N.Kamthane, Object Oriented Programming with ANSI & Turbo C ++, Pearson Education, 2006
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 fuction overloading to compute the volume of a geometric primitive (eg: cylinder,sphere etc)

Program to implement the concept of operator over loading 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

Elasticity : Hooke's Law – Elastic Constants – bending of beam – Bending moment – Cantilever Depression at the loaded end of a cantilever – determination of Young's modulus by non-uniform bending.

Torsion : Torsion couple – Potential energy in a twisted wire – Torsional pendulum – Time period – Rigidity Modulus – Determination of rigidity modulus by Torsional oscillation (without masses).

Viscosity: Viscosity of a liquid – Viscous force – Co-efficient of viscosity of a liquid – Poiseuille's formula – Comparison of viscosities of two liquids by graduated burette method.

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

Heat: Specific heat – Newton's law of cooling – determination of specific heat of a liquid using Newton's law of cooling – Emissivity and Emissive Power.

Low Temperature: J.K. Effect – Positive Effect – Negative Effect – Temperature of Inversion – Super conductors. Type I and II – Meisner Effect – Helium I and II.

UNIT – III: ELECTRICITY AND MAGNETISM

Electricity: Potentiometer – Principle – Calibration of low range voltmeter – Measurement of internal resistance of cell – measurement of an unknown resistance.

Magnetism – Moment and pole strength of a magnet – Deflection magnetometer – Tan C position – Vibration magnetometer – Theory – Period of Oscillation – Determination of M and B_H using the deflection magnetometer in Tan C position and the vibration magnetometer.

UNIT – IV: SOUND AND ACOUSTICS OF BUILDING

Sound: Transverse vibration of strings – Velocity and frequency of vibrations of a stretched string – laws – sonometer – A.C. Frequency – Steel Wire – Brass wire.

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.

Diffraction: Theory of transmission grating – Normal Incidence – Determination of Wavelength of monochromatic source and Wavelength of mercury line using a grating by normal Incidence.

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

Books for Study & REFERENCE

1. Allied Physics – R. Murugesan S. Chand & Co. First Edition (2005).
2. Allied Physics – Dr. K. Thangaraj, Dr. D. Jayaraman Popular Book Department, Chennai.
3. Allied Physics – Prof. Dhanalakshmi and others.
4. Elements of Properties of Matter – D.S. Mathur, S. Chand & Co. (1999).
5. Heat and Thermodynamics – N. Brijlal and Subramaniam S. Chand & Co.
6. A text book of Sound – by M. Narayanamoorthy and other National Publishing Companies (1986).
7. Modern Physics – R. Murugesan S. Chand & Co. (2004).

PAPER – 3

B. STATISTICAL METHODS AND THEIR APPLICATIONS I

Objective

To understand and computing statistical aspects.

UNIT-I

Introduction - scope and limitations of statistical methods - classification of data - Tabulation of data - Diagrammatic and Graphical representation of data - Graphical determination of percentiles and quartiles.

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 Skew ness Karl Pearson's, Bowley's, kelly's and co-efficient of Skew ness and kurtosis based on moments.

UNIT-V

Correlation - Karl Pearson - spearman's rank correlation - concurrent deviation methods. Regression Analysis: Simple Regression Equations.

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
3. Elements of Statistics - Mode . E.B. - Prentice Hall
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

Recursion, Queue- operations - Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition. Doubly Linked List - Operations.

UNIT-IV

Trees: Binary Trees - Operations - Recursive Tree Traversals.

UNIT-V

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

Text Books

1. Data structure by N.Dale,publishers narosa publishing,Edition 2000

NON MAJOR ELECTIVE

PAPER – 1

INTRODUCTION TO INFORMATION TECHNOLOGY

UNIT-I

Introduction: History of Computer - Parts of Computer System - Hardware Devices - Software - Operating System - Examples of Operating systems - Computer Networking - Visual Editor.

UNIT-II

Microsoft Word - Microsoft Excel - Microsoft PowerPoint

UNIT-III

Introduction to Multimedia - Images - Sound -Video Desktop Publishing Basics - Page layout Programs.

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:

Sanjay Saxsena, “A First Course in Computer”, Vikas Publishing House, 2000

Ron Mansfield, “Working in Microsoft Office”,Tata Mcgraw Hill, 1997

Linda Tway, Sapphiro Pacific Lajolla, “Multimedia in Action”, Academic Press,1995

Neil randal “Teach yourself the internet in a week”, Prentice Hall of India, Second Edition, 1996.

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

Classes - Objects - Constructors - Overloading method - Access Control - Static and fixed methods - Inner Classes - String Class - Inheritance - Overriding methods - Using super- Abstract class – Type Wrapper classes for primitive types – Auto boxing and auto Unboxing --Recursion.

UNIT- III

GUI components – Common GUI Event types and Listener Interfaces- JoptionPane – JLabel, JTextfield, JButton,JCheckBox,JTextarea, JComboBox, JList, JPannel. – Mouse Event Handling - Adapter Classes- Key Event Handling.

UNIT- IV

Mouse Event Handling - Adapter Classes- Key Event Handling. Layout Managers – FlowLayout, BorderLayout, GridLayout.- Graphics contexts and graphics objects – color control – font control – Drawing lines,rectangles and ovals –jslider-using menus with frames.

UNIT- V

Packages - Access Protection - Importing Packages - Interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Runnable Interface - Inter thread Communication – Multithreading.- file streams-Sequential file , Random file.

Text Books

Programming in Java – 2nd Edition by C.Muthu, TMH Publication

Java How to Program by Deitel & Deitel - 6th Edition- PHI Publication 2005..

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

Wave Mechanics – De Broglie Waves – Dual Nature – Experimental Study of Matter Waves – Davission and Germer's Experiment – G.P. Thomson's Experiment _ Heisenberg's uncertainty Principle – The position and moment of a particle.

UNIT – II : NUCLEAR PHYSICS

Particle accelerators – cyclotron, particle detectors – GM Counter Artificial Transmutation – Rutherford's Experiment – The Q value equation for nuclear reaction – Threshold energy – Nuclear Reactions.

Conservation Laws: Conservation of Charge – Conservation of Nucleons – Conservation of Mass – Energy – Conservation of Parity – Quantities conserved and quantities not conserved in a nuclear reaction.

Biological effects of radiation – control of radiation hazards.

UNIT – III : ENERGY PHYSICS

Sources of conventional energy – Need for non-conventional energy resources – solar energy utilization – solar water heater – solar drier – conversion of light into electrical energy – solar cell – merits and demerits of solar energy – wind energy – its conversion systems – energy from Bio mass – Bio gas generation – Industrial and space application.

UNIT – IV : CRYSTALLOGRAPHY AND FIBRE OPTICS

Crystallography : The crystal structure – Unit Cell – Miller indices – Reciprocal Vectors – Properties of Reciprocal Lattice – Bragg's Law.

Fibre Optics : Principle – classification of optical fibres – fiber optic communication system block diagram.

UNIT – V : ELECTRONICS

Electronics : Zener diode – Characteristics – Voltage regulation using zener diode – LED – uses of LED.

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

1. Allied Physics – R. Murugesan S. Chand & Co. First Edition (2005).
2. Allied Physics – Dr. K. Thangaraj, Dr. D. Jayaraman Popular Book Department, Chennai.
3. Allied Physics – Prof. Dhanalakshmi and others.
4. Elements of Properties of Matter – D.S. Mathur, S. Chand & Co. (1999).
5. Heat and Thermodynamics – N. Brijlal and Subramaniam S. Chand & Co.
6. A text book of Sound – by M. Narayanamoorthy and other National Publishing Companies (1986).
7. Modern Physics – R. Murugesan S. Chand & Co. (2004).
8. Electronic Principles and Applications – A.B. Bhattacharya, New Central Book Agency, Calcutta.
9. Introduction to Solid State Physics – C. Kittel, 5^{th} Edition Wiley Eastern Ltd.
10. Renewable & Sustainable energy sources – Agarwal.
11. Introduction to Fiber optics by K. Thyagarajan and Ajay Ghatak, Cambridge, University Press (1999).

ALLIED PRACTICAL

PAPER – 1 & 2

PHYSICS

(Any 15 Experiments)

1. Youngs modulus – non uniform bending – pin and microscope.
2. Rigidity modulus – Static Torsion Method Using Scale and Telescope.
3. Ridigity modulus – Torsional oscillation method (without symmetric masses).
4. Determination of Co-efficient of Viscosity – Graduated Burette.
5. Surface Tension and Interfacial Tension – By drop weight method.
6. Specific Heat Capacity of a liquid – by Newton's Law of Cooling.
7. Sonometer – Determining A.C. Frequency. (Screw Gauge is given).
8. Sonometer – frequency of tuning fork.
9. Newton's Rings – Radius of Curvature.
10. Air Wedge – Determination of thickness of thin wire.
11. Spectrometer Grating – Minimum Deviation – Mercury Lines.
12. Spectrometer – Refractive Index of a liquid – Hollow Prism.
13. Potentiometer – Calibration of High Range Ammeter.
14. Potentiometer – Calibration of Low Range Voltmeter.
15. Determination of M and B_H using Deflection Magnetometer in Tan C position and vibration magnetometer.
16. Figure of merit and voltage sensitiveness of table galvanometer.
17. Construction of AND, OR gates using diodes and NOT by transistors.
18. Zener diode – Voltage Regulation.
19. NAND / NOR as universal gate.
20. Demorgan's theorem verification.

PAPER – 4

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
2. Fundamental of Applied Statistics - S.C. Gupta & V.K. Kapoor – Sultan Chand
3. Statistical Methods - Snedecor G.W. & Cochran W.G. oxford & +DII
4. Elements of Statistics - Mode . E.B. – Prentice Hall

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
3. Fundamental of Applied Statistics - S.C. Gupta & V.K. Kapoor

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 array s of integers both with their elements in ascending order into a single ordered array.

UNIT-V

Sorting by selection – Sorting by exchange (Bubble) – Sorting by insertion – Linear Search - Binary Search- linear Recursion – Non linear recursion – Mutual recursion – Recursive algorithm for Towers of Hanoi problem .

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

Purpose of Database - Overall System Structure - Entity Relationship Model -Mapping Constraints - Keys - E-R Diagrams.

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

Oracle - Introduction – SQL (DDL,DML, DCL Commands) – Integrity Constraints – PL/SQL – PL/SQL Block – procedure, function – Cursor management – Triggers – Exception Handling.

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

Information management - File concept - Access methods - Directory structure - allocation methods - free space management - disk scheduling.

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, forien 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

Introduction to computer Graphics - Video display devices- Raster scan Systems - Random Scan Systems - Interactive input devices - Hard copy devices - Graphics software - Output primitives - line drawing algorithms - initializing lines - line function - circle Generating algorithms.

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

D.Hearn and M.P.Baker - Computer Graphics (C version) - Pearson Education.

W.M. Newman and RF.Sproull - Principles of Interactive Computer Graphics - McGraw Hill International Edition - 1979.

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

PAPER – 1

B. DATA MINING

UNIT-I

Introduction - What is Data mining , Data mining - important Data mining - various kind of data 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)
2. Data Mining (Practical Machine Learning Tools and Techniques (Second Edition) Author : Ian H. Witten & Eibe Frank Publishers : Morgan Kaufmann Publishers (An imprint of Elsevier)
3. Data Warehousing, Data mining & OLAP (Edition 2004) Author : Alex Benson, Stephen V. Smith Publishers : Tata McGraw – Hill

PAPER – 1

C. DIGITAL IMAGE PROCESSING

UNIT-I

CONTINUOUS AND DISCRETE IMAGES AND SYSTEMS : Light, Luminance, Brightness and Contrast, Eye, The Monochrome Vision Model, Image Processing Problems and Applications, Vision Camera, Digital Processing System, 2-D Sampling Theory, Aliasing, Image Quantization, Lloyd Max Quantizer, Dither, Color Images, Linear Systems And Shift Invariance, Fourier Transform, Z Transform, Matrix, Theory Results, Block Matrices and Kronecker Products.

UNIT-II

IMAGE TRANSFORMS : 2-D orthogonal and Unitary transforms, 1-D and 2-D DFT, Cosine, Sine, Walsh, Hadamard, Haar, Slant, Karhunen – loeve, Singular value Decomposition transforms.

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 K.Jain, “Fundamentals of Digital Image Processing”, PHI, 1995.

Sid Ahmed M.A., “Image Processing”, McGraw Hill Inc, 1995.

Gonzalaz R. and Wintz P., “Digital Image Processing”, Addison Wesley. 2nd Ed, 1987.

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

Introduction to networks and communication media: Uses - Network Hardware - Network Software - Reference Models - Example networks - Network Standardization - Basis for data communication - Transmission Media - Wireless Transmission - Telephone Systems - Satellite communication.

UNIT-II

Security Attacks - Security Services - A model for internetwork security – Conventional Encryption Model - Steganography - Data Encryption Standard.

UNIT-III

Principles of public key cryptosystems - RSA algorithm - Key Management -Diffie-Hellman key exchange - Prime and Relatively prime numbers - Fermat's and Eulers's theorems - Testing of primality - Euclid's algorithm - Chinese Remainder Theorem.

UNIT-IV

Authentication requirements - Authentication functions - Message authentication codes - Hash functions - Digital signatures - Authentication protocols - Digital signature standards.

UNIT-V

Kerberos - Pretty Good Privacy - S/MIME - IP Security Overview - IP Security Architecture - Authentication Header – Intruders – Intrusion Detection – Password Management.

Text Books:

1. Andrews S.Tanenbaum, ”Computer Networks“,4/E, PHI/Pearson Education.
2. Zehrouz Forouzan, “Data Communication and Networking”, 2 /E , TMH, 2006
3. William Stallings,” Cryptography and network security”, 4/E, PHI, 2006.Reference books:
4. Singh, Brijendra, ”Network Security and Management”, PHI, 2007.
5. Charles.P.Pleeger, "Security in Computing", PHI, 1989.
6. Hans, "Information and Communication Security", Springer Verlag, 1998.
7. Simonds, "Network Security", McGraw Hill, 1998.
8. Derek Atkins, "Internet Security", Techmedia, 1998.
9. BAXER, "Networking Security", MCGRAW-HILL, 1996.
10. V.k.panchgare,Cryptography and information Security, PHI,

PAPER – 2

B. ARTIFICIAL INTELLIGENCE

UNIT-I

Introduction: What is Artificial Intelligence – AI Technique – Level of the model – Problems, Problem spaces and search – Production systems – Problem characteristics – Production system characteristics.

UNIT-II

Heuristic search techniques – Hill climbing – Best first search – Problem reduction – Means end analysis – Knowledge representation issues – Representations and mappings – Approaches – Issues in knowledge representation.

UNIT-III

Using predicate logic – Representing simple facts, Instance – Computable functions and predicates – Representing knowledge using rules – Procedural versus Declarative – Logic programming – Control knowledge.

UNIT-IV

Symbolic reasoning – Nonmonotonic reasoning – Implementation issues – Breadth first search – Depth first searching – Statistical reasoning – Bayes' theorem – Bayesian network – Fuzzy logic.

UNIT-V

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

Books for Study:

Elaine rich, Kevin knight, "Artificial Intelligence", Second edition, Tata McGraw Hill Edition, 1991.

R.B.Mishra , "Artificial Intelligence",PHI,2011.

Reference Books:

Stuart Russell, Peter Norvig, "Artificial Intelligence", Second edition, 2003.

Dan W. Patterson, "Artificial Intelligence and Expert Systems", 1990.

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

Data link control: Flow controls - Error Detection - Error Control. MULTIPLEXING : Frequency Division multiplexing - Synchronous time - Division multiplexing - Statistical time division multiplexing.

UNIT-IV

Circuit switching: Circuit switching networks switching concepts - Routing in circuit switched networks.

UNIT-V

Packet switching principles - Routing in packet switching - Congestion control.
Frame relay: Frame relay Protocol Architecture – Frame relay Congestion control.

Text Books

William Stallings, Data and Computer Communications Fifth Edition , Prentice Hall of India, 1997.

Forouzan: Introduction to Data Communication & Networking, McGraw-Hill, 1998.

Reference Books:

Ulysess D. Black Data Communications and Distributed Networks Third Edition , 1997. Prentice Hall of India.

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

SKILL BASED SUBJECT

PAPER – 3

VISUAL PROGRAMMING

UNIT-I

Customizing a form- Writing a simple program - Tool box- Creating control-Name property-Command button-Access keys-Image control-Text boxes-Labels-Grid-Message boxes-Editing tools-Variables, data types.

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

VB objects- Dialogue boxes-Common control-Menus-MDI forms-Testing-Debugging and Optimization -Working with Graphics.

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

Noel Jerke – Visual Basic (The Complete Reference) – Tata McGraw Hill – 1999

Deitel& Deitel ,T.R. Nieto – Visual Basic 6 – Pearson Edition - 2005

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

Introduction : Linux Essential Commands – File system Concept – Standard Files – The Linux Security Model – Vi Editor – Partitions Creation – Shell Introduction – String Processing – Investigation and Managing Processes – Network Clients – Installing Application.

UNIT-III : JAVA SCRIPT

Introduction to Javascript –Advantages of Javascript –JavaScript Syntax-Datatype- Variable– Array – Operators and Expressions- Loops - functions – Dialog box.

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

PHP Introduction – General Syntactic Characteristics – PHP Scripting – Commenting your code – Primitives, Operations and Expressions – PHP Variables – Operations and Expressions Control Statement – Array – Functions – Basic Form Processing – File and Folder Access – Cooking – Sessions – Database Access with PHO – MySQL - MySQL Functions – Inserting Records – Selecting Records – Deleting Records – Update Records.

"Setting Up LAMP : Getting Linux, Apache, MySQL, and PHP and Working Together", Eric Resebrock, Eric Filson, Published by John Wiley and Sons, 2004.

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

I. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, Javascript, Pen CGI, BPB Publications, 2000

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.
MM Video : How video works - broadcast video standards - digital video fundamentals - digital video production and editing techniques - file formats.

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

Multimedia Making it Work - Tay Vaughen 6th edition – TMH

Kiran Thauras,Prabhut k.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:

2.1 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
c. icon animation

8. Create a digital clock Animation.

ELECTIVE

PAPER – 3

A. SOFTWARE ENGINEERING

UNIT-I

Introduction to Software Engineering: Definitions - Size Factors - Quality and Productivity Factors - Managerial Issues - Planning a Software Project: Defining the Problem - Goals and Requirements - Solution Strategy - Planning the Development Process: Various Models - Planning an Organizational Structure - Planning Activities.

UNIT- II

Software cost estimation: Introduction - Software Cost Factors - Software Cost Estimation Techniques - Stating Level estimation - Estimating Software Maintenance Costs Software Requirements Definition - Software Requirements Specification - Specification Techniques.

UNIT-III

Software design: - Design concepts - Modules And Modularization Criteria - Design Notations - Design Techniques - Design Considerations - Real Time and Distributed System Design - Test Plans - Milestones, Walkthroughs and Inspections - Design Guidelines Implementation Issues : Structure Loading Techniques - Coding Style - Standards And Guidelines - Documentation Guidelines.

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

Testing And Debugging: System Testing - Formal Verification Software Maintenance - Maintainability - Managerial Aspect Of Software Maintenance - Configuration Management - Source Code Metrics - Other Maintenance Tools And Techniques.

Text Books

Software Engineering Concepts 1997 Edition

Author: RICHARD FAIRLEY Publishers: TATA Mc GRAW-Hill Edition.

Software Engineering VI Edition, Author: ROGER S. PRESSMAN Publishers TATA McGRAW - HILL International Edition.

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 :

1. Panneer Selvam, R., Design and Analysis of Algorithms –PHI Learning private Limited,New Delhi.

2. S.K.Basu, Design methods and Analysis of Algorithms, - PHI Learning private Limited,New Delhi.

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

Messaging – Usenet Newsgroup – Internet Relay chat (IRC) – Instant Messaging - Voice and Video Conferencing.Web Browsers- Internet Explorer- Features of Internet explorer6 Searching the Internet- online help and tutorials- Browser settings.

UNIT-III

Overview – Web Security, Privacy, and site-blocking – Audio and Video on the web – Creating and Maintaining the Web – Web site creation concepts – Web Page Editors.

Unit-IV:

Optimizing Web Graphics – Web Audio Files – Forms, Interactivity, and Database-Driven Web sites – File Transfer and downloading – FTP – Peer to Peer – Downloading and Installing software.

UNIT-V

What is Intra net – 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

2. Margaret Levine Young, "Internet and WWW", 2nd Edition, Tata McGraw Hill, 2002.

3. The Internet- Complete Reference Harley hahn, Tata McGraw hill

SKILL BASED SUBJECT

PAPER – 4

MOBILE COMPUTING

UNIT-I

Introduction- Applications-vehicles- Mobile and Wireless devices- History of wireless communications- Mobile Communication Market – A Simplified and reference model – Overview – Wireless Transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulation – Spread Spectrum.

UNIT-II

Medium Access Control – motivation for a MAC- SDMA – FDMA – TDMA – Comparison of S/T/F/ CDMA. – Telecommunication Systems –GSM – System Architecture – Protocols – DECT – TETRA.

UNIT-III

Satellite system – History – Applications – BASICS – GEO 139 – LEO 139 – MEO 140 – Routing – Localization – Handover – Examples – Broad cast Systems – Overview – Cyclic Repetition of data – Digital Video and Audio Broadcasting.

UNIT-IV

Mobile Network Layer – Mobile IP – Goals, assumptions- Entities and term logy – IP Packet Delivery – Tunneling and encapsulation – Optimization - Dynamic Host Configuration Protocol – ad hoc networks – Routing- Destination sequence distance vector – Dynamic source routing – Hierarchical algorithms – Alternative metrices.

UNIT-V

Mobile Transport layer- Traditional TCP 292 – Congestion control 292 – Slow start 292 – Fast retransmit / fast recovery 293 – Implication on mobility 294- Indirect TCP – Snooping TCP – Mobile TCP – Fast retransmit / fast recovery – transmission / time-out freezing – selective retransmission – transaction oriented TCP – WAP .

TEXT BOOK:

1. JOCHEN SCHILER , “Mobile Communication”, Addison Wesley, 2000.
REFERENCES: 1. HONEYMAN P HUSTON L.B, “Communications And Consistency In Mobile File Systems”, IEEE Personal communication 2(6), Dec 1996.
2. www.awl.com/cseng
3. www.dect.ch
4. Biplob k Sikdar ,Sipra dasbit –Mobile Computing - Printice Hall India.

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 ~ Down load music from internet and play ~ Down load 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 .

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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.

Practical CIA	–	40 marks
University Practical	–	60 marks
Total	–	100 marks

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