

**Sri Chandrasekharendra Saraswathi
Viswa Mahavidyalaya
SCSVMV University
Enathur, Kanchipuram - 631 561**

Department of Computer Science and Engineering



**Curriculum and syllabus
for
B.Tech(Information Technology)**

**(Applicable for students admitted
from 2014-15 onwards)**

CHOICE BASED CREDIT SYSTEM FOR B.Tech(IT) FULL-TIME PROGRAMME

CREDITS

Each course is normally assigned one credit per lecture per week and one credit for two periods of tutorials or part thereof for laboratory or practical per week.

Each semester curriculum shall normally have a blend of theory and practical courses For Semester I to V the average credits per semester will be 25. For Semester VI and VII the average credits per semester will be 26 and for semester VIII will be 18. For the award of the degree a student has to earn a minimum of 195 credits.

DURATION OF THE PROGRAMME

A student is normally expected to complete B.Tech(IT) programme in four years but in any case not more than seven years from the time of admission.

REGISTRATION FOR COURSES

A newly admitted student will automatically be registered for all the courses prescribed for the first year , without any option.

Every other student shall submit a completed registration form indicating the list of courses intended to be credited during the next semester. This registration will be done a week before the last working day of the current semester. Late registration with the approval of the dean on the recommendation of the head of the department along with a late fee will be done, up to the last working day.

Registration for the project work shall be done only for the final semester.

ASSESSMENT

The break-up of assessment and examination marks for theory subjects is as follows.

Internal Assessment : 40 Marks

Examination : 60 Marks

The break-up of the assessment and examination marks for practical is as follows.

Internal Assessment : 40 Marks

Examination : 60 Marks

The project work will be assessed for 60 marks by a committee consisting of the guide and a minimum of two members nominated by the head of the department. The head of

the department may himself be a member or the chairman. 60 marks are allotted for the project work and viva voce examination at the end of the semester.

WITHDRAWAL FROM A COURSE

A student can withdraw from a course at any time before a date fixed by the head of the department prior to the second assessment, with the approval of the dean of the faculty on the recommendation of the head of the department.

TEMPORARY BREAK OF STUDY

A student can take a one-time temporary break of study covering the current year/semester and/or the next semester with the approval of the dean on the recommendation of the head of the department, not later than seven days after the completion of the mid-semester test. However, the student must complete the entire programme within the maximum period of seven years.

MOVEMENT TO HIGHER SEMESTERS

The following minimum credits must be earned by the student to move to a higher semester

To move to the fifth semester : 45 credits

SUBSTITUTE ASSESMENT

A student who has missed, for genuine reasons accepted by the head of the department, one or more of the assessments of a course other than the examination, may take a substitute assessment for any one of the missed assessments. The substitute assessment must be completed before the date of the fourth meeting of the respective class committees.

A student who wishes to have a substitute assessment for a missed assessment must apply to the head of the department within a week from the date of the missed assessment.

ATTENDANCE REQUIREMENTS

To be eligible to appear for the examination in a particular course, a student must put in a minimum of 80% of attendance in the course. However, if the attendance is 70% or above but less than 80% in any course, the authorities can permit the student to appear for the examination in the course on payment of the prescribed condonation fee.

A student who withdraws from or does not meet the minimum attendance requirement in course must re-register for and repeat the course.

PASSING AND DECLARATION OF EXAMINATION RESULTS

All assessments of all the courses on the absolute mark basis will be considered and passed by the result passing board in accordance with the rules of the university. Thereafter, the controller of examinations shall convert the marks for each courses to the corresponding letter grade as follows, compute the grade point average and cumulative grade point average , and prepare the grade cards.

90 to 100 marks	-	Grade 'S'
80 to 89 marks	-	Grade 'A'
70 to 79 marks	-	Grade 'B'
60 to 69 marks	-	Grade 'C'
55 to 59 marks	-	Grade 'D'
50 to 54 marks	-	Grade 'E'
less than 50 marks	-	Grade 'F'
Insufficient attendance	-	Grade 'I'
Withdrawn from the course	-	Grade 'W'

A student who obtains less than 50 marks out of 100 in the subject or less than 20 out of 50 in external exam or is absent for the examination will be awarded Grade 'F'.

A student who earns a grade of S,A,B,C,D or E for a course is declared to have successfully completed that course and earned the credits for that course. Such a course cannot be repeated by the student.

A student who obtains letter grade F in a course has to reappear for the examination in that course.

A student who obtains letter grade I or W in a course has to re-register for and repeat the course.

The following grade points are associated with each letter grade for calculating the grade point average.

S - 10; A-9; B-8; C-7; D-6; E-5; F-0

Course with grades I and W are not considered for calculation of grade point average or cumulative grade point average. F Grade will be considered for computing GPA and CGPA.

A student can apply for retotalling of one or more of his examination answer papers within a week from the date of issue of grade sheet to the student on payment of the prescribed fee per paper. The application must be made to the controller of examinations with the recommendation of the head of the department.

After results are declared, grade cards will be issued to the students. The grade card will contain the list of courses registered during the year/semester, the grades scored and the grade point average(GPA) for the year/semester.

GPA is sum of the products of the number of credits of a course with the grade point scored in that course, taken over all the courses for the Year/Semester, divided by the sum of the number of credits for all courses taken in that year/semester. CGPA is similarly calculated considering all the courses taken from the time of admission.

After successful completion of the programme, the degree will be awarded with the following classification based on CGPA.

For First Class with Distinction the student must earn a minimum of 195 credits within four years from the time of admission, pass all the courses in the first attempt and obtain a CGPA of 8.25 or above.

(Or)

For First Class the student must earn a minimum of 195 credits within five years from the time of admission and obtain a CGPA of 6.5 or above.

(Or)

For Second Class the student must earn a minimum of 195 credits within seven years from the time of admission.

ELECTIVES

Apart from the various elective courses offered in the curriculum of the branch of specialisation, a student can choose a maximum of two electives from any specialisation under the faculty during the entire period of study, with the approval of the head of the department and the head of the department offering the course.

**COURSE CONTENT
&
SCHEME OF EXAMINATION**

SCSVMV (University)
B.Tech., Information Technology Credit Based System
I Semester

S.No	Subject Code	Subject	Ins./Week in Hours			C
			L	T	P	
1	EN1T1	English - I	3	-	-	3
2	MA1T2	Basic Mathematics for Engineering -I	2	2	-	3
3	CH1T3	Engineering Chemistry	3	-	-	3
4	ME1T4	Basic Civil & Mechanical Engineering	2	2	-	3
5	CS1T5	Environmental Science And Engineering	3	-	-	3
6	CH1T6	Computer Programming	3	-	-	3
7	SA1T1	Sanskrit and Indian Culture - I	2	-	-	1
8	CH1P7	Chemistry Laboratory	-	-	3	2
9	CS1P8	Computer Laboratory	-	-	3	2
10	ME1P9	Mechanical Workshop	-	-	3	2
			18	4	9	25

II Semester

S.No	Subject Code	Subject	Ins./Week in Hours				C
			L	T	P	D	
1	EN2T1	English -II	3	-	-	-	3
2	MA2T2	Basic Mathematics for Engineering -II	2	2	-	-	3
3	PH2T3	Engineering Physics	3	-	-	-	3
4	EE2T4	Basic Electrical And Electronics Engineering	2	2	-	-	3
5	CS2T5	Object Oriented Programming Using C++	2	2	-	-	3
6	SA2T2	Sanskrit and Indian Culture - II	2	-	-	-	1
7	ME2P6	Engineering Graphics	2	-	-	2	3
8	PH2P7	Physics Laboratory	-	-	3	-	2
9	CS2P8	Object Oriented Programming Lab Using C++	-	-	3	-	2
10	EE2P9	Electrical Workshop	-	-	3	-	2
			16	6	9	2	25

L - Lecture
E - External

T - Tutorial
C- Credits

P - Practical
D-Drawing

I - Internal

SCSVMV University
B.Tech., Information Technology , Credit Based System
III Semester

S.NO	Subject Code	Subject	Ins./Week in Hours			C
			L	T	P	
1	MM3T1	Applied Mathematics for Technology – I	3	1	0	3
2	EC3T2	Signals and Systems	3	1	0	3
3	IT3T3	Digital Principles and System Design	3	1	0	3
4	IT3T4	Design And Analysis Of Algorithms	3	1	0	3
5	IT3T5	Data Structures	3	1	0	3
6	EC3T6	Principles Of Communication	3	1	0	3
7	SA3T3	Sanskrit and Indian Culture - III	2	0	0	1
8	IT3P7	Data Structures Lab	0	0	4	2
9	IT3P8	Digital Lab	0	0	4	2
10	IT3P9	Algorithms Lab	0	0	4	2
11	SS3P1	Soft Skills-I*	2	-	-	1*
			22	6	12	25

IV Semester

S.NO	Subject Code	Subject	Ins. / Week in Hours			C
			L	T	P	
1	MM4T1	Applied Mathematics for Technology – II	3	1	0	3
2	IT4T2	Computer System Architecture	3	1	0	3
3	IT4T3	Operating System	3	1	0	3
4	EC4T8	Digital Signal Processing	3	0	0	3
5	EC4T5	Microprocessors and Micro Controllers	3	1	0	3
6	IT4T4	Computer Networks	3	1	0	3
7	SA4T4	Sanskrit and Indian Culture - IV	2	0	0	1
8	IT4P5	Operating System Lab	0	0	4	2
9	EC4P7	Microprocessor/ Micro Controller & Assembly Language Programming Lab	0	0	4	2
10	IT4P6	Computer Networks Lab	0	0	4	2
11	SS4P2	Soft Skills-II*	2	-	-	1*
			22	5	12	25

L - Lecture
E - External

T - Tutorial
C- Credits

P - Practical

I - Internal

SCSVMV (University)
B.Tech., Information Technology, Credit Based System
V Semester

S.No	Subject Code	Subject	Ins./ Week in hours			C
			L	T	P	
1	MM5T1	Applied Mathematics for Technology - III	3	1	0	3
2	IT5T2	Information Coding Techniques	3	0	0	3
3	IT5T3	System Software	3	1	0	3
4	IT5T4	Relational Database Management System	3	1	0	3
5	IT5T5	Java Programming	3	1	0	3
6	IT5T6	Computer Graphics and Multimedia	3	1	0	3
7	SA5T5	Sanskrit and Indian Culture - V	2	0	0	1
8	IT5P7	RDBMS Lab	0	0	4	2
9	IT5P8	Java Programming Lab	0	0	4	2
10	IT5P9	Computer Graphics Lab	0	0	4	2
11	SS5P1	Soft Skills-III*	2	-	-	1*
12	OE5T	Open Elective**	2	-	-	1**
			23	5	12	25

VI Semester

S.No	Subject Code	Subject	Ins./ Week in hours			C
			L	T	P	
1	IT6T1	Data Warehousing and Data Mining	3	1	0	3
2	IT6T2	Sanskrit Grammar & Logic for Computing	3	0	0	3
3	IT6T3	Dot Net Technologies	3	1	0	3
4	IT6T4	Object Oriented System Design	3	1	0	3
5	IT6T5	Cryptography and Network Security	3	1	0	3
6	IT6T6	Embedded System	3	1	0	3
7	SA6T6	Sanskrit and Indian Culture - VI	2	0	0	1
8	IT6P7	CASE Tools Lab	0	0	4	2
9	IT6P8	Dot Net Lab	0	0	6	3
10	IT6P9	Data Warehousing and Data Mining Lab	0	0	4	2
11	SS6P4	Soft Skills-IV*	2	-	-	1*
12	IT6T1	Industrial Training**				1**
			22	5	14	26

L - Lecture
E - External

T - Tutorial
C - Credits

P - Practical

I - Internal

SCSVMV (University)
B.Tech., Information Technology, Credit Based System
VII Semester

S.NO	Subject Code	Subject	Ins./ Week in hours			C
			L	T	P	
1	IT7T1	Software Engineering	3	2	0	4
2	IT7T2	Mobile computing	3	0	0	3
3	IT7T3	Component Based Technology	3	1	0	3
4	IT7T4	Distributed Computing	3	1	0	3
5	IT7E	Elective- I	3	1	0	3
6	IT7E	Elective- II	3	1	0	3
7	IT7P7	Web Technology Lab	0	0	6	3
8	IT7P8	Mobile Application Development Lab	0	0	4	2
9	IT7Z1	Project Work Phase-I	0	0	4	2
			18	6	12	26

VIII Semester

S.NO	Subject Code	Subject	Ins./ Weeks in hours			C
			L	T	P	
1	IT8T1	Professional Ethics and Human Value	3	1	0	3
2	IT8E	Elective-III	3	1	0	3
3	IT8E	Elective – IV	3	1	0	3
4	IT8E	Elective – V	3	1	0	3
5	IT8Z2	Project Work Phase- II	0	0	12	6
			12	4	12	18

L - Lecture
E -External

T - Tutorial
C- Credits

P - Practical

I - Internal

Total Credits:

195

***Soft skills** - The syllabus and the course will be monitored by placement and training cell. It carries 1 credit per semester from III semester to VI semester which is not considered for CGPA calculation.

**** Open Elective** - Students has to take one course from non engineering department only.

***** Industrial Training** - The student have to undergo practical industrial training for 1 to 2 weeks (in VI semester holidays) in recognized industrial establishments. Examination mode will be Quiz/ Objective type Exam/ Viva voce.

SYLLABUS FOR SANSKRIT & INDIAN CULTURE

Year	Semester	Sub.code	Paper	Subject	Period	Credits	
II	Third		2	Mahabharata Eloquence (45 Slokas)	15	1 P.W	
			2	And Elements of Indian Culture & Science and Technology	15	1 (2P.W)	
	Fourth		3	Hitopadesha (Selected Stories)	15	1 P.W	
			3	And Elements of Indian Culture & Science and Technology	15	1 (2P.W)	
	III	Fifth		4	Raghuvamsa (II Canto 45 Slokas)	15	1 P.W
				4	And Elements of Indian Culture & Science and Technology	15	1 (2P.W)
Sixth			5	Introduction in to Sanskrit Literature (Selected topics)	15	1 P.W	
			5	And Elements of Indian Culture & Science and Technology	15	1 (2P.W)	

Examination Pattern for Sanskrit & Indian Culture paper

(Students who have admitted during academic year 2002 onwards & common for all branches)

There will not be any external examination for Sanskrit and Indian Culture paper to B.E. courses but performance of students will be assessed through tests and assignments conducted by the same department. The internal assessment pattern is follows.

	Indian Culture	Sanskrit
First Test	20 Marks	20 Marks
Second Test	20 Marks	20 Marks
Assignment	10 Marks	10 Marks
Total	50 Marks	50 Marks

Total marks for Sanskrit and Indian Culture - 100 Marks
Passing Minimum marks - Aggregate 50%

A candidate shall be declared to have passed the examination he/she should have secure a minimum marks of 50% in each part (Sanskrit & Indian Culture) with the aggregate of 50%

I SEMESTER

L	T	P	C
3	0	0	3

EN1T1 - ENGLISH - I
(Common for all branches)

UNIT - I:
TECHNICAL WORDS, PHOBIA WORDS AND MANIA WORDS

{List Enclosed}

UNIT - II: FUNCTIONAL GRAMMAR

Parts of Speech, Articles, Prepositions, Verbs, Adverbs, Sentence Analysis, Tenses, Basic Patterns, Prefixes and Suffixes, Syllabification and Spelling

UNIT - III: ESSAYS

1. Spoken English and Broken English-G.B. Shaw
2. Arguing-Robert Lynd
3. The Verger-Somerset Maugham
4. The Beauty Industry - Aldous Huxley

UNIT - IV

Paragraph writing relating to Charts, Tables and graphs and Acronyms.

UNIT - V

Dialogue Writing, Advertisement.

Collateral

Amalgamation

Permeability Volatile

Defy Paradox

Plague Douse

Fantasy

Malevolent

Benevolent

Myth

Crux

Vagaries

Ballast

Sanctuary

Repository

Panorama

Heritage

Innovation

Nuances

Vicissitudes

Nodal

Viable

Deluge

Amphibian

Ornithologist

Pulmonary

Retard

Impediment

Rapport

Mania – Words:

1. Bibliomania

2. Dipsomania

3. Egomania

4. Kleptomania

5. Megalomania

6. Pyromania

Phobia - Words

1. Acrophobia

2. Gynophobia

3. Hydrophobia

4. Claustrophobia

5. Ergophobia

6. Zoophobia

7. Agoraphobia

8. Arachnophobia

9. Triskaidekaphobia

10. Xenophobia

L	T	P	C
2	2	0	3

MA1T2 - MATHEMATICS - I

(B.E. First Year - Common For All Branches)
(For students admitted from 2014-15)

UNIT - I

(NUMERICAL SOLUTION OF ALGEBRAIC, TRANSCENDENTAL EQUATION)

Solution of algebraic and transcendental equations - Bisection method - Method of successive approximation-Method of false position (Regula - Falsi Method) - Newton-Raphson method -Honer's method-Secant method. Matlab applications.

UNIT - II

(EIGEN VALUES, EIGEN VECTORS)

Rank of matrix - Elementary transformation - Elementary matrices-solution of linear system of equations-Cramer's rule-Matrix inversion method-Consistency of linear system of equations; Linear Transformations - Linear dependence of vectors - Eigen values and Eigen vectors - Properties of Eigenvalues - Cayley Hamilton theorem (without proof). Matlab applications

UNIT - III

(DIFFERENTIAL CALCULUS AND DIFFERENTIAL EQUATION)

Function of two or more variables - Partial derivatives - Total derivative - Taylor's expansion - Maxima and Minima of functions of two variables - Jacobians - Homogenous functions - Euler's theorem for homogeneous function Operator D - Rules for finding Complementary function - Inverse operator - Rules for finding particular Integral - Working procedure to solve the equation. - Method of undetermined coefficients

UNIT - IV

(LINEAR DIFFERENTIAL EQUATIONS)

Method of variation of parameters- Equations reducible to linear equations with constant coefficients: Cauchy's homogeneous linear equation , Legendre's linear equation - Linear dependence of solutions - Simultaneous linear equations with constant coefficients

UNIT - V

(VECTOR DIFFERENTIATION)

Differentiation of vectors - Curves in space - Velocity and acceleration - Scalar and vector point functions -vector operator Del- Del applied to scalar point functions : Gradient - Del applied to vector point functions : Divergence and curl - Physical interpretation of divergence and curl-irrotational and solenoidal vectors - Del applied twice to point functions - Del applied to products of point functions-Conservative vector field.

Note: Questions are to be set on problem solving and not on the theoretical aspects.

TEXT BOOK:

1. Grewal B.S, Higher Engineering Mathematics, 41st Edition, Khanna Publishers, New Delhi, 2011.

REFERENCES

1. Alan Jeffrey, Advanced Engineering Mathematics, Academic Press
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons
3. Gerald C.F and Wheatley P.O, Applied Numerical Analysis, Addison-Wesley Publishing Company

L	T	P	C
3	0	0	3

CH1T3 - ENGINEERING CHEMISTRY

(With Effect From 2015-16)

UNIT - I (CHEMICAL THERMODYNAMICS)

Introduction - Limitations of first law – different statements of second law (Clausius and Kelvin) – Entropy – entropy change for a reversible process – entropy change for an isothermal expansion of an ideal gas – problems – Free energy - Work function – Gibbs Helmholtz equation and its applications - Van't hoff isotherm and isochore – applications.

UNIT - II (CHEMICAL KINETICS AND CATALYSIS)

Kinetics of second order reactions –half life period – saponification of ester – kinetics of opposing, parallel reactions and its examples - effect of temperature on reaction rate – theory of absolute reaction rate. Classification and characteristics of catalysts – autocatalysis – steady state principle - enzyme catalysis – Michaelis menton equation (derivation) – types of acid base catalysis

UNIT - III (THERMAL AND SPECTROSCOPIC TECHNIQUES)

Thermogravimetry (TGA) – schematic and block diagram – characteristics of thermo-balance design – methods expressing TG results – applications in qualitative analysis, composition of alloys and mixtures, study of polymers. Differential thermal analysis (DTA) - schematic and block diagram – representation of DTA data – qualitative application (calcium oxalate monohydrate only). Electromagnetic spectrum – Beer Lambert's law (Derivation) – principle, theory, instrumentation and simple applications of: Flame photometry – UV-visible spectroscopy - IR spectroscopy.

UNIT - IV (CORROSION - THEORY & PROTECTION)

Standard electrode potential - electrochemical series - Electrochemical cells – principles of corrosion - chemical and electrochemical corrosion - galvanic corrosion - differential aeration corrosion - stress corrosion – factors influencing corrosion – corrosion control - cathodic protection and sacrificial anode – corrosion inhibitors - protective coatings - constituents, functions and uses of paints and varnishes.

UNIT - V (POLYMERS AND NANOMATERIALS)

Polymer Chemistry: Monomers – functionality – polymers - degree of polymerization – effect of polymer structure on properties – addition, condensation, co-polymerization - mechanism of addition polymerization (free radical polymerization only).
Nanomaterials: Introduction - synthesis of nano materials by physical and chemical methods - ball milling - chemical vapour deposition -sol-gel method - applications of nano materials.

TEXT BOOK

1. Engineering Chemistry, P.C. Jain and Monika Jain, Dhanpat Rai Publishing Co Pvt. Ltd., New Delhi, 2008.

REFERENCE BOOKS

1. Principles of Physical Chemistry, B.R. Puri, L.R. Sharma and Madan S. Pathania, Shoban Lal Nagin Chand & Co., Jalandhar, 2000.
2. Physical Chemistry for Engineers, P.C. Jain and Renuka Jain, Dhanpat Rai & sons, New Delhi, 2001.
3. Applied Chemistry, K. Sivakumar, Anuradha Publications, Chennai, 2009.
4. Chemistry in Engineering & Technology, J.C. Kuriacose and J. Rajaram, Vol. 1, Tata McGraw-Hill, New Delhi, 1996

L	T	P	C
2	2	0	3

MEIT4 - BASIC CIVIL AND MECHANICAL ENGINEERING

PART- A CIVIL ENGINEERING

UNIT - I

BUILDING MATERIALS: Construction Materials and foundation Properties and uses of construction materials such as stone, bricks, cement, concrete, steel.

BUILDING COMPONENTS: Selection of site - simple foundations such as well footing- isolated footing. Combined footing. Pile foundation - foundations of machinery. Superstructure Brick and stone masonry - beams. Columns and lintel RCC roofing - simple steel roof trusses and AC roofing - Flooring types such as granolithic. Concrete, mosaic, tile, terrazzo, marble etc., - plastering.

VALUATION : Valuation by plinth area method - simple problems.

UNIT - II

MECHANICS Units - Simple stresses and strains for uniform section - Moduli of elasticity - Factor of safety - centre of gravity and moment of inertia - simple problems.

DAMS Selection of site - Brief idea of different types of dams - their purpose. **BRIDGES** Components of bridge - classification - slab bridge - T beam bridge.

UNIT - III

SURVEYING - Different types of surveying - chain survey - calculation of area by Simpson's rule and trapezoidal rule - compass - conversion on bearings - simple leveling - reduction of levels - simple problems.

ROAD Classification - brief description of earthen road. Water bound macadam. Bituminous. Concrete roads - traffic signs and signals.

ENVIRONMENTAL ENGINEERING Protected water supply - sewage treatment - septic tanks.

PART - B MECHANICAL ENGINEERING UNIT - I

BOILERS Classification - Principles of Low pressure steam generators simple Vertical Boiler, Cochran Boiler, Locomotive Boiler, Lancashire Boiler, Bab-cock Wilcox Boiler

POWER PLANTS Layout of Steam, Gas Turbine, Diesel, Nuclear and Hydropower Plants.

NEW SOURCES OF ENERGY Study of different types of alternative energy sources - Solar, Wind, Wave, Tidal and Geo - thermal.

UNIT - II

INTERNAL COMBUSTION ENGINES - Working principles of Petrol and Diesel Engines - Two stroke and Four stroke cycles-Function of main components - single jet carburation - ignition. Cooling and lubrication systems - fuel pump and injector.

METAL CASTING PROCESS Patterns - Types of patterns - Pattern materials - pattern allowances - Molding sand - Properties of molding sand - types of molding - preparation of Green sand mould for casting - melting of cast iron in cupola furnace only - casting defects.

UNIT - III

METAL FORMING PROCESS- Principles of Forging. Rolling, Drawing and Extrusion.

METAL JOINING PROCESS Principles of welding - fundamental of Arc welding. Gas welding and gas cutting - Brazing and soldering.

METAL MACHINING PROCESS Types of lathes - Main components and the functions of a centre lathe - operations - cutting tools - Drilling machines.

TEXT BOOKS

1. Basic Civil Engineering - V. Ramesh Babu, Anuradha Agencies, Kumbakonam.
2. Basic Civil Engineering - K.V. Natarajan, Madras.
3. Basic Mechanical Engineering – K.Venugopal, Anuradha Agencies, Kumbakonam

REFERENCE BOOKS

1. Basic Civil Engineering - N.Arunachalam, Pratheeba Pub. Coimbatore.
2. Basic Civil and Mechanical Engineering - G. Shanmugam and M.S.Palanichamy, Tata McGraw Hill Publishing Co., 1993.

L	T	P	C
3	0	0	3

CSIT5 - COMPUTER PROGRAMMING

UNIT - I

Introduction to digital computer ALU Memory Unit, Control Unit-Types of Computers-Number Systems-Conversion Problems. DOS commands - Computer Languages - High Level, machine Level and Assembly Level language - Algorithm Flow Chart.

UNIT - II

Introduction to C - Character set, Constants, Variables, Data Types- Operators - Expression. Decision Making statement - Looping statements, break continue, goto functions.

UNIT -III

Arrays and its types - Functions - call by reference - storage classes in C Auto, Register, Static, Extern - Recursive function.

UNIT - IV

Structures and Unions, Introduction to Pointer, Pointer arithmetic, String operations.

UNIT - V

User defined data types - Introduction to Preprocessor, Macros, Files, Command line arguments

TEXT BOOKS

1. Let Us 'C' - Yashawant Kanetkar, (Unit 2 to 5), BPB publications, 10th Edition, 2010.
2. Ashok N Kamthane, "Computer Programming", Pearson education, Second Impression, 2008.
3. Venugopal.K and Kavichithra.C, "Computer Programming", New Age International Publishers, First Edition, 2007.

REFERENCE BOOKS

1. Kernighan B.W and Ritchie,D.M , The C programming language: second edition, Pearson education, 2006
2. Fundamentals of Computing and Programming- V.Ramesh Babu, R.Samyuktha, M.Muniratham by VRB Publishers 2012 edition.
3. Balagurusamy. E, "Programming in ANSI C", Tata McGraw Hill, Third edition, 2006

L	T	P	C
3	0	0	3

CHIT6 - ENVIRONMENTAL SCIENCE & ENGINEERING

Syllabus Common for First Year Engineering and Technology
(with effect from the academic year 2014-2015 onwards)

UNIT - I

(INTRODUCTION TO ENVIRONMENT AND ENVIRONMENTAL STUDIES)

1.1. Introduction to environment – components – nature of environment - need of awareness – reasons for environmental problems – anthropocentric and eco centric views.

1.2. Environmental studies - multidisciplinary nature – scope and aim – sustainable development- principles – RRR concept-Indian environmental movements – environmental calendar.

UNIT - II

(ECOSYSTEM AND BIODIVERSITY)

2.1. Ecosystem – structure – functions – simplified ecosystem models (food chain and food webs and their types, energy flow) - forest – grassland – pond – ecosystems – ecological succession - ecological pyramids – Bio-geochemical cycles of water – oxygen-carbon-phosphorous and sulphur.

2.2. Biodiversity – definition – types – species – genetic and ecosystem diversities- values of biodiversity – threats to biodiversity – conservation of biodiversity – endemism – biodiversity hotspots – Indian biodiversity- endemic species of India – IUCN lists -red-green and blue data books.

UNIT - III

(NATURAL RESOURCES)

3.1 Natural resources – definition – types – forest resources – uses – deforestation- reasons - effects – water resources – dams – effects of dams - food resources – modern agriculture- ill effects -energy resources- types – hydel – nuclear – solar – wind and biomass energy - world scenario – Indian scenario.

3.2 Population and environment – reasons for over exploitation of resources – population – demography – population curves – population explosion – effects – consumerism – effects – urbanization – reasons and effects- role of an individual.

UNIT - IV

(ENVIRONMENTAL POLLUTION)

4.1 Pollution – definition – types – air pollution – causes and effects – effects of CO₂ – CO – NO_x – SO_x – particulates – control of air pollution – water pollution – causes – effects – remedies – soil pollution – solid waste management – e waste – ill effects of e-waste – proper recycling- Noise pollution – reasons – effects – control – nuclear pollution – cases – effects and control – thermal pollution causes – effects and remedies.

4.2 Legal provisions for protecting environment – article 48 A – 51 A (g) – Environment act 1986 – Air act 1981 – Water act 1974 – wild life protection act – Forest act 1980- problems in implementation-reasons.

UNIT - V
(SOCIAL ISSUES AND ENVIRONMENTAL ETHICS)

5.1 Present environmental scenario – green house effect – climate change – The Kyoto Protocol – ozone layer depletion-The Montreal Protocol - acid rain – causes – effects - disparity among the nations – The Copenhagen UNFCCC summit – carbon currency-virtual water- genetically modified organisms, Disaster management.

5.2 Environmental ethics – introduction – people getting affected - resettlement and rehabilitation – issues involved –Sardhar Sarovar project – Tawa Matsya sang - Melting icebergs of Arctic.

TEXT BOOK

Anubha Kaushik and C.P. Kaushik, "Prospects of Environmental Science", New Age International publishers, 2013.

REFERENCE BOOKS

1. Environmental Studies, N. Nandini, N. Sunitha and Sucharita Tandon, Sapna Book House, 2007.
2. Text book of Environmental Science, Ragavan Nambiar, Scitech Publications, 2009.
3. Text book of Environmental Chemistry and Pollution Control, S.S.Dara, S.Chand and Co., 2002.
4. Environmental Chemistry, Colin Baird, W.H.Freeman and company, New York,1999.
5. Environmental Chemistry, Gary W. VanLoon and Stephen J.Duffy, Oxford University Press, 2000.
6. New Trends in Green Chemistry, V.K. Ahluwalia and M. Kidwai, Anamaya Publishers, 2006.

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SAIT1 - SANSKRIT & INDIAN CULTURE - I

UNIT - I

1. An Introduction to Sanskrit Language
2. Meaning and definition, Significance of Sanskrit language
3. Relations between Sanskrit and other languages

UNIT - II

1. Introduction to Vedic literature, Origin of Vedas, Classification of Vedas
2. Structure of Vedas (Samhitā, Brāhmaṇā, Āranyaka)
3. Introduction to Upaniṣads and its relevance

UNIT - III

1. Introduction to Upavedas and their classification & its significance
2. Introduction to Āyurveda,
3. Application of Āyurveda in present days

UNIT - IV

1. Introduction to Dhanurveda - the Indian Martial Art, History of Dhanurveda, Dhanurveda and its impacts in the regional styles
2. Introduction to Gāndarvaveda
3. Text on dramaturgy and music

UNIT - V

1. Introduction to Arthaśāstra - the Indian statecraft, economic policy and military strategy
2. Relevance of Arthaśāstra to the present days
3. Message of Paramacharya

REFERENCE TEXTS

1. A text book of elementary Linguistics and Phonetics by Dr. R. Ravi S Sharma, New Delhi 2012
2. A history of Sanskrit literature by A. B. Keith New Delhi 1993
3. A history of Indian literature by Maurice Winternitz New Delhi 1990
4. Samskruta Sahitya Ka Itihas - by Baladev Upadaya
5. short history of Sanskrit Literature by T.K. Balachandra Iyer, Palaghat 1998

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CH1P7 - ENGINEERING CHEMISTRY LABORATORY
LIST OF EXPERIMENTS (ANY SIX OF THE FOLLOWING)

1. Estimation of Na_2CO_3 present in washing soda sample.
2. Estimation of alkalinity of the given water sample.
3. Estimation of total hardness of the given water sample- EDTA method
4. Conductometric titration Strong acid Vs Strong base.
5. Conductometric titration Strong base Vs mixture of acids
6. Potentiometric titration - Strong acid Vs Strong base.
7. Potentiometric titration Fe^{2+} Vs KMnO_4 .
8. Determination of K_{sp} of a sparingly soluble salt concentration cell method
9. Construction of phase diagram for a simple eutectic system.
10. Rate and order of reaction between $\text{K}_2\text{S}_2\text{O}_8$ and KI Clock reaction method.

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CS1P8 - COMPUTER LABORATORY

- Evaluate Expressions using library Function.
 - πr^2
 - $(A+B+(2C/3A)+A^2+2B)$
 - $\sqrt{S(S-A)(S-B)(S-C)}$
 - $\text{LOG}(x^3+y^3+z^3)$
- Find Sum & Average of 'N' numbers.
- Find the Biggest among 3 numbers.
- Find the factorial of given number.
- Check whether the number is prime or not.
- Find the sum of digits using (i) For loop (ii) While loop
- Program to add the first N odd numbers and even numbers.
- Generate the Fibonacci series and Evaluate Sine series.
- Arithmetic operations using Switch - Case Statements.
- Find the biggest & smallest among "N" numbers.
- Sort "N" numbers in ascending order.
- Matrix addition and Multiplication.
- Display the student information & marks using Structure & Unions.
- Evaluate the Binomial coefficient.
- Swapping of numbers using call by value, call by reference.
- Number system Conversions
- Basic File Operations
- Preprocessor directives usage.
- Pointer Arithmetic and Array access using Pointers.
- Introduction to graphics.

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ME1P9 - BASIC MECHANICAL WORKSHOP

CARPENTRY

Names and uses of tools used in carpentry - Handling of the tools. Practice in marking, sawing, planing and chiseling to size. Making simple joints such a half lap, mortises and Tenon joints.

FITTING

Name and uses of tools like files, chisels, hammer, tri square, calipers, hacksaw, etc., and handling of these tools. Practice in marking, chipping, fitting to size and drilling marking of simple mating, profiles such as Vee , Square.

WELDING

Study of Arc & Gas Welding, Tools and Equipments Simple welding exercises Butt welding and Lap Welding.

TURNING

Study of Centre Lathe, Accessories and tools Simple turning exercises Facing and Step turning - use of measuring Instruments for lathe work.

DRILLING

Study of drilling machines Drills, Taps, and reamers Demonstration of Drilling and Tapping operations.

Demonstration of the following (not included for the examination)

1. Preparation of green sand mould.
2. Study of tool in smithy shop and making a square section from circular section.
3. Gas welding and cutting.
4. Brazing and soldering.
5. Sheet Metal Work

II SEMESTER

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EN2T1 - ENGLISH - II

UNIT - I

WORDS FOR SOCIAL INTERACTION

{List Enclosed}

UNIT - II

FUNCTIONAL GRAMMAR

Noun Group, Verbal Group, Modal Verbs, Conditionals, Connectives, Passivity, Gerund and Infinitives, Reported Speech, Synonyms and Antonyms, Concord and Error detection.

UNIT - III

ESSAYS

1. On Habits- A.G. Gardiner
2. How to Make a Speech - Edgar Baker
3. Springtime - O.Henry
4. Dangers of Drug Abuse - Hardin Jones

UNIT - IV

Letter Writing, Report Writing, Essay Writing (Essays on Sports Social Issues, Science and Technology and Proverb Expansions) and Comprehension.

UNIT - V

British English and American English With Emphasis on Vocabulary and Spelling (From Reader's Digest's Publication)

BOOKS FOR REFERENCE:

1. Bikaram K. Das : Functional Grammar and Spoken and Written communication in English (Orient Blackswan, Chennai - 600002)
2. T.M. Farhathullah : English Practice Book (Emerald Publishers)

The prescribed Essays will be compiled and edited by the staff of the Department of English.

WORDS FOR SOCIAL INTERACTION

- | | | |
|--------------------|------------------|----------------------------------|
| 1. Euthanasia | 16. Super Ego | 31. Theocracy |
| 2. Bier | 17. Psychopath | 32. Ombudsman |
| 3. Charlatan | 18. Guarantee | 33. Anthology |
| 4. Cynosure | 19. Warranty | 34. Dialectic |
| 5. déjà vu | 20. Neologism | 35. Asphyxiation |
| 6. Myopia | 21. Nepotism | 36. Doggy bag |
| 7. Epicentre | 22. Oligarchy | 37. Somnambulism |
| 8. Oedipus complex | 23. Anarchy | 38. Dermatitis |
| 9. Electra complex | 24. Utopia | 40. Biopsy |
| 10. Halitosis | 25. Dystopia | 41. Anti-biotic |
| 11. Imbroglio | 26. Philanthropy | 42. Vendetta |
| 12. Impasse | 27. Plagiarism | 43. Virago |
| 13. Paranoia | 28. Euphemism | 44. Prefixes pseudo, quasi, bi, |
| 14. Id | 29. Autarky | mono, poly, semi, retro, circum, |
| 15. Ego | 30. White Paper | intro, intra and inter |

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MA2T2- BASIC MATHEMATICS FOR ENGINEERS -II

UNIT-I

NUMERICAL SOLUTION OF SIMULTANEOUS EQUATIONS

Solution of linear simultaneous equations - Direct methods of solution: Gauss elimination method , Inversion of a matrix using Gauss Elimination method- Gauss Jordan method Method of Factorization-Crout's method, Iterative methods of solution : Jacobi's method, Gauss Seidel method.

UNIT- II

ORTHOGONAL REDUCTION

Orthogonal transformation-Reduction to diagonal form Similarity matrices Powers of a matrix - Reduction of quadratic form to canonical form Nature of a quadratic form Hermitian, Skew Hermitian and Unitary matrices Outline of applications of Eigen values and Eigen vectors in engineering

UNIT- III

INTEGRAL CALCULUS AND ITS APPLICATIONS

Reduction formulae reduction formulae[without proof] and Bernoulli's formula. Definite integrals , length of the curve. Double integrals - Change of order of integration - Double integrals in polar coordinates - Areas enclosed by plane curves - Triple integrals - Volume as triple integral

UNIT- IV

BETA AND GAMMA FUNCTIONS

Change of variables in double integrals and Triple integrals Area of a curved surface Beta function - Gamma function Reduction formula for - Relation between Beta and Gamma functions Outline of applications of multiple integrals

UNIT- V

VECTOR INTEGRATION

Integration of vectors - Line integral-circulation-work - Surface integral- Green's theorem in the plane (without proof) - Stoke's theorem (without proof) - Volume integral - Gauss divergence theorem (without proof) - Irrotational fields Outline of applications of vector calculus in engineering.

Note: Questions are to be set on problem solving and not on the theoretical aspects.

TEXT BOOK:

Grewal B.S, Higher Engineering Mathematics, 41st Edition, Khanna Publishers, New Delhi, 2011.

REFERENCES

1. Alan Jeffrey, Advanced Engineering Mathematics, Academic Press.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons
3. Gerald C.F and Wheatley P.O, Applied Numerical Analysis, Addison- Wesley Publishing Company

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PH2T3 - ENGINEERING PHYSICS

UNIT-I

PROPERTIES OF MATTER ELASTICITY

Stress - Strain - Hooke's law - Elastic Behavior of Material - Factors affecting elasticity - Young's modulus by cantilever depression - Non-uniform bending- Application -I-shaped girders. Torsional Pendulum - Couple per unit twist of a wire-Time period-Application- Determination of Rigidity Modulus.

UNIT- II

TECHNICAL ACOUSTICS ACOUSTICS

Acoustics of buildings - Reverberation - Weber Fechner law- Factors affecting acoustics of a building and remedies - Noise Pollution - Noise control in machines - Sabine's formula for standard reverberation time- Absorption coefficient.

ULTRASONICS

Generation - Piezoelectric method - Magnetostriction method - Application of Ultrasonics in industries NDT.

UNIT -III

PHOTONICS LASER

Properties- Population inversion- Einstein's theory of stimulated emission of radiation - Different types of Lasers Nd:YAG laser, CO2 laser Application of Lasers in holography.

FIBER OPTICS

Types of Optical Fibers (material, mode, index) - Fiber losses - acceptance angle - Numerical aperture - applications in engineering (communication).

UNIT- IV

CRYSTAL PHYSICS

Crystalline and amorphous solids - lattice and unit cell - seven crystal systems and Bravais lattices - crystal planes and directions- Miller indices- Expression for interplanar distance - Atomic radius, Coordination number and packing factor for simple structures: SC, BCC, FCC and HCP.

UNIT -V

PHYSICS OF MATERIALS DIELECTRIC MATERIALS

Definition - Dielectric Breakdown - Dielectric loss - Internal field - Clausius Mossotti relation.

SUPERCONDUCTING MATERIALS

Introduction - Meissner effect - Type I & Type II superconductors - BCS theory- Applications.

NANOMATERIALS

Introduction - Synthesis of nano materials - Top - down and Bottom - up approach-
Ball milling- PVD method-Applications.

TEXT BOOKS

1. Applied Physics for Engineers K.Venkatramanan, R.Raja, M.Sundarrajan (Scitech)
2. Applied Engineering Physics Rajendran & Marikani (Tata McGraw Hill)
3. Modern Engineering Physics R.K.Gaur & S.L.Gupta, Dhanpat Rai publications.
4. Modern Engineering Physics A.S.Vasudeva S.Chand & Company Ltd.
5. Engineering Physics Bhattacharya, Bhaskaran Oxford Publications.
6. Engineering Physics I & II G.Senthilkumar, VRB publications.

REFERENCE BOOKS

1. Properties of Matter - D.S.Mathur (Unit I)
2. Sound - Brijilal & Subramanian (Unit II)
3. Engineering Physics - M.N.Avadhanulu (Unit III)
4. Fiber Optics - R.Agarwal (Unit III)
5. Solid state Physics C.Kittel (Unit IV)
6. Modern Physics - R.Murugesan (Unit IV, V)
7. Fundamentals of Physics, 6th Edition, D. Halliday, R. Resnick and J. Walker, John Wiley and Sons, New York.

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EE2T4 - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT -I

ELECTRICITY AND MAGNETISM

Electric current - Ohms law - Temperature coefficient of resistance- Kirchhoff's laws
Electromagnetic induction: Relation between magnetism and electricity - Production of induced E.M.F and current - Faraday's laws of electromagnetic induction - Direction of induced E.M.F and current- Fleming's Right rule-Lenz's law-Induced E.M.F Dynamically induced E.M.F- Statically induced E.M.F-Self inductance-Coefficient of self inductance (L)- Mutual inductance Coefficient of mutual inductance(M) -Coefficient of magnetic coupling-Inductances in series.

UNIT -II

COMPLEX ALGEBRA AND A.C CIRCUITS

Mathematical representation of vectors - Symbolic notation - Significance of operator j
Conjugate complex numbers - Trigonometrical form of vector representation -
Exponential form of vector representation - Polar form of representation - Addition and subtraction of complex quantities - Multiplication and division of complex quantities - Powers and roots of vectors - Complex algebra applied to series circuits - Complex algebra applied to parallel circuits Series Parallel circuits.

UNIT- III

THREE PHASE CIRCUITS

Generation of three phase voltages - Phase sequence Numbering of phases- Inter connection of three phases Star or wye(Y) connections Voltages and currents in Y-connection - Neutral current in unbalanced star-connection Delta(Δ) or mesh connection - Balanced Y/ Δ and Δ Y conversions Comparison: star and delta connections Comparison between single and three phase supply system - Power factor improvement - Power factor correction equipment - Power measurement in three phase circuits Three wattmeter method, Two wattmeter method (Balanced and unbalanced load), Two wattmeter method Balanced load, Reactive power One wattmeter method.

UNIT -IV

DIGITAL ELECTRONICS

Binary number system - Logic gates Boolean algebra - Half and Full adders - Flip Flops - Registers and counters - A/D and D/A conversion - (Basics only), Junction diodes basic types - transistors basic types.

UNIT - V
FUNDAMENTALS OF COMMUNICATION ENGINEERING

Types of signals: Analog and digital signals Modulation and demodulation: Principles of amplitude and frequency modulation. Communication systems: Radio, T.V, Fax, Microwave, Satellite and Optical fiber (Block diagram approach only).

TEXT BOOKS:

1. B.L.THERAJA-Fundamentals of Electrical Engineering and Electronics -2012 Edition, S.Chand Publishers.
2. T.L.THYGARAJAN-Fundamentals of Electrical Engineering and Electronics - 2012 Edition, Scitech Publishers.
3. V.K.MEHTA Principle of Electronics - 2012 Edition, SChand Publishers.

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CS2T5 - OBJECT ORIENTED PROGRAMMING USING C++

UNIT- I

Need for object oriented programming, Characteristics of object oriented language - objects, classes, Inheritance, Reusability, creating new data types, Polymorphism and overloading. C++ programming basics Data types, Manipulators, Cin, Cout, Type conversion, arithmetic operators, Loops and decisions.

UNIT- II

Class and objects : A simple class, C++ Objects as physical Objects, C++ Objects as Data Types, Constructors, destructors, objects as function arguments, overloaded constructors, member functions defined outside the class, inline functions, Returning objects from Functions.

UNIT - III

Arrays : Defining & accessing Array elements, arrays as class member data, array of Objects. Operator Overloading : Overloading Unary Operators, Operator Arguments, Return Values, nameless Temporary objects, postfix notations. Overloading Binary Operators - Arithmetic operators, Concatenating Strings, Multiple overloading Comparison operators, Arithmetic Assignment Operators.

UNIT- IV

Inheritance-Derived class and base class, derived class constructors, overriding member functions, Class Hierarchies, Abstract base class, Public and private inheritance, Levels of inheritance, Multiple inheritance. Memory management new and delete operator, a string class using new, Pointers to Objects Referring to Members, another Approach to new, An array of pointers to Objects.

UNIT- V

Virtual Functions, Pure virtual functions, Late Binding, Abstract Classes, Virtual base classes. Friend Functions Friend Classes, Friends for functional Notation. Static Functions , investigating destructors. Assignment and copy initialization- overloading the assignment operator, the copy constructor, the this pointer. Templates - function templates, class template, File Handling-Introduction to graphics

TEXT BOOKS:

1. Object Oriented Programming in Microsoft C++ - Robert Lafore, Galgotia Publication Pvt Ltd.
2. Let us C++ - Yaswant Kanitkar (for templates), BPB Publication

REFERENCE BOOKS:

1. Object Oriented Programming in C++ - E. Balaguruswamy, Tata Mcgraw Hill.
2. Teach yourself C++ - Herbertsehildt, OSBORNE/MH

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SA2T2 - SANSKRIT & INDIAN CULTURE - II

UNIT - I

1. Introduction to Vedāngas
2. Introduction to Śikṣā, Vyākaraṇa, Chandas
3. Introduction to Nituktam, Jyotiṣa, Kalpa

UNIT - II

4. Introduction to classical literature
5. Introduction to Epics
6. Introduction to Purānas

UNIT - III

7. Introduction to Sanskrit poets any five
8. Introduction to Kāvya and their classifications, Pañcamahākāvya and their significance in Sanskrit literature
9. Significance of Kālidasa and his contribution

UNIT - IV

10. Introduction to Dramas
11. Introduction to Subhāṣitas
12. Tales and fables

UNIT - V

13. Introduction to System of Indian philosophy, Six Darśanas and their profounder, principles of Nyāya and Vaiśeṣika schools
14. Valid means of Sāṅkya philosophy and its significance, Yoga and Patañjali, Aṣṭāṅgayoga and its application
15. Introduction to (Manu and Yāgñavalkya)

REFERENCE TEXTS

1. A history of Sanskrit literature by A. B. Keith New Delhi 1993
2. Samskruta Sahitya Ka Itihas - by Baladev Upadyaya
3. A short history of Sanskrit Literature by T.K. Balachandra Iyer, Palaghat 1998

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ME2P6 - ENGINEERING GRAPHICS (PRACTICAL)

UNIT - 0 (NOT INCLUDED FOR THE EXAMINATION)

BASICS OF DRAWING

Use of Drawing instruments - BIS conventions and specifications - size layout and folding of drawings sheets - lettering and dimensioning - studying the method of drawing ellipse, Parabola and Cycloids.

VISUALIZATION CONCEPTS AND FREE HAND SKETCHING

Visualization principles Representation of Three Dimensional objects Layout of views- Free hand sketching of multiple views from pictorial views of objects

UNIT - I

PROJECTION OF POINTS

Introduction to orthographic projections - Projection of points

PROJECTION OF LINES :

Projection of straight lines in the first quadrant, lines parallel to both planes - inclined to one plane and parallel to other - inclined to both planes.

UNIT - II

PROJECTION OF SOLIDS

Projection of Simple solids like prism, pyramid, cylinder, cone and sphere - Auxiliary projections.

UNIT - III

SECTION OF SOLIDS

Section of solids like prism, pyramid, cylinder, cone and sphere in simple position - True shape of sections for the above.

DEVELOPMENT OF SURFACES:

Surfaces like - Prism, Pyramid, Cylinder, Cone and Cut solids.

UNIT- IV

ORTHOGRAPHIC PROJECTION

Conversion of pictorial views to orthographic views of simple machine members.

INTERPENETRATION OF SOLIDS

Interpenetration of solids - Cylinder and cylinder, cone and cylinder

UNIT - V

ISOMETRIC PROJECTIONS Isometric Projections of solids.

PERSPECTIVE PROJECTIONS Perspective projections of solids.

UNIT - VI (NOT FOR EXAMINATION)

COMPUTERAIDED DRAFTING (DEMONSTRATION ONLY) Introduction to drafting packages and demonstration of their use.

TEXT BOOKS

1. Engineering Drawing - K. Venugopal, Wiley Eastern Ltd., 1922.
2. A text book of Engineering Drawing - K.V. Natarajan.

REFERENCE BOOKS

1. Elementary Engineering Drawing (First Angle Projection) N.D. Bhatt, Charotar publishing Co., Anand.
2. Engineering Drawing - S.M. Sekkilar & S. Tamarai Selvi, Anuradha Agencies, Kumbakonam.
3. Engineering Drawing and Graphics - Prof. K.Venkataraman.

Special points applicable to University Examinations on Engineering Graphics:

1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day

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PH2P7 - PHYSICS LAB

List of Experiments (Any six of the following)

1. Determination of Rigidity Modulus & Moment of Inertia using Torsional Pendulum.
2. Determination of Young's Modulus.
3. [a] Determination of Wavelength of Laser light using transmission grating.
[b] Measurement of numerical aperture of an optical fiber.
4. Determination of refractive index of material of prism using i-d curve.
5. Determination of radius of curvature of the given lens using Newton's Rings.
6. Determination of Velocity of sound waves in liquid using Ultrasonic interferometer.
7. Determination of wavelength of prominent colours of mercury spectrum using Spectrometer and grating.
8. Determination of emissivity of the surface of a black body.
9. Determination of number of lines per meter of the grating using normal incidence method.
10. Basic logic gates- Verification of truth tables

REFERENCE BOOKS

1. Practical Physics - Ouseph and Rangarajan.
2. Engineering Practical Physics-K.Srinivasan.
3. Engineering Practical Physics - M.N.Avadhanulu.
4. Experimental Physics K.Venkatramanan, R.Raja, M.Sundarrajan (Scitech)

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EE2P9 - BASIC ELECTRICAL WORKSHOP

LIST OF EXPERIMENTS:

1. House Wiring Series, Parallel, 3 Pin Plug Socket, etc.
2. Staircase Wiring.
3. Tube Light / CFL Wiring.
4. Circuit Tester.
5. Single Phase & Three Phase Energy meters.
6. To Study the use of Megger.
7. To Study The Applications Of CRO.
8. Logic Gate Trainer.
9. Soldering Practice for fabrication of DC power Supply.
10. Different faults in Domestic Electrical equipments.
11. Power wiring for three phase induction motor.
12. Power wiring for single phase induction motor.
13. To Study the use of Multimeter, Tong- tester.

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CS2P8 - OBJECT ORIENTED PROGRAMMING LAB USING C++

List of Programs:

1. Basic arithmetic operators & control structure usage
2. Illustrate class & objects
3. To demonstrate the concept of function overloading applied to the member functions.
4. To demonstrate the use of overloaded constructor and destructor.
5. To demonstrate the use of this pointer and inline functions
6. Implement passing object as function arguments and return object from function
7. Illustrate the use of array of objects
8. Illustrate the memory management operator
9. To enter the records of n number of students and then display them using nested Structure.
10. Illustrate the use of friend class and friend function
11. Illustrate the use of static data member and static member function
12. To Implement the use of unary operator overloading
13. To implement the use of Binary operator overloading
14. To implement the assignment and comparison of two strings using binary operator overloading
15. To implement the use of single private and public inheritance
16. To implement the use of multiple inheritance
17. To implement the use of multilevel inheritance
18. To implement the use of Hierarchical inheritance
19. To implement the Pure Virtual Function
20. To implement the use of class template
21. To implement the use of function template
22. File handling
23. Introduction to graphics

III SEMESTER

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MM3T1-APPLIED MATHEMATICS FOR TECHNOLOGY – I
(For students admitted from 2012-13)

UNIT I
(INTERPOLATION AND NUMERICAL INTEGRATION)

Interpolation with equal intervals – Newton’s forward interpolation formula – Newton’s backward interpolation formula - Interpolation with unequal intervals: Lagrange’s interpolation formula, Newton’s divided difference formula - Numerical integration: Trapezoidal rule - Simpson’s one-third rule - Simpson’s three-eighth rule –Outline of applications of interpolation and numerical integration in engineering.

UNIT II
(NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS)

Picard’s method – Taylor series method - Euler’s method – Modified Euler’s method – Runge’s method – Runge-Kutta method – Predictor-corrector methods: Milne’s method, Adams Bashforth method – Outline of applications of numerical solutions of ordinary differential equations in engineering.

UNIT III
(LAPLACE TRANSFORMS AND APPLICATIONS)

Transforms of elementary functions : $1, t^n, e^{at}, \sin at, \cos at, \sinh at, \cosh at$ - Properties of Laplace transforms: Linearity Property, First shifting property, Change of scale property –Transforms of derivatives - Transforms of integrals - Multiplication by t^n - Division by t - Evaluation of integrals by Laplace transform - Inverse transforms: Method of partial fractions – Other methods of finding inverse - Convolution theorem (Without proof) - Unit step function – Unit Impulse function- Application to differential equations – Outline of applications of Laplace transforms in engineering.

UNIT IV
(FOURIER TRANSFORMS AND APPLICATIONS)

Fourier integral theorem (without proof) - Fourier Sine and Cosine integrals – Complex form of Fourier integral - Fourier integral representation of a function - Fourier transform – Fourier sine and Cosine transforms – Properties of Fourier Transforms: Linear property, Change of scale property, Shifting property - Parseval’s identity for Fourier transforms (without proof) – Application of transforms to boundary value problems: Heat conduction, Vibrations of a string, Transmission lines.

UNIT V
(Z - TRANSFORM AND APPLICATIONS)

Standard z-transforms of $1, a^n, n^p$ – Linearity property – Damping rule – Shifting rules – Multiplication by n - Initial and final value theorems (without proof) – inverse z – transforms – Convolution theorem (without proof) – Convergence of z-transforms – Two sided z-transform – Evaluation of inverse z-transforms: Power series method, Partial fraction method, inversion integral method – Application to difference equations – Outline of applications of z-transform in engineering

Note: Questions are to be set on problem solving and not on the theoretical aspects.

TEXT BOOK:

1. Grewal B.S, Higher Engineering Mathematics, 41st Edition, Khanna Publishers, New Delhi, 2011.

REFERENCES BOOK:

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons
2. Gerald C.F and Wheatley P.O, Applied Numerical Analysis, Addison-Wesley Publishing Company
3. Murrey R.Spiegel, Laplace Transforms, Schaum's Outlines, McGraw Hill

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EC3T2-SIGNALS AND SYSTEMS

UNIT I CLASSIFICATION OF SIGNALS AND SYSTEMS

Continuous time signals (CT signals), discrete time signals (DT signals) - step, Ramp, Pulse, Impulse, Exponential, Classification of CT and DT signals - periodic and aperiodic, Random signals, CT systems and DT systems, Classification of systems – Linear Time Invariant Systems.

UNIT II ANALYSIS OF CT SIGNALS

Fourier series analysis, Spectrum of CT signals, Fourier Transform and Laplace Transform in Signal Analysis, Hilbert Transform.

UNIT III LTI-CT SYSTEMS

Differential equation, Block diagram representation, Impulse response, Convolution Integral, Frequency response, Fourier Methods and Laplace transforms in analysis, State equations and Matrix.

UNIT IV ANALYSIS OF DT SIGNALS

Spectrum of DT Signals, Discrete Time Fourier Transform (DTFT), Discrete Fourier Transform (DFT), Properties of Z-transform in signal analysis.

UNIT V LTI-DT SYSTEMS

Difference equations, Block diagram representation, Impulse response, Convolution SUM, Frequency response, FFT and Z-transform analysis, State variable equation and Matrix.

TEXT BOOKS:

1. Alan V. Oppenheim, Alan S. Willsky with S.Hamid Nawab, "Signals & Systems", Pearson / Prentice Hall of India Pvt. Ltd., 2003.

REFERENCES BOOKS

1. K.Lindner, "Signals and Systems", McGraw-Hill International, 1999.
2. Simon Haykin and Barry Van Veen, "Signals and Systems", John Wiley & Sons, Inc., 1999.
3. Robert A.Gabel and Richard A.Roberts, Signals and Linear Systems John wiley and sons 3ed, 1987.
4. Roger E.Ziemer et al, Signals and systems continuous and Discrete, Mc Millan 2ed, 1990.

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IT3T3-DIGITAL PRINCIPLES AND SYSTEM DESIGN

UNIT I

BOOLEAN ALGEBRA AND LOGIC GATES

Review of binary number systems - Binary arithmetic – Binary codes – Boolean algebra and theorems - Boolean functions – Simplifications of Boolean functions using Karnaugh map and tabulation methods – Logic gates

UNIT II

COMBINATIONAL LOGIC

Combinational circuits – Analysis and design procedures - Circuits for arithmetic operations - Code conversion – Introduction to Hardware Description Language (HDL)

UNIT III

DESIGN WITH MSI DEVICES

Decoders and encoders - Multiplexers and demultiplexers - Memory and programmable logic - HDL for combinational circuits

UNIT IV

SYNCHRONOUS SEQUENTIAL LOGIC

Sequential circuits – Flip flops – Analysis and design procedures - State reduction and state assignment - Shift registers – Counters - HDL for sequential logic circuits, Shift registers and counters.

UNIT V

ASYNCHRONOUS SEQUENTIAL LOGIC

Analysis and design of asynchronous sequential circuits - Reduction of state and flow tables – Race-free state assignment – Hazards.

TEXT BOOKS

1. M.Morris Mano, “Digital Design”, 3rd edition, Pearson Education, 2002.

REFERENCES

1. Charles H.Roth, Jr. “Fundamentals of Logic Design”, 4th Edition, Jaico Publishing House, 2000.
2. Donald D.Givone, “Digital Principles and Design”, Tata McGraw-Hill, 2003.

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IT3T4- DESIGN AND ANALYSIS OF ALGORITHMS

UNIT I

Introduction – Notion of Algorithm – Fundamentals of Algorithmic Solving – Important Problem types – Fundamentals of the Analysis of Algorithm Efficiency – Asymptotic Notations and Basic Efficiency Classes. Mathematical Analysis of Non-recursive Algorithm – Mathematical Analysis of Recursive Algorithm – Example: Fibonacci Numbers

UNIT II

Divide and conquer: General Method, Binary Search, Finding the maximum and minimum, Merge sort, Quick sort, Multiplication of large integers, Strassen's multiplication algorithm.

UNIT III

The Greedy Method : General method, Optimal storage on tapes, Knapsack problem, Job sequencing with deadlines, Optimal merge patterns, Minimum spanning trees, Single source shortest paths.

UNIT IV

Dynamic programming: General method, Multistage graphs, All pairs shortest paths, Optimal binary search trees, 0/1 Knapsack, Travelling salesperson problem.

UNIT V

Back Tracking: General method, 8-Queens problem, Sum of subsets, Graph coloring, Hamiltonian problem – Introduction to NP hard and NP complete Problems

Note: Topics involved in analysis related theorems are not included in the syllabus

TEXT BOOKS

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithm", Pearson Education Asia, 2nd Edition 2006 (Unit I).
2. Ellis Horowitz, Sartaj Sahani, Sanguthevar Rajasekaran – "Fundamentals of Computer Algorithms" – W.H. Freeman and Co. 1996

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IT3T5-DATA STRUCTURES

UNIT-I

INTRODUCTION TO DATA STRUCTURES AND LINKED LIST

Definitions of Data Structure - Arrays - Structures, Unions, Pointers – Introduction to Linked list-Single, Double and Circular linked lists

UNIT-II

LINEAR DATA STRUCTURE

Stacks- Array representation, linked list representation- Application - Infix, Postfix and prefix notation, Evaluating Postfix Expression, Converting an infix Expression to Postfix, Queue-Array representation, linked list representation- Double ended queue-Circular queue-Priority queue.

UNIT-III

NON LINEAR DATA STRUCTURE

Trees-Binary trees-Representation -node representation ,array representation –Basic search and Traversal Techniques – BFS,DFS, Pre order , Post order ,In order –Application of tree and Binary Tree – General expression as trees

UNIT IV – SORTING

Bubble sort-Radix sort-Binary Tree sort- Heap sort- Insertion sort -Shell sort-Bucket sort- Address calculation sort.

UNIT V – SEARCHING

Searching – sequential searching –Efficiency of sequential searching, searching an ordered table, Indexed Sequential Search, Binary search, Interpolation search. Hashing – Resolving Hash clashes by open addressing, Coalesced Hashing, Separate Chaining, Linear hashing

TEXT BOOKS

1. Seymour Lipschutz – “Theory and Problems of Data Structures”.(AVL Trees,B-Trees),Tata mcgraw Hill, Edition 2006 20th Reprint 2011
2. Ellis Horowitz & Sartaj Sahani – “Fundamentals of Data Structures in C ” – W.H. Freeman and Co., 2nd Edition, 2007
3. Jean Paul Tremblay & Paul Sorenson – “An Introduction to Data Structures with Applications” – TMH., 2nd Edition, 15th Reprint 1999 (Address calculation sort)

REFERENCE BOOKS

1. Mark Allen Weiss – “Data Structures and Analysis in C” - Pearson Education Pubs.
2. Aho, Hopcroft, Ullman – “Data Structures and algorithms” – Pearson Education .
3. Behrouz A.Forouzan, Richard Gilberg, “Computer Science – Structured Programming Approach Using C “, 2ndEd, Thomson Asia, 2001.

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EC3T6-PRINCIPLES OF COMMUNICATION

UNIT I

AMPLITUDE MODULATION: TRANSMISSION AND RECEPTION

Principles of amplitude modulation – AM envelope, frequency spectrum and bandwidth, modulation index and percent modulation, AM power distribution, AM modulator circuits – low level AM modulator, medium power AM modulator, AM transmitters – low level transmitters, high level transmitters, Receiver parameters. AM reception: AM receivers – TRF, Superheterodyne receivers, Double Conversion AM receivers.

UNIT II

ANGLE MODULATION: TRANSMISSION AND RECEPTION

Angle Modulation – FM and PM waveforms, phase deviation and modulation index, frequency deviation, phase and frequency modulators and demodulators, frequency spectrum of a angle modulated waves, Bandwidth requirement, Broadcast band FM, Average power FM and PM modulators – Direct FM and PM, Direct FM transmitters, Indirect transmitters, Angle modulation Vs. amplitude modulation.
FM receivers: FM demodulators, PLL FM demodulators, FM noise suppression, Frequency Vs. phase Modulation.

UNIT III

DIGITAL MODULATION TECHNIQUES

Introduction - ASK, Binary PSK, DPSK, Differentially encoded PSK, QPSK, Binary FSK. Introduction about PCM- Transmitter and Receiver, DM,ADM,DPCM

UNIT IV

BASEBAND DATA TRANSMISSION

Sampling theorem, Quadrature sampling of bandpass signals, reconstruction of message from its samples, Signal distortion in sampling, Discrete PAM signals, power spectra of Discrete PAM signals, ISI Nyquist Criterion for Distortionless baseband binary transmission, eye pattern, baseband M-ary PAM systems, adaptive equalization for data transmission.

UNIT V

SPREAD SPECTRUM AND MULTIPLE ACCESS TECHNIQUES

Introduction, Pseudo-noise sequence, DS spread spectrum with coherent binary PSK, Processing gain, FH spread spectrum, multiple access techniques, wireless communications, TDMA and CDMA, wireless communication systems, source coding of speech for wireless communications.

TEXT BOOKS

1. Wayne Tomasi, "Electronic Communication Systems: Fundamentals Through Advanced", Pearson Education, 2001.
(UNIT I Chapters- 3,4; UNIT II : Chapters-6,7; UNIT III Chapters-12).
2. Simon Haykin, Digital Communications, John Wiley & Sons, 2003. (UNIT IV Chapters-3,4; UNIT V Chapters-7,8)

REFERENCES BOOKS

1. Simon Haykin, Communication Systems, John Wiley & Sons, 4th edn.,2001.
2. Taub & Schilling, Principles of Communication Systems, TMH, 2nd edn., 2003.
3. Martin S.Roden, Analog and Digital Communication System, PHI, 3rd edn. 2002.
4. Blake, Electronic Communication Systems, Thomson Delman, 2nd edn., 2002.

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SA3T3 - SANSKRIT AND INDIAN CULTURE- III

UNIT - I (G T)

1. Introduction to Jñānayoga
2. Introduction to Bhaktiyoga
3. Introduction to Karmayoga

UNIT - II (UPANIṢADIC PRINCIPLES)

4. Introduction to Śaṅkara's Phillosophy
5. Introduction to Rāmānuja's Phillosophy
6. Introduction to Mādhva's Phillosophy

UNIT - III

7. Amazing creations in Sanskrit (Varnacitras, Sthānacitras and Svaracitras, Gaticitras, Citrabandanas)
8. Intercity verses in Sanskrit, some intercity discoveries, Sanskrit and artificial intelligence beauty and charm of Sanskrit Poetry.
9. Stotrakāvya and its relevance

UNIT - IV

10. Introduction to Maths
11. Introduction to Physics and Chemistry
12. Introduction to Environmental Science

UNIT - V

13. Introduction to Yoga
14. Introduction to Botany & Zoology
15. Introduction to Agriculture

REFERENCE BOOKS

1. The wonder that was India by Arthur Llewellyn Basham – 1971
2. The wonder that is Sanskrit by Sampadananda Misra – 2002
3. Vedic Science & Technology by Sadasiva Biswal and Bidyut Lata Ray – 2009
4. Vedavijnanasree by Urmila Srivatsava – 2002

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IT3P7-DATA STRUCTURES LAB

1. Implementation of Stack
2. Implementation of Queue.
3. Convert an Infix expression to postfix.
4. Evaluate the given postfix expression.
5. Implementation of Linked List.
6. Implementation of Doubly linked list.
7. Perform Traversals on a Binary Tree.
8. Sort the Given Numbers using.
 - i) Bubble sort
 - ii) Selection Sort.
9. Perform Quick and Merge Sort for the given N numbers.
10. Sort the given Elements using Heap Sort.
11. Perform Binary Search.
12. Perform BFS, DFS.

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IT3P8-DIGITAL LAB

1. Adder/Subtractor
2. Multiplexer/Demultiplexer
3. Encoder/Decoder
4. Study of flip flops – RS/JK/T/D
5. Asynchronous Counter
6. Synchronous counter
7. Shift register – Right/ Left/Serial/Parallel
8. Code Converters – Binary to Gray, BCD to Excess 3
9. Seven segment display systems (with Counters & Decoders)
10. Design of combinational and sequential circuits using PLAs and PALs.

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IT3P9-ALGORITHMS LAB

1. Write a program that implements tower of Hanoi.
2. Write a program that implements Fibonacci series.
3. Write a program that implements insertion sort.
4. Write a program that implements Selection sort.
5. Write a program that implements Binary search.
6. Write a program that implements knapsack using greedy method.
7. Write a program to find the minimum and maximum value using divide and conquer.
8. Write a program that implements N-Queen Problem
9. Write a program that implements travelling sales person problem.
10. Write a program that implements All pair Shortest path.
11. Implement Quick sort
12. Implement Merge sort

IV SEMESTER

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MM4T1-APPLIED MATHEMATICS FOR TECHNOLOGY- II

(For students admitted from 2012-13)

UNIT I (RELATIONS AND DIGRAPHS)

Product sets and partitions – Relations and digraphs – Paths in relations and digraphs – Properties of relations – Equivalence relations – Computer representation of relations and digraphs – Operations on relations – Transitive closure and Warshall's algorithm – Outline of applications of digraphs in information technology.

UNIT II (ORDER RELATIONS AND STRUCTURES)

Partially ordered sets – Extremal elements of partial ordered sets – Lattices – Finite Boolean algebras – Functions of Boolean algebras – Circuit designs – Outline of applications of Boolean algebras in information technology.

UNIT III (TREES)

Trees – Labeled trees – Tree searching – Undirected trees – Minimal spanning trees – Outline of applications of trees in information technology.

UNIT IV (TOPICS IN GRAPH THEORY)

Graphs – Euler paths and circuits – Hamiltonian paths and circuits – Transport networks – Matching problems – Coloring problems – Outline of applications of graph theory in information technology.

UNIT V (LANGUAGES AND FINITE STATE MACHINES)

Semi groups (Definition only) – Product and quotients and semi groups (Definition only) – Languages – Representations of special grammars and languages – Finite state machines – Semi groups, machines and languages – Machines and regular languages – Simplification of machines – Outline of applications of finite state machines in information technology.

Note: Questions are to be set on problem solving and not on the theoretical aspects.

TEXT BOOK

Kolman B., Busby R.C. and Ross S., Discrete Mathematical Structures for Computer Science, Fifth Edition, Prentice Hall of India, New Delhi, 2006.

REFERENCES

1. Kenneth H. Rosen, Discrete Mathematics and its Applications, Tata McGraw Hill
2. Susanna S. Epp, Discrete Mathematics with applications, Brookes/Cole Publishing Company
3. J.P.Trembley, R.Monahor, Discrete Mathematical Structures with Applications to Computer Science, Tata McGraw Hill, New Delhi

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IT4T2-COMPUTER SYSTEM ARCHITECTURE

UNIT-I

Basic Computer Organisation : Instruction Codes - Computer registers - Computer Instruction timing and Control-Instruction Cycle-Memory Reference instructions-Input/Output Instructions - Complete computer Description.

UNIT-II

Central Processing Unit : Introduction – General Register Organization-Stack Organization Instruction formats-Addressing modes-Data Transfer and manipulation - Program Control.

UNIT-III

Computer Arithmetic: Addition and Subtraction – Multiplication Algorithm – Division Algorithm – Floating Point Arithmetic operations – Decimal Arithmetic Unit – Decimal Arithmetic Operations.

UNIT-IV

Input / Output Organization : Peripheral Devices-Input/Output Interface-Asynchronous Data Transfer - Modes of Transfer-Priority Interrupt-Direct Memory Access-Input/Output Processor - Serial Communication.

UNIT-V

Memory Organization : Memory Hierarchy-Main memory-Auxiliary memory-Cache memory-Virtual memory-Memory Protection.

TEXT BOOK

1. Computer System Architecture-M.Morris Mono.Third Edition. Prentice Hall of India (Pct) Ltd, New Delhi.1994.

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IT4T3-OPERATING SYSTEM

UNIT I

Introduction - Mainframe systems - Desktop Systems - Multiprocessor Systems - Distributed Systems - Clustered Systems - Real Time Systems - Handheld Systems - Hardware Protection - System Components - Operating System Services - System Calls - System Programs - Process Concept - Process Scheduling - Operations on Processes - Cooperating Processes - Inter-process Communication.

UNIT II

Threads - Overview - Threading issues - CPU Scheduling - Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Multiple-Processor Scheduling - Real Time Scheduling - The Critical-Section Problem - Synchronization Hardware - Semaphores - Classic problems of Synchronization - Critical regions - Monitors.

UNIT III

System Model - Deadlock Characterization - Methods for handling Deadlocks - Deadlock Prevention - Deadlock avoidance - Deadlock detection - Recovery from Deadlocks - Storage Management - Swapping - Contiguous Memory allocation - Paging - Segmentation - Segmentation with Paging.

UNIT IV

Virtual Memory - Demand Paging - Process creation - Page Replacement - Allocation of frames - Thrashing - File Concept - Access Methods - Directory Structure - File System Mounting - File Sharing - Protection

UNIT V

File System Structure - File System Implementation - Directory Implementation - Allocation Methods - Free-space Management. Kernel I/O Subsystems - Disk Structure - Disk Scheduling - Disk Management - Swap-Space Management. Case Study: The Linux System, Windows

TEXT BOOK

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", Sixth Edition, John Wiley & Sons (ASIA) Pvt. Ltd, 2003.

REFERENCES BOOK

1. Harvey M. Deitel, "Operating Systems", Second Edition, Pearson Education Pvt. Ltd, 2002.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall of India Pvt. Ltd, 2003.
3. William Stallings, "Operating System", Prentice Hall of India, 4th Edition, 2003.
4. Pramod Chandra P. Bhatt - "An Introduction to Operating Systems, Concepts and Practice", PHI, 2003

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EC4T8- DIGITAL SIGNAL PROCESSING

UNIT-I

SIGNALS AND SYSTEMS: Basic elements of digital signal Processing, Concept of frequency in continuous time and discrete time signals, Sampling theorem. Discrete time signals – Types and classification – Representations – Mathematical operations. Discrete time systems – Methods of analysis – Classification – Block diagram and signal flow graph representations – Structures for realization. Z transform – Convolution and correlation

UNIT-II

DFT AND FFT: Discrete Fourier transform (DFT) and its properties, Relationship between DFT and Z-transform, Discrete convolutions-Linear, Circular and sectional convolutions, Fast Fourier Transform (FFT) - Decimation in -time and Decimation in frequency (radix-2 only), Computation of inverse DFT through FFT.

UNIT-III

FINITE-IMPULSE RESPONSE (FIR) FILTERS: Magnitude response and phase response of digital filters. Frequency response of Linear phase FIR filters, Design techniques for linear phase FIR filters-Fourier series method, Frequency sampling method and Windows-rectangular, Hamming, Hanning and Kaiser. Finite Word Length Effects In Digital Filters

UNIT -IV

INFINITE IMPULSE-RESPONSE (IIR) DIGITAL FILTERS: Review of the properties of Butter worth and chebychev filters of the continuous - time type, IIR digital filter design from continuous-time filters using Impulse-invariance Technique and Bilinear transformation method.

UNIT-V

APPLICATIONS Multi rate signal processing – Speech compression, adaptive filter – sound processing – image enhancement.

TEXT BOOK

1. John G Proakis and Dimtris G Manolakis, “Digital Signal Processing Principles, Algorithms and Application”, PHI/Pearson Education, 2000, 3rd Edition.

REFERENCES

1. Alan V Oppenheim, Ronald W Schafer and John R Buck, “Discrete Time Signal Processing”, PHI/Pearson Education, 2000, 2nd Edition.
2. Johnny R.Johnson, “Introduction to Digital Signal Processing”, Prentice Hall of India/Pearson Education, 2002.
3. Sanjit K.Mitra, “Digital Signal Processing: A Computer – Based Approach”, Tata McGraw-Hill, 2001, Second Edition.

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EC4T5-MICROPROCESSOR AND MICROCONTROLLER

UNIT - I

8085 Microprocessor: Introduction, Microprocessor architecture and its operation, memory, I/O devices, 8085 microprocessor – pin diagram, Core architecture. Microprocessor communication and Bus Timings, Multiplexing and Demultiplexing of Address Bus, Decoding and Execution, Instruction set – Classification, Instruction Format, Addressing Modes, Simple Assembly Language Programs, 8085 Interrupt Process, Hardware and Software Interrupts.

UNIT - II

Peripheral Support Chips: PPI (8255), Timer (8253), PIC (8259), PCI (8251), Keyboard Display Interface IC (8279). **Interfacing applications:** ADC / DAC Interface, Stepper Motor Interface, DMA Controller Interface

UNIT - III

8086 Microprocessor: Introduction, 8086 Microprocessor – Pin diagram, and Signal Description, Core Architecture. Memory Segmentation, Minimum mode Operation and Maximum Mode Operation, Interrupt and Interrupt Service Routine. Instruction Set – Classification. Instruction Format Addressing modes, Simple Assembly Language Programs

UNIT - IV

Advanced microprocessors: salient features of 80286 – internal architecture, real addressing mode, PVAM. Features of 80386 internal architecture, real addressing mode, protected mode segmentation and paging. Features of 80486 – internal architecture, features of Pentium – system architecture

UNIT - V

Microcontroller: architecture of 8051-signals-operational features-memory and i/o addressing –interrupt-instruction sets-applications.

TEXT BOOKS:

Unit I & II - Microprocessor Architecture, Programming and applications by R.S.Gaonkar – Penram international publications Fourth Edition

Unit II - B.Ram, Fundamentals of Microprocessors and Microcomputers, Dhanpat Rai Publications

Unit III, IV – Advanced Microprocessor and Peripherals by A.K RAY & K.M. Bhurchandi – Tata Mc Graw Hill Pub.

Unit IV – Microprocessor Theory and Application –M.Raffiquzzaman.

Unit V-mohamedali Mazidi ,jaince Gillispie mazidi,"the 8051 microcontroller and embedded systems",pearson education 2004.

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IT4T4-COMPUTER NETWORKS

UNIT - I

Introduction to computer Networks: Network topology Network models, Networks components – Type of Networks OSI reference model.

Theoretical basis for data communication.

Transmission Media - Twisted pair cable, coaxial cable fiber optic cable, wireless. – Analog transmission – Digital transmission and switching.

UNIT - II

Error correction and Detections : Types of Errors, Error detection & Corrections. Interfaces RS232C & RS422

Data Link control & protocols:Flow and Error Control – Stop & wait ARQ, Go back N-ARQ , Selective Repeat ARQ. HDLC.

UNIT III

The Network Layer : Network Layer Design Issues, Routing algorithms Congestion control algorithms- Internetworking devices.

UNIT IV

The Transport layer : Transport layer design issues –Connection management UDP / TCP / IP Protocol.The Session Layer : Session layer design issues, Remote procedure calls.

UNIT V

The Presentation Layer : Presentation layer design issues – Data compressions techniques- Cryptography.The Application layer:- Design issues – File transfer, access and management – Electronic mail-Virtual terminals – Other applications.

TEXT BOOK

- 1.Computer Networks by Andrew Tanneenbaum
- 2.Data Communication and Networking by Behrouz fourzen
- 3.William Stallings , Data and Computer Communications, MacMillan Publishing Co, second edition 1989.

REFERENCE BOOK

1. Couch Digital and Analog communication systems, MacMillan publishing Co, 1990.
2. Gibson J.D principles of digital and Analog Communications , MacMillan Publishing Co, 1990.
3. Prokis, J.Q, Digital Communications, Mcgraw Hill , 1983.
4. Schweber, Data communications , Mcgraw Hill.

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SA4T4-SANSKRIT & INDIAN CULTURE-IV

UNIT I

- 1.Hitopadesha Introduction 2.prologue 3.Important verses
A.kao|qa-: pu~oNa B.gauINagaNa C.]Vmaona

UNIT II

Mitralabha - acquisition of friends

- 1.Fable I (Old tiger and traveler) 2.Fable II (Cat and Vulture)
3.Important Slokas A.maÉsqalyaama\ B.sa ih gagana C.tavad\Bayasya

UNIT III

Suhridbheda - separation of friends

- 1.Fable 7 (Pair of crows) 2.Fable 9 (pair of Tittibhas)
3.Important Slokas A.]payaona B.A=\gai=\gaBaava C.du:Kmaa%maa

UNIT IV

Vigraha - War

- 1.Fable 3 (Rabbits and elephants) 2. Fable 7 (Jackal) 3.Important Slokas
A.spRSannaip B.Aa%mapxama\ C.ya: svaBaavaao

UNIT V

Sandhi -Peace

- 1.Fable 6 (Crane and crab) 2.Fable 10 (Camel)
3.Important Slokas A.]pk~a-irNaa B.%yajao%xauQaata- C.na BaUp`danama\

INDIAN CULTURE - III

Part I

Unit I – Religion and different philosophical Schools - evolution of religious thoughts and ritual practices; astica and nastica sets; Jaina & Buddhist philosophy;

Unit II – Bhakti Movement – evolution of trimurti tradition and Bhakti movement; Shankara, Ramanuja, Madhwa, Vellabha, Bhaskara, etc. personalities and their contribution in Indian philosophy; Alwars, Nayanmars, Kabir, Tulasi, Meera, Goswami, etc. and their role in Bhakti movement;

Unit III – Important personalities and their Contribution – Devarishies, Maharishies, Rishies, Seers and contribution of their institutions to protect the cultural heritage.

Part II

Unit IV – Significance of Yoga in daily life.

Unit V – Vedic Mathematics, Astrology & Astronomy, Jyotism, etc. early Indian works and its importance in day to day life.

Reference Books

Datta, B. & A.N. Singh. 1962(rp). *History of Hindu Mathematics*. 2 Vols. Asian Publishing House. Bombay.

Jagadguru Swami Sri Bharati Krishna Tirthaji Maharaj. 1994 *Vedic Mathematics*. Motilal Banarasidas. New Delhi.

Kulkarni, R.P. 1983. *Geometry according to Sulba Sutra*. Samsodhana Mandal. Pune.

Radhakrishna, S. 1993(rp). *Indian Philosophy*. Vol I & II. Oxford University Press. Delhi.

Rao, J. 1960. *Principles and Practices of Medical Astrology*. Raman Publications. Bangalore.

Swami Satyananda Saraswati. 1997 (rp). *Asanas Pranayama Mudra Bandha*. Bihar Yoga Bharati. Bihar.

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IT4P5-OPERATING SYSTEMS LAB
(For Students admitted from 2014 onwards)

1. Write programs using the following system calls of UNIX operating system:
fork, exec, getpid, exit, wait, close, stat, opendir, readdir
2. Write programs using the I/O System calls of UNIX operating system. (open, read, write, etc)
3. Shell Programming.
4. Illustration of Grep, sed, awk commands.
5. Process management – Fork, Exec.
6. Implement CPU Scheduling using
 - (i) FIFOs.
 - (ii) Round Robin.
7. Process synchronization using semaphores (Solutions to synchronization problems like producer consumer problem, dining philosophers' problem etc...)
8. Bankers Algorithm.
9. Develop Application using Inter-Process-Communication (Using shared memory, pipes or message queues).
10. Implement some Memory management schemes like Paging and Segmentation.
11. Implement some Memory management schemes like FIRST FIT, BEST FIT & WORST FIT.
12. Implement any file allocation techniques (Contiguous, Linked or Indexed)

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EC4P7-MICROPROCESSOR/ MICROCONTROLLER & ASSEMBLY LANGUAGE PROGRAMMING LAB

ASSEMBLY LANGUAGE PROGRAMS USING INTEL 8085 MICROPROCESSOR/8051 MICROCONTROLLER

- 1) Study of 8085/8086 Microprocessor trainer kits
- 2) Addition/ Subtraction/Division/Multiplication – 8 Bit Hex/BCD Number
- 3) Addition/ Subtraction/Division/Multiplication – 16 Bit
- 4) Search/ Sort an array of data Largest/Smallest , Ascending /Descending order
- 5) Evaluation of function & series
(Square/square root of a number & Sum of series / Fibonacci series)
- 6) Code conversions between Hexa decimal – ASCII Code & Hexadecimal – BCD Number

ASSEMBLY LANGUAGE PROGRAMS USING INTEL 8086 MICROPROCESSOR

- 7) 16 – Bit Addition/ Subtraction/ Multiplication / Division & Separation of odd/even Numbers
- 8) Matrix multiplication/Block move of strings

INTERFACING PERIPHERAL WITH 8085 MICROPROCESSOR/8051 MICROCONTROLLER

- 9) Messaging the display
- 10) Programming the PPI – 8255 IC in various modes
 - IO Mode (Interfacing Keys, LEDs and 7 segment LED)
 - BSR Mode (Square wave generation)
- 11) Stepper motor interface
- 12) Interfacing ADC/DAC (Includes wave form generation)
- 13) Study of hardware interrupt RST 7.5 (Interrupt driven clock)

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IT4P6-COMPUTER NETWORK LAB

Using C/C++

Computer Networks Lab (Using C / C++ & Java)

1. Write a program to simulate Sliding window protocol.
2. Write a program to simulate shortest path algorithm.
3. Write a program to simulate Distance vector Routing algorithm.
4. Write a program to know your IP Address and to check whether it is Broadcasting address or not.
5. Write a program to establish a TCP Socket connection between 2 system and communicate "Hello" message.
6. Design a Broadcasting server to send "hello" message to 5 other clients.
7. Design a searching tool to check for the availability of a file in server.
8. Design FTP to download a given file from another system using TCP Sockets.
9. Design a simple chat application for communicating between 2 systems using swing components and DatagramSockets.
10. Write a Program to demonstrate Multicasting.

V SEMESTER

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MM5T1-APPLIED MATHEMATICS FOR TECHNOLOGY - III

(For students admitted from 2012-13)

UNIT I

(COLLECTION AND ANALYSIS OF DATA)

Classification and tabulation of data - Frequency tables - Graphical representation - Measures of central tendency : Averages, mean, median, mode, Geometric and harmonic means - Measures of dispersion : Range, quartile deviation, Mean deviation, Standard deviation - Relative distribution - Moments - Skewness - Kurtosis - Linear correlation - Coefficient of correlation - Grouped data : calculation of correlation coefficient - Rank correlation - Linear regression - Regression lines.

UNIT II

(PROBABILITY THEORY)

Random experiment – Mathematical, statistical and axiomatic definitions of probability – Conditional probability – Independent events - Theorem of total probability – Theorem of probability of causes: Bayes’s theorem – Bernoulli’s trials – De Moivre-Laplace approximation – Generalization of Bernoulli’s theorem multinomial distribution – Outline of applications of probability theory in engineering.

UNIT - III

(THEORETICAL DISTRIBUTIONS)

Binomial distribution: Properties and constants of Binomial distribution – Fitting a Binomial distribution - The multinomial distribution – Negative Binomial distribution – Poisson distribution: Properties and constants of Poisson distribution – Fitting a Poisson distribution – Hyper-geometric distribution – Normal distribution: Properties and constants of Normal distribution – Fitting a normal curve – Outline of applications of theoretical distributions in engineering

UNIT IV

(ANALYSIS OF TIME SERIES)

Measurement of trend: Freehand method, Semi-average method, Moving average method, Method of least squares – Measuring trends by logarithms – Measurement of seasonal variations: Method of simple averages, Ratio-to-trend method, Ration-to-moving average method, Link relative method – Measurement of cyclic variations: Residual method, Reference cycle analysis method, Direct method, Harmonic analysis method – Measurement of irregular variations – Outline of applications of analysis of time series in engineering.

UNIT V
(DESIGN OF EXPERIMENTS)

Parameters and statistics – Sampling distribution – Tests of hypothesis and tests of significance – Critical region and level of significance – Errors in testing of hypothesis – One tailed and two tailed tests – Procedure for testing of hypothesis – Design of experiments – Completely randomized design: Analysis of variance for one factor of classification – Randomized block design: Analysis of variance for two factors of classification – Latin square design: Analysis of variance for three factors of classification – Outline of applications of design of experiments in engineering.

Note: Questions are to be set on problem solving and not on the theoretical aspects.

TEXT BOOK

1. Gupta S.P, Statistical Methods, 28th Edition, Sultan Chand and Sons., New Delhi, 1997.

REFERENCES BOOK:

1. Montgomery Douglas C. and. Runger George C, Applied Statistics and Probability for Engineers, John Wiley & Sons, Inc,
2. Richard Isaac, The Pleasures of Probability, Springer Verlag, 1995.
3. Spiegel Murry R., Stephens Larry J. Statistics, (Schaum's Outline Series), McGraw Hill Company

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IT5T2-INFORMATION CODING TECHNIQUES

UNIT I INFORMATION ENTROPY FUNDAMENTALS

Uncertainty, Information and Entropy – Source coding Theorem – Huffman coding – Shannon Fano coding – Discrete Memory less channels – channel capacity – channel coding Theorem – Channel capacity Theorem.

UNIT II ERROR CONTROL CODING – BLOCK CODES

Linear Block codes – Syndrome Decoding – Minimum distance consideration – cyclic codes – Generator Polynomial – Parity check polynomial – Encoder for cyclic codes – calculation of syndrome

UNIT III ERROR CONTROL CODING – CONVOLUTIONAL CODES

Convolutional codes – code tree, trellis, state diagram - Encoding – Decoding: Sequential search and Viterbi algorithm – Principle of Turbo coding

UNIT IV COMPRESSION TECHNIQUES

Principles – Text compression – Static Huffman Coding – Dynamic Huffman coding – Arithmetic coding – Image Compression – Graphics Interchange format – Tagged Image File Format – Digitized documents – Introduction to JPEG standards.

UNIT V AUDIO AND VIDEO CODING

Linear Predictive coding – code excited LPC – Perceptual coding, MPEG audio coders – Dolby audio coders – Video compression – Principles – Introduction to H.261 & MPEG Video standards.

TEXTBOOKS

1. Simon Haykin, “Communication Systems”, John Wiley and Sons, 4th Edition, 2001.
2. Fred Halsall, “Multimedia Communications, Applications Networks Protocols and Standards”, Pearson Education, Asia 2002; Chapters: 3,4,5.

REFERENCES

1. Mark Nelson, “Data Compression Book”, BPB Publication 1992.
2. Watkinson J, “Compression in Video and Audio”, Focal Press, London, 1995.

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IT5T3-SYSTEM SOFTWARE

UNIT I INTRODUCTION

Basic concepts-Machine structure-Instruction formats-Addressing modes-Typical Architectures - SIC/XE machine Architecture – IBM 360/370.

UNIT II ASSEMBLER

Basic Functions – Machine Dependent Assembler features – Machine Independent Assembler features – Assembler Design Options – One pass Assemblers – Multi pass Assemblers – Implementation Examples

UNIT III LOADERS AND LINKERS

Functions – Features – Relocation - Program Linking - Linking loader implementation- Loader option - Linkage editors – Different schemes - Bootstrap loaders.

UNIT IV MACROPROCESSORS

Functions - Macro parameters - Using labels - Conditional macro expansion - Recursive macro expansion - General purpose macro processors - Examples.

UNIT V COMPILERS AND UTILITIES

Introduction to Compilers - Different phases of a compiler - Simple one pass compiler- Code optimization techniques - System Software tools - Implementation of editors – Debuggers.

TEXT BOOKS

1. L.Beck, " System Software, An Introduction to System Programming ", Addison Wesley, 1999.
2. D.M.Dhamdhare, " Systems Programming and Operating Systems ",Second Revised Edition,Tata,McGraw Hill Company, 1999.

REFERENCE BOOK

- 1.John J. Donovan – “Systems Programming” - McGraw Hill. - 1972.
- 2.A.V.Aho, Ravi Sethi and J.D.Ullman, " Compilers Principles, Techniques and Tools ", Addison Wesley, 1988.

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IT5T4-RELATIONAL DATABASE MANAGEMENT SYSTEM

UNIT I INTRODUCTION

Introduction to database management system -Data Abstraction - Data Models – Data Dictionary – Architecture - Entity relationship model - Entities and relations -E-R diagram. Design of E-R and database schema.

UNIT II FILES AND STORAGE

Primary file organizations and storage structures - indexing and hashing - Indexes for files - Single level ordered indexes - Multilevel indexes - Dynamic multilevel indexes using B- trees and B+ trees.

UNIT III RELATIONAL MODEL AND DESIGN

Relational model - Key and Referential integrity constraints - Relational algebra - Selection Projection - Join and other operators - Query expression in relational algebra - Mapping ER-model description to relational-model description. SQL language - Data definition - Query formulation - Update operations - View specification in SQL - Embedded SQL. Relational Database Design- Normal forms- Normalisation using functional dependencies - multivalued dependencies and Join dependencies - Domain Key Normal Form

UNIT IV IMPLEMENTATION TECHNIQUES

Query processing-Transaction Processing-Concurrency control-Recovery.

UNIT V CURRENT TRENDS

Introduction to Distributed Databases-Object Oriented Databases-Object Relational Databases-Data mining and Data Warehousing.

TEXT BOOK:

1. Silberschatz, H. Korth and S. Sudarshan, "Database System Concepts", 4th Edition, McGraw-Hill International, 2002.
2. R. Elmasri and Shamakant B. Navathe, "Fundamentals of Database Systems", 3rd Edition, Addison Wesley, 2000

*Unit I - Chapter1,2,3 Refer R. Elmasri and Shamakant B. Navathe
Unit II-Chapter 4,5 Refer R. Elmasri and Shamakant B. Navathe

Unit III-Chapter 6,7,8,12&13 Refer R. Elmasri and Shamakant B. Navathe

Unit IV-Chapter 16,17,18,19 Refer R. Elmasri and Shamakant B. Navathe

Unit V-Chapter 22,23 Refer R. Elmasri and Shamakant B. Navathe

Unit V-Chapter 9,22 Refer Silberschatz, H. Korth and S. Sudarshan

REFERENCE BOOKS:

1. Raghu Ramakrishnan, " Database Management Systems ", WCB, McGraw Hill, 2000
2. C.J. Date, "An introduction to Database Systems", Seventh Edition, Pearson Education, 2002.
3. Thomas Connolly , Carolyn Begg , "Database Systems, A Practical Approach to Design, Implementation and Management", 3rd Edition, Pearson Education , 2003.
Rob Coronel , "Database Systems , Design , Implementation & Management ;, Thomson Asia,

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IT5T5- JAVA PROGRAMMING

UNIT I

Introduction to Java: Comparing C++ and Java - Features of Java, Data Types, operators, control statements, Arrays, Classes, Objects, Interfaces, Abstract Classes, Final, static and Packages, Exception handling

UNIT II

Exploring java.lang: String, StringBuffer and Wrapper Classes Exploring java.io: BufferedInputStream & BufferedOutputStream, File I/O, Object I/O, Piped I/O, Sequence I/P, Buffered I/O, Checked I/O, Inflater/Deflator and LineNumber I/P Streams – File and StreamTokenizer – Reader/Writer Classes

UNIT III

Multithreading: Runnable, Thread and ThreadGroup Exploring java.util: Interfaces: Collection, Enumeration, Iteration, List and Set – Classes: BitSet, Date, GregorianCalendar, Hashtable, LinkedList, Stack and Vector

UNIT IV

Introduction to MVC Architecture – Introduction to java.awt – Exploring javax.swing: JComponent, Containers, Panes, LayoutManagers, Basic components, Advanced components – Handling events: Listener interfaces and Adapter classes for various components

Theoretical introduction to Java Network Programming in java.

UNIT V

Introduction to n-tier architecture - JDBC principles – Exploring java.sql: Connection, DriverManager, Statement, ResultSet, CallableStatement, PreparedStatement, ResultSetMetaData & DatabaseMetaData

TEXT BOOKS:

1. **Units I to IV** Patrick Naughton and Herbert schildt , “ The Complete Reference JAVA”, Tata McGraw Hill Publishing Limited , New Delhi , 1997.
2. **Unit -V** Java Database Programming Bible by John O'Donahue John Wiley & Sons , 2002

REFERENCE BOOKS:

1. Campione, Walrath and Huml, “The Java Tutorial”, Addison Wesley, 1999.
2. Eric Armstrong, Jennifer Ball, Stephanie Bodoff, Debbie Bode Carson, Ian Evans, Dale
3. Green, Kim Haase and Eric Jendrock, “J2EE 1.4 Tutorial”, Addison-Wesley, 2004
4. Jame Jaworski, “Java Unleashed”, SAMS Techmedia Publications, 1999.

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IT6T6-COMPUTER GRAPHICS AND MULTIMEDIA

UNIT I

Introduction - Line - Circle and Ellipse drawing Algorithms - Attributes of output primitives.

UNIT II

2D Concepts- Two dimensional transformations - Two-Dimensional Viewing-Two dimensional clipping

UNIT III

3D Concepts- Three-dimensional object representation - Polygonal representations, Spline representation, Bezier Curves and surfaces - 3D TRANSFORMATIONS - 3D Projections - Hidden surface and hidden line elimination -

UNIT IV

Visualization and rendering - color models - Texture mapping - animation - morphing.

UNIT V

OVERVIEW OF MULTIMEDIA :Overview of hardware and software components - 2D and 3D graphics in multimedia - audio - video - Standards for multimedia authoring and designing - Multimedia project development.

TEXT BOOK :

DONALD HEARN and PAULINE BAKER, Computer Graphics, C version - Printice Hall New Delhi,1997.

John Villamil, Casanova and Leony Fernanadez, Eliar, Multimedia Graphics, PHI, 1998.

REFERENCES BOOKS:

1. Foley J.D, Van Dam A, Feiner S.K, Hughes J.F, computer Principles and practice, Addison,Wesley publication company, 1993.

2. Siamon J. Gibbs and Dionysios C. Tsichritzis, Multimedia programming, Addison, Wesley,

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SA5T5-SANSKRIT & INDIAN CULTURE

UNIT I

I.rGauvaMSapircaya: II.p`QaanaSlaaoka: -

- 1.AnyaoVura%maanaucarsya Baavama\ 2.saa duYp`QaYaa- 3.tdlyamaaEindtma\ 4.ttao maRgaond`syā 5.vaamaotrstsya 6.tmaaya-gaR(ma\ 7.AlaM mauhlpala 8.kOlaasagaaOrma\ 9.AmauM pur: pSyaisa

UNIT II

I.p`QaanaSlaaoka: -

- 1.kNDUyamaanaona 2.tda p`BaR%yaova 3.tsyaalamaoYaa 4.sa%vaMinavat-sva 5.[it p`galBama\ 6.p`%yaba`valccaOnama\ 7.maanya: sa mao 8.sa %vaM madIyaona 9.AqaanQakarMa\

UNIT III

I.p`QaanaSlaaoka: -

- 1.ekatp~ma\ 2.BaUtanaukmpa 3.AqaOkQaonaa: 4.td\ rxa 5.etavadu@%vaa 6.inaSamya dovaanaucarsya 7.xatai%kla 8.kqaM nau Sa@ya: 9.saoyaM svadohap-Na

UNIT IV

I.p`QaanaSlaaoka: -

- 1.BavaanapIdma\ 2.ikmaPyaihMsya: 3.sambanQamaaBaaYaNapUva-ma\ 4.tqaoit gaamau>vato 5.tismana\ xaNao 6.ji<aYz va%saoit 7.tM ivaismatM QaonauEvaaca 8.Ba@%yaa gauraO 9.tt: samaanalya

UNIT V

I.p`QaanaSlaaoka: -

- 1.santanakamaaya 2.va%sasya 3.[%qaM ixatI Saona 4.sanaindnaIstnyama\ 5.p`atya-qaao>va`tparNaanto 6.p`dixaNalkR%ya 7.tmaaihtaO%sau@ya 8.purndrEal: 9.Aqa nayanamasau%qama\
II.kailadasasya pircaya:

INDIAN CULTURE - IV
(Syllabus for Fifth Semester)

Part I

Unit I – Temple worship – Evolution of religious establishments; worship in temples; ritual requirements; daily rituals; symbolism of rituals.

Unit II – Temple Festivals – Daily, monthly, yearly, occasionally, etc.; different *vahanas*; *mudras* in worship; *yajna* and *yajna vedicas* for different sacrifices; other worships and programs related to religious and human welfare.

Part II

Unit III – Significance of Gandharva veda; Evolution & development of music; Karnataka & Hindustani music; main styles; different famous personalities & their contribution. different early musical instruments.

Unit IV – Evolution & development of dance; different schools; important famous personalities.

Unit V – Different schools and contribution of music, dance and dramas to preserve cultural heritage.

Reference Books

1. Rao, S.R.K. 1992. *Alaya and Aradhana*. Agama-Kosha (Agama Encyclopaedia). Kalpatharu Research Academy Publications. Vol VI. Bangalore.
2. Sharma, S. 1997. *Comparative study of Evolution of Music in India and the West*. Pratibha Prakashan. Delhi.
3. Sanyal, R. 1987. *Philosophy of Music*. Somaya Publications Pvt. Ltd. Bombay.

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IT5P7-RDBMS LAB

1. Data Definition Language (DDL)
2. Create Table, Alter and Drop Table
3. Date, Aggregate Function, Math and Set Operators
4. Joins, Views and Sequence
5. Write a PL/Sql program for inserting record into Table.
6. Write a PLSql program for retrieve the row from table.
7. Write a PL/Sql block to generate Even numbers
8. Write a PL/Sql program to raise a Application Error
9. Write a PL/Sql program to display all the records in Employee table using Cursor.
10. Write a PL/Sql program to copy the content of one table to another table using
Cursor.
11. Write a PL/Sql program not Updating Saturday and Sunday in a Table using
Trigger.
12. Write a PL/Sql program not Inserting more than twenty Rows in a Table using
Trigger.
13. Write a PL/Sql program to find the factorial of No using Function.
14. Write a PL/Sql program to return a value using Procedure.
15. Design an application using Database

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IT5P8-JAVA PROGRAMMING LAB

1. Write simple structured programs in java to practice the following
 - a) conditional statements
 - b) iterative statements
2. Write programs in java to practice the following concepts
 - a) Class and objects
 - b) Constructors
 - c) inheritance
 - d) polymorphism
 - e) interface
3. Write program in java to demonstrate the package concepts.
4. Write program in java to demonstrate the Multithreading and its related concepts.
5. Write program in java to illustrate Exception handling.
6. Write a file copy utility using command line arguments and File I/O Streams.
7. Write an utility program to compress and decompress a file
8. Write a program to illustrate the HashTables and Vectors
9. Write a java program to demonstrate the use of following Layouts
 - a) Flow Layout
 - b) Border Layout
 - c) Grid Layout
 - d) Grid Bag Layout
 - e) Card Layout
10. Write a program in java to create a simple paintbrush applet.
11. Write a program in java to demonstrate the following swing controls
 1. JScrollBar
 2. JOptionButton
 3. JList
 4. JCheckBox
12. Write a program to create a simple calculator interface with basic arithmetic operations.
13. Write program in java to store and retrieve data from databases.
[use Swing concept to demonstrate]
14. Design an interface to list the various functions available in the connected database using
DatabaseMetaData

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IT5P9-COMPUTER GRAPHICS LAB
(For Students admitted from 2014 onwards)

LIST OF EXPERIMENTS

Implement The Exercises From 1 To 4 Using C

1. Implementation of Algorithms for drawing 2D Primitives – Line (DDA, Bresenham) – and Circle (Midpoint)
2. Implementation of 2D Geometric transformations: Translation, Rotation, Scaling, Reflection, Shear.
3. Implementation of Composite 2D Transformations.
4. Implementation of Liang - Barsky Line Clipping.

Implement the exercises from 5 to 7 using OpenGL

5. Implementation of 3D Transformations - Translation, Rotation, Scaling
6. Implementation of 3D Projections – Parallel, Perspective
7. Creating 3D Scenes
8. Compression Algorithms - To implement text and image compression algorithms.
9. Image Editing and Manipulation - Basic Operations on image using any image editing software, Creating gif animated images, Image optimization
10. 2D Animation – To create Interactive animation using any authoring tool

VI SEMESTER

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IT6T1-DATA WAREHOUSING AND DATA MINING

UNIT I BASICS OF DATA WAREHOUSING

Introduction – Data warehouse – Multidimensional data model – Data warehouse architecture –
Implementation – Further development – Data warehousing to data mining.

UNIT II DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, CONCEPT DESCRIPTION

Why preprocessing – Cleaning – Integration – Transformation – Reduction – Discretization – Concept hierarchy generation – Data mining primitives – Query language – Graphical user interfaces –
Architectures – Concept description – Data generalization – Characterizations – Class comparisons –
Descriptive statistical measures.

UNIT III ASSOCIATION RULES

Association rule mining – Single-dimensional boolean association rules from transactional databases – Multi level association rules from transaction databases

UNIT IV CLASSIFICATION AND CLUSTERING

Classification and prediction – Issues – Decision tree induction – Bayesian classification – Association rule based – Other classification methods – Prediction – Classifier accuracy – Cluster analysis – Types of data – Categorization of methods – Partitioning methods – Outlier analysis.

UNIT V RECENT TRENDS

Multidimensional analysis and descriptive mining of complex data objects – Spatial databases –
Multimedia databases – Time series and sequence data – Text databases – World Wide Web –
Applications and trends in data mining.

TEXT BOOKS

1. Han, J. and Kamber, M., "Data Mining: Concepts and Techniques", Harcourt India / Morgan Kauffman, 2001.
2. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson Education 2004.

REFERENCES BOOKS

1. Sam Anahory and Dennis Murry, "Data Warehousing in the real world", Pearson Education, 2003.
2. David Hand, Heikki Manila and Padhraic Symth, "Principles of Data Mining", PHI 2004.
3. W.H.Inmon, "Building the Data Warehouse", 3rd Edition, Wiley, 2003.
4. Alex Bezon and Stephen J.Smith, "Data Warehousing, Data Mining and OLAP", McGraw-Hill Edition, 2001.
5. Paulraj Ponniah, "Data Warehousing Fundamentals", Wiley-Interscience Publication, 2003.

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IT6T2-SANSKRIT GRAMMAR & LOGIC FOR COMPUTING

OBJECTIVE:

The objective of the course is to introduce to the student to the basic concepts of Natural Language processing with specific details for the English Language. The unique features of Sanskrit Language, how it differs from English language and the special approach required to apply conventional NLP ideas to Sanskrit is introduced. The course will be a mixture of theoretical concepts, as well as their applications.

A hands-on perspective will be provided with the Natural Language Toolkit.

UNIT I

Introduction to NLP, Applications of NLP, Words, Regular Expressions and Automata, Morphology and Finite-State Transducers
(Chapters 1,2,3 of Book 1)

UNIT II

N-Grams - Counting words in corpora, Simple N Grams, Smoothing - Add-one smoothing, N-Grams for Spelling (NOT FOR Pronunciation), Word Classes and Part-of-Speech Tagging- English Word Classes, Tagsets for English, Part-of-Speech Tagging, Rule based Part of Speech Tagging, Stochastic Part-of-Speech-Tagging, Transformation-based Tagging (Chapter 6 & 8 of Book 1)

UNIT III

Context Free Grammars for English , Constituency, Context-Free Rules and Trees, Sentence-Level Constructions, The Noun Phrase, Coordination, Agreement, The Verb Phrase Parsing with context-free grammars, Parsing as search (Top-down, Bottom-up), Basic Top-down parser (Chapter 9 & 10 of Book 1)

UNIT IV

Sanskrit – Language Structure, Language Analyser, Local Word Grouper, Morphological Generation & Analysis using Paradigms, Local Word Grouping, Paninian Grammar
(Chapter 1 to 5 of Book 2)

UNIT V

Introduction to NLTK, Language Processing and Python, Accessing Text Corpora and Lexical Resources, Processing Raw Text, Categorizing and Tagging words, Extract Information from Text
(Chapters 1,2,3,5,7 from Book 3)

The course will offered with complete internal evaluation.

Text Books

1. Speech and Language Processing by Daniel Jurafsky and James H Martin - Pearson Publication (Eight Impression, 2012)
2. Natural Language Processing – A Paninian Perspective – AksharBharti, Rajeev Sangal and VineetChaitanya, Prentice Hall of India, 2006
3. Natural Language Processing with Python--- Analyzing Text with the Natural Language Toolkit by Steven Bird, Ewan Klein, and Edward Loper, O'Reilly Media, 2009

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IT6T3-DOT NET TECHNOLOGIES

UNIT I

Programming Models – Introduction to .NET Framework – Evolution of .NET technologies - CTS, CLS, CLR, MSIL, JIT, Assemblies, .NET Security Model – Introduction to Base Class Library
Introduction to VB.NET - Working with Visual Studio IDE – IDE Components – Environment Options
VB.NET Fundamentals – Variables – Data Types – Arrays – Control Flow Statements – Modular Coding – Subroutines – Functions – Argument-Passing

UNIT II

Classes – Instance Fields – Constructors – Properties – Methods – Object – Inheritance – Static Classes – Interfaces .Exception Handling- Need – Models – Statements – Creating Exception Classes
Collections – Arrays – ArrayList Collection – HashTable Collection – SortedList Class – IEnumerator and IComparer Interfaces .Handling Strings, Characters and Dates – File Class - Directory Class – Accessing Files – FileStream- StreamWriter- StreamReader- BinaryWriter- Binary Reader

UNIT III

Windows Forms – Form Properties – Form Events - Building Dynamic Forms at Runtime
Introduction to Components and controls – Adding Components and controls to forms – Layout and Grouping – Responding to User Inputs – Mouse and Keyboard Events – Designing Menus – Building MDI Applications- Reading Input through Controls – Presentation and Information Controls – Common Dialog Controls – RichTextBox Control - Creating Windows Installer

UNIT IV

ADO.NET Architecture – DataSet – DataGrid Control- Data Binding – DataAdapter – Command Objects – DataReader - Performing Updates.Introduction to Web Programming – Building Web Applications – Web Controls - Interacting with Web Applications – Maintaining State – ASP.NET Objects – Page Object – Response Object – Request Object – Server Object – Deploying ASP.NET Applications

UNIT V

Data-Bound Web Controls – Simple Data binding – Binding to DataSets – Customizing dataGrid Control
Building and Consuming Web Services – ASP.NET Web Service Projects .Theoretical
Introduction to C# and its Comparison with VB

TEXT BOOKS:

1. VB.NET Complete Reference – Jeffrey R. Shapiro – Tata McGrawHill – 2006
2. Mastering Visual Basic. NET – Evangelos Petroutsos – BPB Publications - 2005

REFERENCE BOOKS:

1. ADO.NET Complete Reference – Michael Otey , Denielle Otey, Tata McGrawHill, 2005
2. Mastering Visual Basic. NET Database Programming– Evangelos Petroutsos , Ali Bilgin– BPB Publications – 2002
3. Pro C# with .NET 3.0 – Andrew Troelsen – Special Edition 2007

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IT6T4-OBJECT ORIENTED SYSTEM ANALYSIS & DESIGN

UNIT - I

The Object Model: The evolution of the object model - Elements of the object model - applying object model. Class and Objects: The nature of an object Relationships among object.

UNIT - II

Class and Objects: The nature of the class - Relationship among classes- The interplay of classes and objects-on building quality classes and objects.

Classification: The importance of proper classification-identifying proper classes and objects-key abstraction mechanism.

UNIT - III

Introduction - UML - Metamodel - Analysis and design - more information. Outline Development Process: Overview of the process-Inception - Elaboration-construction-refactoring-patterns-transmission-iterative development -use cases.

UNIT - IV

Class diagram: Essentials. Class Diagram: Advanced.

UNIT - V

Interaction diagram-package diagram-state diagram-activity diagram-deployment diagram - UML and programming.

TEXT BOOKS:

1. Grady Booch, "Object Oriented Analysis and Design", Addison Wesley
2. Martin Fowler, Kendall Scott, "UML Distilled", Addison Wesley

REFERENCE BOOKS:

1. Erich Gama, "Design Pattern", Addison Wesley.
2. James Rumbough Etal, "Object Oriented Modelling and Design "
3. Ivar Jacobson, "Object Oriented Software Engineering, A Use Case Driven Approach", Addison Wesley, 1994.
4. Eriksson, "UML Tool Kit", Addison Wesley.

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IT6T5-CRYPTOGRAPHY AND NETWORK SECURITY

UNIT I INTRODUCTION

OSI Security Architecture - Classical Encryption techniques - Cipher Principles - Data Encryption Standard - Block Cipher Design Principles and Modes of Operation - Evaluation criteria for AES - AES Cipher - Triple DES - Placement of Encryption Function - Traffic Confidentiality

UNIT II PUBLIC KEY CRYPTOGRAPHY

Key Management - Diffie-Hellman key Exchange - Elliptic Curve Architecture and Cryptography - Introduction to Number Theory - Confidentiality using Symmetric Encryption - Public Key Cryptography and RSA.

UNIT III AUTHENTICATION AND HASH FUNCTION

Authentication requirements - Authentication functions - Message Authentication Codes - Hash Functions - Security of Hash Functions and MACs - MD5 message Digest algorithm - Secure Hash Algorithm - RIPEMD - HMAC Digital Signatures - Authentication Protocols - Digital Signature Standard

UNIT IV NETWORK SECURITY

Authentication Applications: Kerberos - X.509 Authentication Service - Electronic Mail Security - PGP - S/MIME - IP Security - Web Security.

UNIT V SYSTEM LEVEL SECURITY

Intrusion detection - password management - Viruses and related Threats - Virus Counter measures - Firewall Design Principles - Trusted Systems.

TEXT BOOK

1. William Stallings, "Cryptography And Network Security - Principles and Practices", Prentice Hall of India, Third Edition, 2003.

REFERENCES

1. Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, 2003.
2. Bruce Schneier, "Applied Cryptography", John Wiley & Sons Inc, 2001.
3. Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", Third Edition, Pearson Education, 2003

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IT6T6-EMBEDDED SYSTEMS

UNIT I INTRODUCTION TO EMBEDDED SYSTEMS

Definition and Classification – Overview of Processors and hardware units in an embedded system – Software embedded into the system – Exemplary Embedded Systems – Embedded Systems on a Chip (SoC) and the use of VLSI designed circuits.

UNIT II DEVICES AND BUSES FOR DEVICES NETWORK

I/O Devices - Types and Examples of device I/O devices – Synchronous - Iso-synchronous and Asynchronous Communications from Serial Devices - Examples of Internal Serial-Communication Devices - UART and HDLC - Parallel Port Devices - Sophisticated interfacing features in devices ports- Timer and Counting Devices - 'I²C', 'USB', 'CAN' and advanced I/O Serial high speed buses- ISA, PCI, PCI-X, cPCI and advanced buses.

UNIT III PROGRAMMING CONCEPTS

Programming in assembly language (ALP) vs. High Level Language - C Program Elements: Header and source files, preprocessor directives, Macros and functions, Data types, data structures, modifiers, statements, loops and pointers-Embedded programming in C++ - C program compiler and cross compiler – Optimization of memory needs.

INTER PROCESS COMMUNICATION AND SYNCHRONISATION : Multiple processes in an application – Problem of sharing data by multiple tasks and routines - Inter process communication.

UNIT IV [REAL TIME OPERATING SYSTEMS (RTOS)

Operating System Services- I/O Subsystems – Real time and Embedded system operating systems - Need of an ideal RTOS - Interrupt Routines in RTOS environment - RTOS Task scheduling models: Co-operative Round Robin Scheduling, Cyclic Scheduling with Time Slicing – Preemptive Scheduling – Critical Section Service by a Preemptive Scheduler – Fixed (Static) Real time scheduling of tasks - Performance metrics in scheduling models

UNIT V

RTOS PROGRAMMING TOOLS

Micro C/OS-II RTOS : System Level Functions – Task Service Functions – Time Delay Functions – Memory Allocation Related Functions – Semaphore Related Functions – Mailbox Related Functions – Queue Related Functions Case Study of coding for an automatic chocolate vending machine using MUCOS RTOS –Case Definition, Multiple Tasks and their functions – Creating a list of tasks, Functions and IPCs – Exemplary Coding (steps only)

TEXTBOOKS :

1. Rajkamal, Embedded Systems Architecture, Programming and Design, TATA McGraw-Hill, First reprint Oct. 2003

REFERENCES :

1. Steve Heath, Embedded Systems Design, Second Edition-2003, Newnes,
2. .David E.Simon, An Embedded Software Primer, Pearson Education Asia, First Indian Reprint 2000.
3. Wayne Wolf, Computers as Components; Principles of Embedded Computing System Design – Harcourt India, Morgan Kaufman Publishers, First Indian Reprint 2001
4. .Frank Vahid and Tony Givargis, Embedded Systems Design – A unified Hardware /Software Introduction, John Wiley, 2002.

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SA6T6-SANSKRIT & INDIAN CULTURE

UNIT I

A. ?gvaod: B.yajauvao-d: C.saamavaod: & Aqava-vaod:

UNIT II

A.YaD=\gaaina B.]pinaYad: C.dSa-naaina

UNIT III

A.puraNaaina B.[ithasa: C.stao~aiNa

UNIT IV

A.kailadasa: B.Baasa: C.kaOiTlya:

UNIT V

A.Sa=\kracaaya-: B.ramaanaujaacaaya-: C.maQvaacaaya-:

INDIAN CULTURE - V

Part I

Unit I – Art forms as cultural expression; technology & aesthetics; their relation to the social structure.

Unit II – Evolution of religious structures & architecture in Indian; different early schools and art centers; important other secular structures.

Unit III – Development of regional styles in Indian art & architecture; important features of Nagara, Dravida & Vesara styles in temple architecture. Sculpture, Iconography and Paintings – different centers and contribution on Indian culture.

Part II

Unit IV – Significance of Stapatya veda; Silpa and Vastu Sastra – significance of vastu in architecture. Vishvakarma, Mayamata, Manasara, Samarangana, Stapatya, etc., personalities and their contribution in Indian Architecture.

Unit V – the decorative art & craft; precious stones & metal; textiles & carpets; calligraphy & other important works;

Reference Books

1. Banerji, J.N. 1941. *The Development of Hindu Iconography*. University of Calcutta. Calcutta.
2. Gopinath Rao, T.R. 1914. *Elements of Hindu Iconography*. Vol I & II.
3. Meister, M.W. (ed) 1983. *Encyclopaedia of Indian Temple Architecture*. American Institute of Indian Studies. University of Pennsylvania Press. Philadelphia.

Sukla, D.N. 1993. *Vastu-Sastra. Hindu Science of Architecture*. Munshiram Manoharlal Publishers Pvt. Ltd. New Delhi.

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IT6P7-CASE TOOLS LAB

Prepare the following documents for two or three of the experiments listed below and develop the software engineering methodology.

1. Program Analysis and Project Planning.
Thorough study of the problem – Identify project scope, Objectives, Infrastructure.
2. Software requirement Analysis
Describe the individual Phases / Modules of the project, Identify deliverables.
3. Data Modeling
Use work products – Data dictionary, Use diagrams and activity diagrams, build and test class diagrams, Sequence diagrams and add interface to class diagrams.
4. Software Development and Debugging
5. Software Testing
Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor.

Suggested List of Applications:

1. Student Marks Analyzing System
2. Quiz System
3. Online Ticket Reservation System
4. Payroll System
5. Course Registration System
6. Expert Systems
7. ATM Systems
8. Stock Maintenance
9. Real-Time Scheduler
10. Remote Procedure Call Implementation

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IT6P8-DOT NET LAB

1. Familiarization with IDE
2. Programming Console applications using VB.NET covering all aspects of VB.NET Fundamentals
3. Object oriented programming using VB.NET covering objects, Inheritance, Polymorphism, Constructors, Static Classes, Interfaces
4. Programmes to illustrate Exception Handling concepts
5. Programmes to illustrate use of Collections
6. Programmes to perform File I/O Operations
7. Programming Windows applications using VB.NET covering all major controls and components, Menus, MDI, Event Handling
8. Creating windows installer
9. Programmes to interact with Database from a Windows Desktop Application
10. Programming to Build web applications using web controls, maintaining state
11. Deploying ASP.NET web application
12. Programmes to interact with Database from a Web Application using appropriate controls
13. Programmes to create and consume a Web Service

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IT6P9-DATA WAREHOUSING AND DATA MINING – LAB
(For students admitted from 2014 onwards)

LIST OF EXERCISES

1. Design and implement a data warehouse for analysis
2. Star, snowflake & Galaxy schema to be implemented
3. Run OLAP queries on an implemented datawarehouse
4. Data Pre-processing using Weka
5. Naïve bayes and decision tree classification
6. Attribute selection & regression
7. Svm classification and evaluation
8. K-means clustering, pca and evaluation
9. Hierarchical Clustering
10. Mining Frequent Itemsets
11. Introduction to writing custom programs to perform data mining

REFERENCES:

1. Ian H. Witten & Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, The Morgan Kaufmann Series in Data Management Systems , Third Edition
2. WEKA Documentation-<http://www.cs.waikato.ac.nz/ml/weka/documentation.html>

VII SEMESTER

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IT7T1-SOFTWARE ENGINEERING

UNIT I

Introduction : Evolving role of software- Software characteristics , components and its applications-General view of software engineering –software process models.

UNIT II

System Analysis : Requirements analysis-Analysis principles-Prototyping-Software Requirement specification – data modeling, functional modeling and behavioral Modeling, cohesion, coupling, design documentation.

UNIT III

Design concepts : Design and software quality. Design concepts : Abstraction, Refinement, modularity and software architecture control hierarchy, structural partitioning and information hiding. Effective modular design: functional independence cohesion And coupling – design documentation.

UNIT IV

Design Methods : Data design – Architectural design process : transform mapping And transaction mapping – interface design – procedural design. Design for Real – Time Systems : System considerations-real time systems-analysis and simulation of real time Systems.

UNIT V

Software Testing Methods : Software testing fundamentals . White Box Testing:Basis path testing and control structure testing-black box testing-testing for specialized Environments. Software Testing Strategies : A strategic approach to software testing-Unit testing-integration testing-validation testing-system testing.

TEXT BOOK

1. R.S .Pressman , “Software Engineering”, Tata McGraw Hill.

REFERENCE BOOKS

1. Watts Humphrey, Managing the Software Process, Addison – Wesley Publishing Company, Reading MA,1989.
2. Watts Humphrey, Characterizing the Software Process : A Maturity Framework – IEEE Software, March 1988.Watts Humphrey,W.L.Sweet , A Method for accessing The Software Engineering
3. Capabilities of Contractors, Technical Report, CMU/SEI-87-TR-23,ESD/TR-87-186.
4. Software Engineering – I am sommerville 6th Edition

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IT7T2-MOBILE COMPUTING

UNIT I

WIRELESS COMMUNICATION FUNDAMENTALS

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

UNIT II

TELECOMMUNICATION NETWORKS

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.

UNIT III

WIRELESS LAN

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

UNIT IV

MOBILE NETWORK LAYER

Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.

UNIT V

TRANSPORT AND APPLICATION LAYERS

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

TEXT BOOKS

1. Jochen Schiller, “Mobile Communications”, PHI/Pearson Education, Second Edition, 2003. (Unit I Chap 1,2 &3- Unit II chap 4,5 &6-Unit III Chap 7.Unit IV Chap 8- Unit V Chap 9&10.)
2. William Stallings, “Wireless Communications and Networks”, PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9)

REFERENCES

1. Kaveh Pahlavan, Prasanth Krishnamoorthy, “Principles of Wireless Networks”, PHI/Pearson Education, 2003.
2. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, “Principles of Mobile Computing”, Springer, New York, 2003.
3. Hazysztof Wesolowshi, “Mobile Communication Systems”, John Wiley and Sons Ltd, 2002.

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IT7T3- COMPONENT BASED TECHNOLOGY

UNIT I INTRODUCTION

Software Components – objects – fundamental properties of Component technology – modules – interfaces – callbacks – directory services – component architecture – components and middleware

UNIT II JAVA BASED COMPONENT TECHNOLOGIES

Threads – Java Beans – Events and connections – properties – introspection – JAR files – reflection – object serialization – Enterprise Java Beans – Distributed Object models – RMI and RMI-IIOP

UNIT III CORBA COMPONENT TECHNOLOGIES

Java and CORBA – Interface Definition language – Object Request Broker – system object model – portable object adapter – CORBA services – CORBA component model – containers – application server – model driven architecture

UNIT IV . NET BASED COMPONENT TECHNOLOGIES

COM – Distributed COM – object reuse – interfaces and versioning – dispatch interfaces – connectable objects – OLE containers and servers – Active X controls – .NET components – assemblies – appdomains – contexts – reflection – remoting

UNIT V COMPONENT FRAMEWORKS AND DEVELOPMENT

Connectors – contexts – EJB containers – CLR contexts and channels – Black Box component framework – directory objects – cross-development environment – component-oriented programming – Component design and implementation tools – testing tools - assembly tools

TEXT BOOK

1. Clemens Szyperski, "Component Software: Beyond Object-Oriented Programming", Pearson Education publishers, 2003

REFERENCES

1. Ed Roman, "Mastering Enterprise Java Beans", John Wiley & Sons Inc., 1999.
2. Mowbray, "Inside CORBA", Pearson Education, 2003.
3. Freeze, "Visual Basic Development Guide for COM & COM+", BPB Publication, 2001.
4. Hortsamann, Cornell, "CORE JAVA Vol-II" Sun Press, 2002.

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IT7T4-DISTRIBUTED COMPUTING

UNIT I – FUNDAMENTALS

Introduction to distributed computing system, Evolution, Different models, Gaining popularity, Definition, Issues in design, DCE, Message Passing – Introduction, Desirable feature of a good message passing system, Issues in IPC, Synchronization, Buffering, Multi datagram, Process addressing, Failure handling, Group communication.

UNIT – II RPC

Introduction, RPC model, transparency of RPC, Implementing RPC mechanism, Stub generation, RPC messages, Marshalling arguments and results, Server management, parameter-passing semantics, Call semantics, communication protocols for RPCs, Complicated RPC, Client-server binding, exception handling, security, Special types of RPC, RPC in heterogeneous environments, Lightweight RPC, Optimization for better performance, case studies – Sun RPC, DCE, RPC.

UNIT – III DISTRIBUTED SHARED MEMORY AND SYNCHRONIZATION

Introduction, General architecture of DSM systems, Design and implementation issues of DSM, Granularity, Structure of shared memory space, consistency model, Replacement strategy, Threshing, Different approaches to DSM, Advantages of DSM, Clock synchronization, Event ordering, Mutual exclusion, Deadlock, Election algorithm.

UNIT – IV DFS AND SECURITY

Desirable features of good DFS, Features of a good global scheduling algorithm, Task assignmnet approach, Load-balancing approach, Load sharing approach, Process migration, Threads

UNIT – V DFS AND SECURITY

Desirable features of good DFS, File models, File models, File accessing models, File sharing semantics, File caching schemes, File replication, Fault tolerance, Atomic transaction, Design principles, Case Study : DCE DFS, Potential attacks to computer System, Cryptography, Authentication, Access control, Digital signatures, Design principles, DCE Security Service.

TEXT BOOKS

1. PRADEEP K.SINGHA, Distributed Operating System – PHI.
2. ANDREW S.TENENBAUM Modern Operating System – 2nd Edition, PHI, 1991

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IT7P7-WEB TECHNOLOGY LAB

INTRODUCTION TO WEB TECHNOLOGY

Introduction to WWW, HTTP

- Web Page Types, Tiers, Comparison of technologies (Microsoft vs Java)
- Static Web page creation (HTML Tags)
- Introduction to IDE for Web Development(Suggested: Dreamweaver)

WEB PAGES – FORMS AND DYNAMIC WEB PAGES

HTML Frames & Forms Introduction to Web Servers – IIS(or Apache) Web server

Installation and Configuration Server side scripting with ASP (or JSP) Client side

scripting with VBScript(or Javascript) ADVANCED DYNAMIC WEB PAGES Creating

Dynamic web pages with ASP.NET (or J2EE) with relevant controls and appropriate IDE

ADVANCED WEB TECHNOLOGIES -1

Introduction to Session Management

Introduction to CSS

Introduction to XML

ADVANCED WEB TECHNOLOGIES -2

Introduction to Web Services

Introduction to AJAX

REFERENCES:

Achyut S Godbole, Atul Kahate, Web Technologies, Tata Mcgraw Hill, 1st Reprint 2003.

Appropriate references/ lecture notes for specific web technologies

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IT7P8-MOBILE APPLICATION DEVELOPMENT LAB
(For Students admitted from 2014 onwards)

TOOLS:

Develop Applications using any of the following tools:

Eclipse, Android studio.

LIST OF EXERCISES

1. Design a Simple Scientific Calculator.
2. Creating Menus in Android.
3. Application explaining the Basic UI Design with all the relevant Fields.
4. A Simple application illustrating styles and themes.
5. Call Log Notification Menu.
6. A GUI Application.
7. Creating live Folders with search options.
8. A simple database application.
9. Playing a audio, video file using Android..
10. A simple offline search Engine.

REFERENCES:

1. "Android Apps with Eclipse", Onur Cinar,Apress-2012.
2. <http://developer.android.com/tools/studio/index.html>.

VIII SEMESTER

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IT8T1-PROFESSIONAL ETHICS AND HUMAN VALUE

UNIT I HUMAN VALUES

Morals, Values and Ethics – Integrity – Work Ethic – Service Learning – Civic Virtue – Respect for Others – Living Peacefully – caring – Sharing – Honesty – Courage – Valuing Time – Co-operation – Commitment – Empathy – Self-Confidence – Character – Spirituality

UNIT II ENGINEERING ETHICS

Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy – Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION

Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study

UNIT IV SAFETY, RESPONSIBILITIES AND RIGHTS

Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the three mile island and chernobyl case studies.
Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

UNIT V GLOBAL ISSUES

Multinational corporations - Environmental ethics - computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers (India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers (IETE),India, etc.

TEXT BOOK

1. Mike Martin and Roland Schinzinger, "Ethics in Engineering", McGraw-Hill, New York 1996.
2. Govindarajan M, Natarajan S, Senthil Kumar V. S, "Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

REFERENCES

1. Charles D. Fleddermann, "Engineering Ethics", Pearson Education / Prentice Hall, New Jersey, 2004 (Indian Reprint)
2. Charles E Harris, Michael S. Protchard and Michael J Rabins, "Engineering Ethics – Concepts and Cases", Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.

ELECTIVES

LIST OF ELECTIVES

VII Semester

Sl.No	Code	Subject
ELECTIVE-I		
1	M	Management Information System
2	N	Network Programming and Management
3	O	Online and Real Time Systems
4	P	Natural Language Processing
5	Q	User Interface Design
6	R	Visual Programming
ELECTIVE-II		
7	S	Artificial Intelligence
8	T	Introduction to Automata Theory
9	U	Satellite Communication
10	V	Digital Image Processing
11	W	Theory of Computation
12	X	Advanced Java Programming
13	Y	Cloud computing

VIII Semester

Sl.No	Code	Subject
ELECTIVE-III		
14	A	Grid Computing
15	B	Neural Networks
16	C	Software Agents
17	D	E-Commerce
18	E	Optical Communication
ELECTIVE-IV		
19	F	Applied Graph Theory
20	G	VLSI
21	H	Information System Design
22	I	Total Quality Management
23	J	Programming C# 3.0
ELECTIVE-V		
24	K	Software Testing
25	L	Telecommunication Systems
26	M	Big data analytics

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M - MANAGEMENT INFORMATION SYSTEM

UNIT I

Definition of MIS- Data Processing , Decision Support Systems – Information Resources Management , End user Computing Managerial Accounting , OR Management theory Sub Systems of MIS.

Data Base Query Languages, Report generators , Statistical Packages , Modeling Languages , V.H.L Language. Batch system, On Line system.

Communication systems, Front End Processors, LAN , WAN , Distributed Systems.

UNIT II

Logical Data Concepts , Sequencing of Data , Types of Files , Data Bases .Serial Access and Direct Access devices.

Sequential , Hashed and indexed File Organization – Data Base Organization – single flat File – Hierarchical , Network, Relational DB Structures. Transaction Processing – Control and Retrieval .

Word and Text Processing . Document Filing Computer Graphics , Composition and Reproduction , Document Distribution , Fascimille Transmission , Message Systems , Information Processing Control- Availability Controls.

UNIT III

Decision Making Process – Problem Formulation _ programmed Vs Non Programmed Decision – Criteria for Decision Making , Classical Economical Model – Administrative Model – Resolution of Conflict – Uncertainty Avoidance – Problematic Search – Incremental Decision Making – optimization Techniques under certainty – Pay off Matrices – Decision Trees – Games Theory – Statistical Inference – documenting and Communicating Decision rules – Support for Decision making phases.

UNIT IV

Definition of Information – Redundancy – Sending and Receiving efficiency – utility of information – Errors and Bias -Value of Information and Sensitivity Analysis - Information system design.

Types of system – Subsystem- Preventing System entropy – System Stress – Organizational efficiency and effectiveness

Use of subsystems in information System Design – Decoupling of information systems – Project Management.

UNIT V

Hierarchy of planning – planning models – Computational support for planning – organizational structure Implementations and Management Theory in System Design – Decision Support systems and Expert systems – Computational support of intelligence , Design and Choice Phases – Spread sheet Processor – Analysis package- Model Generator – Planning Software System – Data Base Query Systems for planning.

TEXT BOOK:

1. Gordon B. Davis And Maggrethe H . Olson , Management Information Systems , Mc Graw Hill International Edition - Second Edition , 1998

REFERENCE BOOK :

1. Rober G . Mudrick , Joel E . Ross And James R . CLAGGET , Information Systems For Modern Management , 33rd Edition , 1992 , Prentice Hall Of India (P) Ltd ., Eastern Economy Edition .
2. Jerome Kanter Management Information Systems, 3rd Edition , 1990 . Prentice Hall Of India Ltd. , Eastern Economy Edition

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N - NETWORK PROGRAMMING AND MANAGEMENT

UNIT I

ELEMENTARY TCP SOCKETS

Introduction to Socket Programming – Overview of TCP/IP Protocols –Introduction to Sockets – Socket address Structures – Byte ordering functions – address conversion functions – Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write, close functions – Iterative Server – Concurrent Server.

UNIT II

APPLICATION DEVELOPMENT

TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients – boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing)

UNIT III

SOCKET OPTIONS, ELEMENTRY UDP SOCKETS

Socket options – getsockopt and setsockopt functions – generic socket options – IP socket options – ICMP socket options – TCP socket options – Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing TCP and UDP sockets – Domain name system – gethostbyname function – Ipv6 support in DNS – gethostbyadr function – getservbyname and getservbyport functions.

UNIT IV

ADVANCED SOCKETS

Ipv4 and Ipv6 interoperability – threaded servers – thread creation and termination – TCP echo server using threads – Mutexes – condition variables – raw sockets – raw socket creation – raw socket output – raw socket input – ping program – trace route program.

UNIT V

SIMPLE NETWORK MANAGEMENT

SNMP network management concepts – SNMP management information – standard MIB's – SNMPv1 protocol and Practical issues – introduction to RMON, SNMPv2 and SNMPv3.

TEXT BOOKS

1. W. Richard Stevens, "UNIX NETWORK PROGRAMMING Vol-I" Second Edition, PHI / Pearson Education, 1998. (Units – I, II, III & IV.) (Chapter – 1-10, 23, 25)
2. William Stallings, "SNMP, SNMPv2, SNMPv3 and RMON 1 and 2", Third Edition, Addison Wesley, 1999. (Unit - V) (Chapter – 4-7)

REFERENCE

1. D.E. Comer, "Internetworking with TCP/IP Vol- III", (BSD Sockets Version), second Edition, PHI, 2003.

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O - ONLINE AND REAL TIME SYSTEMS

UNIT I

Introduction – Terms and concepts – Characteristics of some typical systems – process Control, Business systems, Transactions systems, Data Acquisition systems. Types of systems –simplex , Master Slave , Duplexed , Shared file , Multiprocessor systems.

UNIT II

Hardware requirements-Processor sub system , interrupts , communications network, terminal subsystem, disk storage .Factors in selection – System costs and specifications – Hard ware configurations.

UNIT III

Design Guidelines – Operational models-Interrupts processing, Major cycle models: Applications to message switching system.
Average throughput rate capability calculation using memory disk-Effect of buffer size variations , variable record lengths and multiprogramming .
Design calculations- Mathematical modeling , Simulations , Statistics Generations using sampling and event stream approaches .

UNIT IV

Design of data communications and terminals – Error Characteristics , Error control, Achievable throughput ,Terminals
Calculations . Cost performance criteria and trade offs.
Applications – Stock Brokerage System , Message Switching System, Medical Online Data Base System.

UNIT V

Applications Program- Concepts , Objectives , modular programming , Overlap of CPU and I/O , minimize disk accesses.
File organization concepts –Directories buffering , Simultaneous access , File security , File recovery.

TEXT BOOK :

1. S.Stimler , Real Time Data Processing Systems , Mc Graw Hill , 1969.

REFERENCE BOOK :

1. E.Yourdon, Design of On-Line Computer System , Prentice Hall , 1972.

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P - NATURAL LANGUAGE PROCESSING.

UNIT I

Introduction-The issues and difficulties in natural language processing-Linguistics and computational linguistics language understanding and generation understanding of spoken , written and textual information.

UNIT II

Syntactic parsing – English grammar-Structure of the sentence-Words and organization of the lexical-Context free and context sensitive grammar-Transformational grammar-The role of syntax analysis in semantics ATN 's –Definite class grammar and WASP parser.

UNIT III

Semantic interpretation- The conceptual dependency model for semantic representation – Semantic networks- Frames and scripts-Semantics in the lexicon.

UNIT IV

Discourse interpretation-The interconnections between Pragmatics-Pragmatics in discourse analysis- Speech acts plan-Based theory of speech acts- Analysing intention in utterances – The representations and the use of focus in understanding discourse-Focusing in comprehension of anaphora.

UNIT V

Generation - Strategies for generation – Planning English referring expressions- KING, a natural language generation systems.
Typical systems – ELIZA – Baseball – GUS – PARRY – LADDER - SOPHIE & POET
current trends in NLP

REFERENCE BOOKS:

1. James Allen Benjamin Cummings , Natural Language Understanding.
2. Grosz , Jones And Webber ,Reading in Natural Language Processing ,Morgan Kanfamann Publisher,1986.
3. Windgrad ,Language as a Cognitive Process, Syntax, Addison Wesley publication ,1983.
4. Popov , Talking with Computer In Natural Language , Springer - Verlag ,1986.

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Q - USER INTERFACE DESIGN

UNIT I

Introduction-Importance-Human-Computer interface-characteristics of graphics interface-Direct manipulation graphical system - web user interface-popularity-characteristic & principles.

UNIT II

User interface design process- obstacles-usability-human characteristics in design - Human interaction speed-business functions-requirement analysis-Direct-Indirect methods-basic business functions-Design standards-system timings - Human consideration in screen design - structures of menus - functions of menus-contents of menu-formatting -phrasing the menu - selecting menu choice-navigating menus-graphical menus.

UNIT III

Windows: Characteristics-components-presentation styles-types-managements-organizations-operations-web systems-device-based controls: characteristics-Screen - based controls: operate control - text boxes-selection control-combination control-custom control-presentation control.

UNIT IV

Text for web pages - effective feedback-guidance & assistance-Internationalization-accessibility-Icons-Image-Multimedia -coloring.

UNIT V

Windows layout-test :prototypes - kinds of tests - retest - Information search - visualization - Hypermedia - www - Software tools.

TEXTBOOK

1. Wilbent. O. Galitz ,“The Essential Guide to User Interface Design”, John Wiley& Sons, 2001.

REFERENCES

1. Ben Sheiderman, “Design the User Interface”, Pearson Education, 1998.
2. Alan Cooper, “The Essential of User Interface Design”, Wiley – Dream Tech Ltd., 2002.

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R - VISUAL PROGRAMMING

UNIT - I

Windows Programming: GUI Concept – Hungarian Notation, Data Types- handles, Message Driven Architecture, Message processing & loop, GDI- Brush, Pen, Front Cursor, Menu, keyboard & Mouse Handling.

UNIT - II

WINAPI Functions: Displaying Text and Graphics, Dialog Boxes controls, WinMain and WndProc procedures, files, clipboard, printer handling, DDE, DLLs, OLE – COM, ODBC, Windows registry.

UNIT - III

Visual Basic 6.0: Introduction to Visual Basic 6.0, VB programming Environment, Working with Forms, variables, procedures and control structures, Arrays, constants, data type conversion, VB Built-in functions, date and Time Functions, Comparison and Relational Operators.

Working with Controls: Creating and Using Controls, Using Text Box Controls, Label Control, Option Button Control, ListBox and Combo Box Controls, ScrollBar Control, Working with Control Arrays.

UNIT - IV

Menus, Mouse Events and Dialog Boxes: Menu Interface, Using the Menu Editor, Writing a program, Adding a separator bar and shortcut Keys, Making Menu Controls Invisible.

Mouse Events: Graphical Mouse Application, Mouse Move application, Dragging and Dropping. Dialog Boxes: Mode and modeless Dialog Boxes, Predefined Dialog Boxes, custom Dialog Control, using the common Dialog Control. Graphics, MDI and Flexgrid: Fundamentals of Graphics, Using Graphical Controls, Using Graphics Methods, Multiple Document Interface, Creating an MDI Application, Using the FlexGrid.

UNIT - V

ODBC: Working with DAO, RDO and ADO Controls and Objects - opening a database, working with records - Using DBGrid Control – Data reports and Crystal Reports

TEXT BOOKS:

1. Herbert Schildt, “Windows 98 Programming from Ground Up”, Tata McGraw Hill
2. Cary Cornell , “ Visual Basic 6 for ground Up”,Tata Mc Graw Hill, 1997.
3. Visual Basic 6.0 Black Book by Comdex Publishing.

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S - ARTIFICIAL INTELLIGENCE

UNIT I

INTRODUCTION

Definition of AI-Foundations-History-Intelligent Agents-Perception and Language Processing-Problem Solving- Searching-Heuristic Search-Game Playing.

UNIT II

LOGIC AND REASONING

Agents that reason logically - First order logic - Inference in first order logic - Logical reasoning.

UNIT - III

KNOWLEDGE REPRESENTATION

Semantic Nets and Description matching-Frames-Inheritance and common sense Rules-Rule Chaining

UNIT - IV

REASONING WITH INCOMPLETE AND UNCERTAIN KNOWLEDGE

Uncertainty - Probabilistic Reasoning Systems- Making simple and complex decisions- Nonmonotonic reasoning and Truth Maintenance.

UNIT V

PLANNING AND LEARNING

Planning-Representation for planning-Partial order planning -Conditional planning-Replanning agent- Learning - Analysing differences - Explaining experience - Correcting mistakes

TEXT BOOKS.

1. Elain Rich and Kevin Knight," Artificial Intelligence", Tata McGraw - Hill Publishing Company Limited, New Delhi, 1995.
2. Stuart Russel and Peter Norvig, Artificial Intelligence - A Modern Approach, Prentice Hall, 1995.
3. Patrick Henry Winston," Artificial Intelligence", Addison Wesley, Third edition, 2000.

REFERENCES BOOKS:

1. George F Luger, Artificial Intelligence, Pearson Education, 4th edition, 2001.
2. Engene Charniak and Drew Mc Dermott," Introduction to Artificial intelligence Addison Wesley 2000.
3. Nils J. Nilsson, "Principles of Artificial Intelligence", Narosa Publishing House, 2000.
4. Dan W. Patterson, "Introduction to Artificial Intelligence and Expert systems", Prentice hall of India private limited, 1992.

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T - INTRODUCTION TO AUTOMATA THEORY

UNIT I

(TREES AND FUNDAMENTAL CIRCUITS)

Trees - Properties of trees - Pendant vertices - Distance and centers in a tree - Rooted and binary trees - Counting trees - Spanning trees - Spanning trees in a weighted graph.

UNIT II

Deterministic finite acceptors - Non deterministic finite acceptors - Equivalence of deterministic and non deterministic finite acceptors - Regular expression - Connection between regular expressions and regular languages - Closure properties of regular languages - Identifying some non regular languages using pumping lemma.

UNIT III

(CONTEXT FREE LANGUAGES, SIMPLIFICATIONS AND NORMAL FORMS)

Context free grammars - Parsing and ambiguity - Context free grammars and programming languages - Simplifications - Two normal forms - Membership algorithm for CFL.

UNIT IV

(PUSHDOWN AUTOMATA AND PROPERTIES OF CFL)

Non deterministic pushdown automata -PA and CFL - Deterministic PA and deterministic CFL - Properties of CFL - Decision algorithms - A pumping lemma for CFL - A pumping lemma for linear languages.

UNIT V

(TURING MACHINES)

The standard turing machine - Minor variations on the turing machine theme - Non deterministic turing machines - A universal turing machine - linear bounded automata.

TEXT BOOKS

1. Narsingh Deo, Graph Theory (With Applications to Engineering and Computer Science), Prentice Hall of India, 2000. Unit I : Chapter 3 (3.1 - 3.7, 3.10)
2. Peter Linz, An introduction to formal languages and automata, Narosa Publishing House.
Unit II : Chapter 2 (All Sections)
Chapter 3 (3.1 - 3.2)
Chapter 4 (4.1 - 4.3)
Unit III : Chapter 5 (5.1 - 5.3)
Unit IV : Chapter 6 (6.2)
Chapter 7 (7.1 - 7.4)
Chapter 8 (8.1)
Unit V : Chapter 9 (9.1)
Chapter 10 (10.1, 10.3 - 10.5)

REFERENCES

1. John E.Hopcroft, Jeffery D.Ullman, Introduction to Automata theory, Languages and Computation, Narosa Publishing House.
2. J.C.Martin, Introduction to languages and the Theory of Computation, Tata McGraw Hill Publishing Company Ltd.)

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U - SATELLITE COMMUNICATION

UNIT I

OVERVIEW OF SATELLITE SYSTEMS, ORBITS AND LAUNCHING METHODS

Introduction – Frequency Allocations for Satellite Services – Intelsat – U.S.Domsats – Polar Orbiting Satellites – Problems – Kepler’s First Law – Kepler’s Second Law – Kepler’s Third Law – Definitions of Terms for Earth-orbiting Satellites – Orbital Elements – Apogee and Perigee Heights – Orbital Perturbations – Effects of a Nonspherical Earth – Atmospheric Drag – Inclined Orbits – Calendars – Universal Time – Julian Dates – Sidereal Time – The Orbital Plane – The Geocentric-Equatorial Coordinate System – Earth Station Referred to the IJK Frame – The Topcentric-Horizon Co-ordinate System – The Sub-satellite Point – Predicting Satellite Position.

UNIT II

GEOSTATIONARY ORBIT & SPACE SEGMENT

Introduction – Antenna Look Angels – The Polar Mount Antenna – Limits of Visibility – Near Geostationary Orbits – Earth Eclipse of Satellite – Sun Transit Outage – Launching Orbits – Problems – Power Supply – Attitude Control – Spinning Satellite Stabilization – Momentum Wheel Stabilization – Station Keeping – Thermal Control – TT&C Subsystem – Transponders – Wideband Receiver – Input Demultiplexer – Power Amplifier – Antenna Subsystem – Morelos – Anik-E – Advanced Tiros-N Spacecraft

UNIT III

EARTH SEGMENT & SPACE LINK

Introduction – Receive-Only Home TV Systems – Outdoor Unit – Indoor Unit for Analog (FM) TV – Master Antenna TV System – Community Antenna TV System – Transmit-Receive Earth Stations – Problems – Equivalent Isotropic Radiated Power – Transmission Losses – Free-Space Transmission – Feeder Losses – Antenna Misalignment Losses – Fixed Atmospheric and Ionospheric Losses – Link Power Budget Equation – System Noise – Antenna Noise – Amplifier Noise Temperature – Amplifiers in Cascade – Noise Factor – Noise Temperature of Absorptive Networks – Overall System Noise Temperature – Carrier-to-Noise Ratio – Uplink – Saturation Flux Density – Input Back Off – The Earth Station HPA – Downlink – Output Back off – Satellite TWTA Output – Effects of Rain – Uplink rain-fade margin – Downlink rain-fade margin – Combined Uplink and Downlink C/N Ratio – Intermodulation Noise.

UNIT IV SATELLITE ACCESS

Single Access – Preassigned FDMA, Demand-Assigned FDMA, SPADE System. Bandwidth-limited a Power-limited TWT amplifier operation, FDMA downlink analysis. TDMA : Reference Burst; Preamble and Postamble, Carrier recovery, Network synchronization, unique word detection, Traffic Date, Frame Efficiency and Channel capacity, preassigned TDMA, Demand assigned TDMA, Speech Interpolation and Prediction, Downlink analysis for Digital transmission. Companion of uplink Power requirements for FDMA & TDMA. On-board signal Processing for TDMA / FDMA operation, Satellite switched TDMA.

Code-Division Multiple Access – Direct-Sequence spread spectrum – code signal $c(t)$ – autocorrelation function for $c(t)$ – Acquisition and tracking – Spectrum spreading and dispreading – CDMA throughput – Problems – Network Layers – TCP Link – Satellite Links and TCP – Enhancing TCP Over Satellite Channels Using Standard Mechanisms (RFC-2488) – Requests for comments – Split TCP connections – Asymmetric Channels – Proposed Systems.

UNIT V DIRECT BROADCAST SATELLITE SERVICES

Introduction – Orbital Spacings – Power Rating and Number of Transponders – Frequencies and Polarization – Transponder Capacity – Bit Rates for Digital Television – MPEG Compression Standards – Forward Error Correction – Home Receiver Outdoor Unit (ODU) – Home Receiver Indoor Unit (IDU) – Downlink Analysis – Uplink -Problems - Satellite Mobile Services – VSATs – Radarsat – Global Positioning Satellite System – Orbcomm.

TEXT BOOK

1. Dennis Roddy, Satellite Communications, McGraw-Hill Publication Third edition 2001

REFERENCES

1. Timothy Pratt – Charles Bostian & Jeremy Allmuti, Satellite Communications, John Willy & Sons (Asia) Pvt. Ltd. 2004
2. Wilbur L. Pritchards Henri G.Suyder Hond Robert A.Nelson, Satellite Communication Systems Engineering, Pearson Education Ltd., Second edition 2003.
3. M.Richharia : Satellite Communication Systems (Design Principles Macmillan Press Ltd. Second Edition 2003.

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V - DIGITAL IMAGE PROCESSING

UNIT I DIGITAL IMAGE FUNDAMENTALS AND TRANSFORMS

Elements of visual perception – Image sampling and quantization Basic relationship between pixels – Basic geometric transformations-Introduction to Fourier Transform and DFT – Properties of 2D Fourier Transform – FFT – Separable Image Transforms - Walsh – Hadamard – Discrete Cosine Transform, Haar, Slant – Karhunen – Loeve transforms.

UNIT II IMAGE ENHANCEMENT TECHNIQUES:

Spatial Domain methods: Basic grey level transformation – Histogram equalization – Image subtraction – Image averaging –Spatial filtering: Smoothing, sharpening filters – Laplacian filters – Frequency domain filters : Smoothing – Sharpening filters – Homomorphic filtering.

UNIT III IMAGE RESTORATION:

Model of Image Degradation/restoration process – Noise models – Inverse filtering – Least mean square filtering – Constrained least mean square filtering – Blind image restoration – Pseudo inverse – Singular value decomposition.

UNIT IV IMAGE COMPRESSION

Lossless compression: Variable length coding – LZW coding – Bit plane coding-predictive coding-DPCM.
Lossy Compression: Transform coding – Wavelet coding – Basics of Image compression standards: JPEG, MPEG,Basics of Vector quantization.

UNIT V IMAGE SEGMENTATION AND REPRESENTATION

Edge detection – Thresholding - Region Based segmentation – Boundary representation: chain codes- Polygonal approximation – Boundary segments – boundary descriptors: Simple descriptors-Fourier descriptors - Regional descriptors –Simple descriptors-Texture

TEXT BOOKS

1. Rafael C Gonzalez, Richard E Woods 2nd Edition, Digital Image Processing - Pearson Education 2003.

REFERENCES

1. William K Pratt, Digital Image Processing John Willey (2001)
2. Image Processing Analysis and Machine Vision – Millman Sonka, Vaclav hlavac, Roger Boyle, Broos/colic, Thompson Learniy (1999).
3. A.K. Jain, PHI, New Delhi (1995)-Fundamentals of Digital Image Processing.
4. Chanda Dutta Magundar – Digital Image Processing and Applications, Prentice Hall of India, 2000

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W - THEORY OF COMPUTATION

UNIT I AUTOMATA

Introduction to formal proof – Additional forms of proof – Inductive proofs – Finite Automata (FA) – Deterministic Finite Automata (DFA)– Non-deterministic Finite Automata (NFA) – Finite Automata with Epsilon transitions.

UNIT II REGULAR EXPRESSIONS AND LANGUAGES

Regular Expression – FA and Regular Expressions – Proving languages not to be regular – Closure properties of regular languages – Equivalence and minimization of Automata.

UNIT III CONTEXT-FREE GRAMMAR AND LANGUAGES

Context-Free Grammar (CFG) – Parse Trees – Ambiguity in grammars and languages – Definition of the Pushdown automata – Languages of a Pushdown Automata – Equivalence of Pushdown automata and CFG, Deterministic Pushdown Automata.

UNIT IV PROPERTIES OF CONTEXT-FREE LANGUAGES

Normal forms for CFG – Pumping Lemma for CFL - Closure Properties of CFL – Turing Machines – Programming Techniques for TM.

UNIT V UNDECIDABILITY

A language that is not Recursively Enumerable (RE) – An undecidable problem that is RE – Undecidable problems about Turing Machine – Post's Correspondence Problem - The classes P and NP.

TEXT BOOK

1. J.E.Hopcroft, R.Motwani and J.D Ullman, "Introduction to Automata Theory, Languages and Computations", Second Edition, Pearson Education, 2003.

REFERENCES

1. H.R.Lewis and C.H.Papadimitriou, "Elements of The theory of Computation", Second Edition, Pearson Education/PHI, 2003
2. J.Martin, "Introduction to Languages and the Theory of Computation", Third Edition, TMH, 2003.
3. Micheal Sipser, "Introduction of the Theory and Computation", Thomson Brokecole, 1997.

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X - ADVANCED JAVA PROGRAMMING

UNIT I

JAVA FUNDAMENTALS

Java I/O streaming – filter and pipe streams – Byte Code interpretation - reflection – Dynamic Reflexive Classes – Threading – Java Native Interfaces- Swing.

UNIT II

NETWORK PROGRAMMING IN JAVA

Sockets – secure sockets – custom sockets – UDP datagrams – multicast sockets – URL classes – Reading Data from the server – writing data – configuring the connection – Reading the header – telnet application – Java Messaging services

UNIT III

APPLICATIONS IN DISTRIBUTED ENVIRONMENT

Remote method Invocation – activation models – RMI custom sockets – Object Serialization – RMI – IIOP implementation – CORBA – IDL technology – Naming Services – CORBA programming Models - JAR file creation

UNIT IV

MULTI-TIER APPLICATION DEVELOPMENT

Server side programming – servlets – Java Server Pages - Applet to Applet communication – applet to Servlet communication - JDBC – Using BLOB and CLOB objects – storing Multimedia data into databases – Multimedia streaming applications – Java Media Framework.

UNIT V

ENTERPRISE APPLICATIONS

Server Side Component Architecture – Introduction to J2EE – Session Beans – Entity Beans – Persistent Entity Beans – Transactions.

TEXT BOOKS

1. Elliotte Rusty Harold, “Java Network Programming”, O’Reilly publishers, 2000 (UNIT II)
2. Ed Roman, “Mastering Enterprise Java Beans”, John Wiley & Sons Inc., 1999. (UNIT III and UNIT V)
3. Hortsman & Cornell, “CORE JAVA 2 ADVANCED FEATURES, VOL II”, Pearson Education, 2002. (UNIT I and UNIT IV)

REFERENCES

1. Web reference: <http://java.sun.com>.
2. Patrick Naughton, “COMPLETE REFERENCE: JAVA2”, Tata McGraw-Hill, 2003.

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Y-CLOUD COMPUTING

UNIT- I CLOUD ARCHITECTURE AND MODEL

Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models:- Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud –Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.

UNIT- II VIRTUALIZATION

Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.

UNIT -III CLOUD INFRASTRUCTURE

Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.

UNIT- IV PROGRAMMING MODEL

Parallel and Distributed Programming Paradigms – MapReduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments -Eucalyptus, Open Nebula, OpenStack, Aneka, CloudSim

UNIT- V SECURITY IN THE CLOUD

Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.

REFERENCES

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2010.

3. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", TMH, 2009.
4. Kumar Saurabh, " Cloud Computing – insights into New-Era Infrastructure", Wiley India,2011.
5. George Reese, "Cloud Application Architectures: Building Applications and Infrastructure in the Cloud" O'Reilly
6. James E. Smith, Ravi Nair, "Virtual Machines: Versatile Platforms for Systems and Processes", Elsevier/Morgan Kaufmann, 2005.
7. Katarina Stanoevska-Slabeva, Thomas Wozniak, Santi Ristol, "Grid and Cloud Computing – A Business Perspective on Technology and Applications", Springer.
8. Ronald L. Krutz, Russell Dean Vines, "Cloud Security – A comprehensive Guide to Secure Cloud Computing", Wiley – India, 2010.
9. Rajkumar Buyya, Christian Vecchiola, S.Tamarai Selvi, 'Mastering Cloud Computing', TMGH,2013.
10. Gautam Shroff, Enterprise Cloud Computing, Cambridge University Press, 2011
11. Michael Miller, Cloud Computing, Que Publishing,2008

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A - GRID COMPUTING

UNIT I GRID COMPUTING

Introduction - Definition and Scope of grid computing

UNIT II GRID COMPUTING INITIALIVES

Grid Computing Organizations and their roles – Grid Computing analog – Grid Computing road map.

UNIT III GRID COMPUTING APPLICATIONS

Merging the Grid sources – Architecture with the Web Devices Architecture.

UNIT IV TECHNOLOGIES

OGSA – Sample use cases – OGSA platform components – OGSI – OGSA Basic Services.

UNIT V GRID COMPUTING TOOL KITS

Globus GT 3 Toolkit – Architecture, Programming model, High level services – OGSI .Net middleware Solutions.

TEXTBOOK

1. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson/PHI PTR-2003.

REFERENCE BOOK

1. Ahmar Abbas, "Grid Computing: A Practical Guide to technology and Applications", Charles River media – 2003.

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B - NEURAL NETWORKS

UNIT I

Introduction : Humans and Computers , the structure of the brain , Learning in machines , The differences.

Pattern Recognition : Introduction Pattern Recognition in perspective , Pattern recognition – a definition, Feature vectors and feature space , discriminant Functions , classifications Techniques , pattern recognition – a summary.

UNIT II

The Basic Neuron : Introduction , Modeling the single neuron , Learning in Simple neuron , The perception : a vectorial Perspective , The perception learning rule , Proof , Limitations Of the perceptions.

The Multi Layer Perception : Introduction , Altering the perception model , the new model , the new learning rule , The multi layer perception algorithm , The XOP problem reverted , Visualizing network behaviour , Multi layer perceptions As classifiers , Generalization , Fault tolerance , Learning difficulties , Radial basis functions , applications.

UNIT III

Kohonen Self- Organizing Networks : Introduction , The Kohonen Algorithm , Weight training , Neighborhood ,Reducing the neighborhood , Learning vector Quantisation, The Phonetic type writer.

UNIT IV

Hopfields Networks : The Hopfield model , The energy landscape , The Boltzman Machine , constraint satisfaction . ADAPTIVE RESONANCE MEMORY : Adaptive resonance theory, Architecture and operation , ART network , Clarification Conclusion , Summary of ART.

UNIT V

Associative Memory : Standard Computer memory , Implementing Associative memory , Implementation In RAM's, FAMS & N - tupling, Willshaw 's associative net , The ADAM system , Kaneva's sparse distributed memory , Bi-directional associative Memories.Hardware and software implementations , Optical Computing , Neural networks .

TEXT BOOK:

1. R.Beale & T.Jackson , Neural Computing , An Introduction , Adam Hilger , 1990.

REFERENCE BOOK :

1.Pao Y.H Adaptive Pattern Recognition and Neural Networks , Addison Wesley , 1989.

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C - SOFTWARE AGENTS

UNIT I

.AGENTS – OVERVIEW

Agent definition – agent programming paradigms – Agents Vs objects – aglets – mobile agents – agent frame works – agent reasoning

UNIT II

JAVA AGENTS

Processes – threads – daemons – components – Java Beans – ActiveX – Sockets, RPCs – distributed computing – aglets programming – Jini architecture – actors and agents – typed and proactive messages

UNIT III

MULTI AGENT SYSTEMS

Interaction between agents – reactive agents – cognitive agents – interaction protocols – agent coordination – agent negotiation – agent cooperation – agent organization – self – interested agents in electronic commerce applications

UNIT IV

INTELLIGENT SOFTWARE AGENTS

Interface Agents – Agent Communication Languages – Agent Knowledge Representation – Agent Adaptability – Belief Desire Intension – Mobile Agent Applications

UNIT V

AGENTS AND SECURITY

Agent Security Issues – Mobile Agents Security – Protecting Agents Malicious Hosts – Un trusted Agents – Black box Security – Authentication for Agents – Security issues for Aglets.

REFERENCES BOOKS:

1. Constructing intelligent agents with Java, Bigus & Bigus, Wiley.
2. Software Agents, Bradshaw, MIT Press, 2000
3. Artificial Intelligence: a modern approach, Russel & Novirg, Prentice Hall
4. Intelligent Software Agents, Richard Murch, Tony Johnson, Prentice Hall, 2000.

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D - ELECTRONIC COMMERCE

UNIT I

Introduction – Electronic Commerce Framework – The Anatomy of E-Commerce Applications. The Network Infrastructure for E-Commerce, The Internet as a Network Infrastructure.

UNIT II

Electronic Payment Systems, Inter organizational Commerce and EDI, EDI Implementation, MIME and Value – added Networks.

UNIT III

Advertising and Marketing on the Internet, Computer Based Education and Training, Technological Components of Education on-Demand, Digital Copy rights and Electronic Commerce, Software Agent.

UNIT IV

The Corporate Digital Library – Dimensions of Internal Electronics Commerce Systems, Making a Business case for a document Library, Types of Digital documents, Issues behind document Infrastructure, Corporate data warehouses, Documents Active / Compound document architecture.

UNIT V

Multimedia and Digital Video – Broad band Telecommunications – Mobile and Wireless Computing Fundamentals.

TEXT BOOK

1. “Frontiers of Electronic Commerce”, Kalakota & Whinston, Pearson Education, 2002.

REFERENCES

1. Kamalesh K. Bajaj, “E-Commerce: The Cutting Edge & Business”, Tata McGraw-Hill, 2003.
2. Brenda Kennan, “Managing your E-Commerce Business”, PHI, 2001.
3. “Electronic Commerce from Vision to Fulfillment”, PHI, Elias M. Awad, Feb-2003.
4. “Electronic Commerce – Framework, Technology and Application”, TMH, Bharat Bhaskar, 2003.
5. Effy Oz, “ Foundations of E-Commerce”, PHI, 2001.
6. Jim A Carter, “Developing E-Commerce Systems”, PHI, 2001.

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E - OPTICAL COMMUNICATION

UNIT I INTRODUCTION TO OPTICAL FIBERS

Evolution of fiber optic system- Element of an Optical Fiber Transmission link- Ray Optics-Optical Fiber Modes and Configurations –Mode theory of Circular Wave guides- Overview of Modes-Key Modal concepts- Linearly Polarized Modes –Single Mode Fibers- Graded Index fiber structure.

UNIT II SIGNAL DEGRADATION OPTICAL FIBERS

Attenuation – Absorption losses, Scattering losses, Bending Losses, Core and Cladding losses, Signal Distortion in Optical Wave guides-Information Capacity determination – Group Delay-Material Dispersion, Wave guide Dispersion, Signal distortion in SM fibers- Polarization Mode dispersion, Intermodal dispersion, Pulse Broadening in GI fibers- Mode Coupling –Design Optimization of SM fibers-RI profile and cut-off wavelength.

UNIT III FIBER OPTICAL SOURCES AND COUPLING

Direct and indirect Band gap materials-LED structures –Light source materials – Quantum efficiency and LED power, Modulation of a LED, lasers Diodes-Modes and Threshold condition –Rate equations –External Quantum efficiency –Resonant frequencies –Laser Diodes, Temperature effects, Introduction to Quantum laser, Fiber amplifiers- Power Launching and coupling, Lencing schemes, Fibre –to- Fibre joints, Fibre splicing.

UNIT IV FIBER OPTICAL RECEIVERS

PIN and APD diodes –Photo detector noise, SNR, Detector Response time, Avalanche Multiplication Noise –Comparison of Photo detectors –Fundamental Receiver Operation – preamplifiers, Error Sources –Receiver Configuration –Probability of Error – Quantum Limit.

UNIT V DIGITAL TRANSMISSION SYSTEM

Point-to-Point links System considerations –Link Power budget –Rise - time budget – Noise Effects on System Performance-Operational Principles of WDM, Solitons-Erbium-doped Amplifiers. Basic on concepts of SONET/SDH Network. .

TEXT BOOK

1. Gerd Keiser, "Optical Fiber Communication" McGraw-Hill International, Singapore, 3rd ed., 2000

REFERENCES

1. J.Senior, "Optical Communication, Principles and Practice", Prentice Hall of India, 1994.
2. J.Gower, "Optical Communication System", Prentice Hall of India, 2001.

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F - APPLIED GRAPH THEORY

UNIT I

(PATHS AND CYCLES)

Introduction to graphs - Basic definitions - Matrix representations - Complete graphs - Regular graphs - 1-Connectivity - Cutsets - Cut vertices - Eulerian graphs - Hamiltonian graphs - Shortest path algorithm - Chinese postman problem.

UNIT II

(TREES AND PLANAR GRAPHS)

Trees and forests - Fundamental cutsets - Counting trees : Cayley's theorem - Minimum connector problem - Searching trees : Depth first search and breadth first search (concept only) - Planar graphs - Kuratowski's graphs - Euler's formula - Dual graphs : Abstract dual.

UNIT III

(COLORING)

Coloring vertices - Chromatic number - Six color and five color theorem - Brooks' theorem - Coloring maps - Coloring edges - Chromatic index - Chromatic polynomials.

UNIT IV

(DIGRAPHS)

Directed graphs - Strongly connected graphs - Critical path problem - Eulerian digraphs and tournaments - Hamiltonian digraphs - Markov chain - Transition matrix.

UNIT V

(MATCHING PROBLEMS)

Hall's marriage theorem - Edge disjoint and vertex disjoint paths - Menger's theorem - Implication of Menger's theorem - Network flows - Zero and non zero flows - Maximum flows - Max flow min cut theorem.

REMARKS

"THE PAPER IS NOT THEORY ORIENTED AND THE CONTENTS OF THE PRESCRIBED TEXT BOOK ARE TO BE STRICTLY FOLLOWED" "EACH UNIT IS TO BE COVERED IN 12 PERIODS EACH OF 50 MINUTES DURATION"

PRESCRIBED TEXT BOOK

Robin J. Wilson, Introduction to Graph Theory, Longman Ltd., 2000.

Unit I : Chapters 1, 2, 3 (Except section 4)

Unit II : Chapters 4, 5 (Except section 14, 16)

Unit III : Chapter 6 (All Sections)

Unit IV : Chapter 7 (All Sections)

Unit V : Chapter 8 (Except sections 26, 27)

REFERENCES

1. Narsingh Deo, Graph Theory (With Applications to Engineering and Computer Science), Prentice Hall of India, 2000.
2. Douglas B. West, Introduction to Graph Theory, Prentice Hall of India, 1999.
3. Harary, Graph Theory, Narosa Publishing House, New Delhi, 1998.
4. K.R.Parthasarathy, Basic Graph Theory, Tata McGraw Hill Publishing Company, 1994.

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G - VLSI

UNIT - I

Introduction to CMOS and MOS Transistor theory: Introduction to IC Technologies and the MOORE'S Law. MOS as a switch, CMOS logic CIRCUITS: The CMOS Inverter, Combinational logic implementation, Memory-latches and registers. The nMOS Transistor (enhancement) - Structure and operating regions. pMOS transistor (Enhancement)-structure only. Threshold voltage, Body effect. MOS device design equations (First order effects). The CMOS inverter characteristics, Noise margin, β_n/β_p ratio. Introduction to the CMOS transmission gate. BiCMOS Technology -BiCMOS Inverter. Merits of CMOS technology

UNIT - II

CMOS processing technology and Layouts: Silicon Semiconductor technology, wafer preparation and fabrication processes: Oxidation, Epitaxy, Ion Implantation, deposition and diffusion. Silicon gate nMOS process. CMOS Fabrication methods: n-well process, SOI Process, and Twin-Tub process. Latchup in CMOS circuits.

Layout design rules - Need for design rules. λ based rules. CMOS Layout diagrams - Basic Inverter, NAND, NOR, and Transmission gates. Scaling CMOS circuits

UNIT - III

MOS Circuit and Logic design process: MOS device capacitances - model. Switching characteristics of CMOS Inverter -Rise time, Fall time, delay time. Distributed RC effects. Transistor Gate Sizing basics. Stage ratio.

UNIT - IV

ASIC Design Process, VerilogHDL Programming: Circuit and System representations - Behavioral, Structural and Physical, and the Y diagram. ASIC Design Flow -Front End and BackEnd. Basic programming concepts in Verilog HDL:. Behavioral, RTL and Structural modeling in Verilog. Solving Combinational and sequential problems using Verilog HDL.

UNIT -V

VLSI CAD Tools - An overview of Contemporary CAD Tools used for VLSI Design
Testing of VLSI circuits - Fault models, Gate level testing, Scan-based Testing, and Test Pattern generation.

TEXT BOOK:

1. "Principles of CMOS VLSI Design "- Neil Weste and Kamran Eshraghian.

REFERENCEBOOKS:

1. VLSI Design Principles- John P. Uyemura.
2. Randall L .Geiger and P.E. Allen, "VLSI design techniques for analog and digital circuits"
3. Peter J. Ashenden,"The designers guide to VHDL"
4. Douglas A. Pucknell and Kamran Eshraghian "Basic VLSI Design systems and circuits".

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H - INFORMATION SYSTEMS DESIGN

UNIT I

MANAGING THE DIGITAL FIRM

Why information systems – contemporary approaches to information systems – new role of information systems- major types of systems in organizations – systems from a functional perspective – enterprise applications – organizations and information systems – managers decision making and information systems – information systems and business strategy.

UNIT II

DESIGNING INFORMATION SYSTEMS

Systems as planned organizational change – business process re-engineering and process improvement – overview of systems development – alternate system – Building approaches – Understanding the business value of Information Systems - The importance of change management in information system success and failure – Managing Implementation.

UNIT III

DEVELOPMENT AND MAINTENANCE OF INFORMATION SYSTEMS

Systems analysis and design – System development life cycle – Limitation – End User Development – Managing End Users – off-the shelf software packages – Outsourcing – Comparison of different methodologies.

UNIT IV

KNOWLEDGE MANAGEMENT, ETHICS AND SECURITY

Knowledge Management in the organization – Information and Knowledge base systems – Decision -support systems – Understanding ethical and Social issues packed to systems – Ethics in an Information society – The moral dimensions of Information Systems – System vulnerability and abuse – Creating a control environment – Ensuring System Quality.

UNIT V INFORMATION ARCHITECTURE

Defining Information Architecture – why Information Architecture matters – Practicing Information Architecture in the Real world – Information Ecologies – User needs and Behavior – The anatomy of Information Architecture – Organizing Systems – Search Systems.

TEXT BOOKS

1. Lauaon Kenneth & Landon Jane, "Management Information Systems: Managing the Digital firm", Eighth edition, PHI, 2004.[Unit – 1, 2, 4]
2. Uma G. Gupta, "Management Information Systems – A Management Prespective", Galgotia publications Pvt., Ltd., 1998. [Unit – 3].
3. Louis Rosenfel and Peter Morville, "Information Architecture for the World wide Web", O'Reilly Associates, 2002. [Unit – 5].

REFERENCES

1. Steven Alter, "Information Systems – A Management Perspective", Pearson Education, 2001.
2. Uma Gupta, "Information Systems – Success in 21st Century", Prentice Hall of India, 2000.
3. Robert G. Murdick, Joel E. Ross and James R. Claggett, "Information Systems for Modern Management", PHI, 1994.

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I - TOTAL QUALITY MANAGEMENT

UNIT I - I INTRODUCTION

Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs - Analysis Techniques for Quality Costs, Basic concepts of Total Quality Management, Historical Review, Principles of TQM, Leadership – Concepts, Role of Senior Management, Quality Council, Quality Statements, Strategic Planning, Deming Philosophy, Barriers to TQM Implementation.

UNIT - II TQM PRINCIPLES

Customer satisfaction – Customer Perception of Quality, Customer Complaints, Service Quality, Customer Retention, Employee Involvement – Motivation, Empowerment, Teams, Recognition and Reward, Performance Appraisal, Benefits, Continuous Process Improvement – Juran Trilogy, PDSA Cycle, 5S, Kaizen, Supplier Partnership – Partnering, sourcing, Supplier Selection, Supplier Rating, Relationship Development, Performance Measures – Basic Concepts, Strategy, Performance Measure.

UNIT - III STATISTICAL PROCESS CONTROL (SPC)

The seven tools of quality, Statistical Fundamentals – Measures of central Tendency and Dispersion, Population and Sample, Normal Curve, Control Charts for variables and attributes, Process capability, Concept of six sigma, New seven Management tools.

UNIT - IV TQM TOOLS

Benchmarking – Reasons to Benchmark, Benchmarking Process, Quality Function Deployment (QFD) – House of Quality, QFD Process, Benefits, Taguchi Quality Loss Function, Total Productive Maintenance (TPM) – Concept, Improvement Needs, FMEA – Stages of FMEA.

UNIT - V QUALITY SYSTEMS

Need for ISO 9000 and Other Quality Systems, ISO 9000:2000 Quality System – Elements, Implementation of Quality System, Documentation, Quality Auditing, TS 16949, ISO 14000 – Concept, Requirements and Benefits.

TEXT BOOK

1. Dale H.Besterfield, et al., Total Quality Management, Pearson Education, Inc. 2003. (Indian reprint 2004). ISBN 81-297-0260-6.

REFERENCES

1. James R.Evans & William M.Lindsay, The Management and Control of Quality, (5th Edition), South-Western (Thomson Learning), 2002 (ISBN 0-324-06680-5).
2. Feigenbaum.A.V. "Total Quality Management, McGraw-Hill, 1991.
3. Oakland.J.S. "Total Quality Management Butterworth – Heinemann Ltd., Oxford. 1989.
4. Narayana V. and Sreenivasan, N.S. Quality Management – Concepts and Tasks, New Age International 1996.
5. Zeiri. "Total Quality Management for Engineers Wood Head Publishers, 1991.

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J - PROGRAMMING C# 3.0

UNIT I

Evolution of C# - .NET Platform – Using Visual Studio 2008
C# Language Fundamentals -Types-Variables and Constants –Statements-Operators-Preprocessor Directives;Defining Classes-Creating Objects-Using Static Members-Destroying Objects-Passing ParametersOverloading Methods and Constructors-Encapsulating Data with Properties-readonly Fields; Inheritance and Polymorphism - Abstract Classes- Object -Nesting Classes ; Operator Overloading - operator Keyword - Supporting Other .NET Languages -Creating Useful Operators-Logical Pairs-The Equality Operator-Conversion Operators-Putting Operators to Work ; Defining Structs -Creating Structs ;
Defining and Implementing an Interface-Overriding Interface Implementations-Explicit Interface Implementation

UNIT II

Arrays -The foreach Statement -Indexers -Collection Interfaces -Constraints -List<T> - Queues -Stacks -Dictionaries -Strings -Regular Expressions -Exceptions -Throwing and Catching Exceptions -Exception Objects - Events -Events and Delegates -Anonymous Methods

UNIT III

LINQ and C# -Anonymous Types-Implicitly Typed Local Variables-Extension Methods - Lambda Expressions in LINQ ;XML Basics -Creating XML Documents -Searching in XML with XPath -Searching Using XPathNavigator -XML Serialization ;
LINQ to SQL Fundamentals-Using Visual Studio LINQ to SQL Designer-Retrieving Data - Updating Data Using LINQ to SQL -Deleting Relational Data -LINQ to XML;
Introduction to ADO.NET Object Model

UNIT IV

Programming ASP.NET Applications -Web Forms Fundamentals -Creating a Web Form – Server Controls - Data Binding – Event Handling;Programming WPF Applications – Introduction to WPF -Building the Application – Grids and Stack Panel – Adding Data – Using Data in XAML- Event Handling;Programming Windows Forms Applications – Form creation- Event Handling- Using Controls

Unit 5

Attributes -Reflection -Threads -Synchronization -Race Conditions and Deadlocks - Streams-Files and Directories -Reading and Writing Data -Asynchronous I/O -Network I/O -Web Streams -Serialization -Isolated Storage;Programming .NET and COM - Importing ActiveX Controls -P/Invoke -Pointers ;

TEXTBOOK:

1. Programming C# 3.0-Fifth Edition by Jesse Liberty and Donald Xie – O'Reilly Publication (2007)

REFERENCE BOOKS

1. Herbert Schildt, "The Complete Reference –C#", TMH, 2004.
2. Robinson et al, "Professional C#", 2nd Edition, Wrox Press, 2002.
3. Andrew Troelsen, "C# and the .NET Platform", A! Press, 2003.
4. S. Thamarai Selvi and R. Murugesan, "A Textbook on C#", Pearson Education, 2003.

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K - SOFTWARE TESTING

UNIT I

Introduction: The purpose of testing, a model for testing. The taxonomy of Bugs: The importance of bugs, How bugs affect us - Consequences, flexibility severity rather than Absolutes.

A taxonomy for Bugs: Requirements, Features and functionality Bugs, Structural Bugs, data Bugs, Coding Bugs, Interface, Integration and System Bugs, Test and Test Design Bugs, Testing and Design Style.

UNIT II

Flow graphs and Path Testing: Path-testing Basics, Predicates, path predicates and achievable paths, Path sensitizing, path Instrumentation, Implement and Application of Path-testing.

Transactional-Flow Testing: Generalization, Transaction flows, Transaction-Flow testing Techniques, Implementation comments.

Data- flow Testing: Data-flow testing basics , Data-flow testing strategies , Applications, tools, Effectiveness.

UNIT III

Domain Testing :Domains and paths, Nice Domains and ugly Domains, Domain testing, Domains and interface testing, Domains and Testability.

Metrics and Complexity: Details about metrics, linguistic metrics, Structural metrics, hybrid metrics, Metrics Implementation.

Paths, Path Products and regular Expressions: Path products and path expressions, A Reduction Procedure, Application, Regular Expressions and Flow anomaly detection.

UNIT IV

Syntax Testing: Necessity and Methodology of syntax testing , A Grammar for Formats ,Test case generation, Implementation and Application.

Login -based Testing: Decision tables, path expressions, KV charts, Specifications.

States, State Graphs and Transition Testing: State graphs, Good and bad State Graphs, State testing.

UNIT V

Graphs matrices and Applications: The matrix of a graph, relations, The powers of a matrix , Node-Reduction Algorithm, Building Tools.

Implementation: Strategies for Programmers, Strategies for independent testers, Test as software products, Tools.

TEXT BOOK

1. BORIS BEIZER, Software Testing Techniques (Second Edition), Van Nostrand Reinhold, USA.

REFERENCE BOOKS

1. MARC ROPER, Software Testing, McGraw Hill.
2. GLENFORD J. MYERS, The art of Software Testing , John Wiley & Sons.

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L- TELECOMMUNICATION SYSTEMS

UNIT I

METHODS OF COMMUNICATION

Transmission lines – Types and Characteristics, Antenna Fundamentals – Different types of antennas & their Characteristics, Radio Frequency wave propagation- Microwave – Principles, Devices (Reflex Klystron, Magnetron, TWT)-(Principles Only) Radar - Pulsed Radar - CW Radar (Principles and Block Diagram Only).

UNIT II

INTRODUCTION TO SATELLITE COMMUNICATIONS

Satellite orbits- Satellite communication systems –Earth stations- Applications: Surveillance, Navigation, Mobile Communication, TV Broadcast, Satellite Radio, Satellite Telephone-The Internet.

UNIT III

INTRODUCTION TO FIBER OPTIC COMMUNICATION

Light wave communication systems – Fiber structure and function types of Fiber – Optical Transmitter & Receiver –Fiber optic Data communication systems

UNIT IV

TELEPHONE SYSTEM AND ITS APPLICATION

Telephones –Telephone system- Facsimile- Cellular telephone system-Paging system – Integrated services Digital Networks (ISDN)

UNIT V

CELLULAR RADIO

Citizen's band Radio, Cordless Telephone, Improved Mobile Telephone service (IMTS), Introduction to Advanced Mobile Phone Service (AMPS), GSM – RF channels and time slots – Voice transmission – Frequency Hopping - Subscriber ID module – GSM Privacy and Security – IS-95 CDMA PCS – Channels – Forward Channel – Reverse Channel – Voice Coding – Power Control – Hand-off and CDMA Security.

TEXT BOOKS

1. Louis.E.Frenzel, "Communication Electronics - Principles and Application", 3rd Editions, Tata McGraw-Hill, 2002 (Units I to IV)
2. Roy Blake, "Wireless Communication Technology", Thomson Delmar Learning, Second Reprint 2002. (UNIT V Chapters: 10, 11)

REFERENCES

1. Wayne Tomasi, "Electronic Communication systems" 4th Edition, Pearson Education, 2001.
2. Marin Cole, "Introduction to Telecommunications -Voice, Data and Internet", Pearson Education, 2001.

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M-BIG DATA ANALYTICS

UNIT -I INTRODUCTION TO BIG DATA

Introduction to BigData Platform – Challenges of Conventional Systems - Intelligent data analysis – Nature of Data - Analytic Processes and Tools - Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error.

UNIT- II DATA ANALYSIS

Regression Modeling - Multivariate Analysis – Bayesian Methods – Bayesian Paradigm - Bayesian Modeling - Inference and Bayesian Networks - Support Vector and Kernel Methods - Analysis of Time Series: Linear Systems Analysis - Nonlinear Dynamics - Rule Induction - Fuzzy Logic: Extracting Fuzzy Models from Data - Fuzzy Decision Trees

UNIT -III SEARCH METHODS AND VISUALIZATION

Search by simulated Annealing – Stochastic, Adaptive search by Evaluation – Evaluation Strategies – Genetic Algorithm – Genetic Programming – Visualization – Classification of Visual Data Analysis Techniques – Data Types – Visualization Techniques – Interaction techniques – Specific Visual data analysis Techniques.

UNIT -IV MINING DATA STREAMS

Introduction To Streams Concepts – Stream Data Model and Architecture – Stream Computing - Sampling Data in a Stream – Filtering Streams – Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

UNIT -V FRAMEWORKS

MapReduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases - S3 - Hadoop Distributed File Systems – Case Study.

REFERENCES

1. Michael Berthold, David J. Hand, “Intelligent Data Analysis”, Springer, 2007.
2. Anand Rajaraman and Jeffrey David Ullman, “Mining of Massive Datasets”, Cambridge University Press, 2012.
3. Bill Franks, “Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics”, John Wiley & sons, 2012.
4. Glenn J. Myatt, “Making Sense of Data”, John Wiley & Sons, 2007
5. Pete Warden, “Big Data Glossary”, O’Reilly, 2011.

6. Jiawei Han, Micheline Kamber "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008. 36
7. Da Ruan, Guoqing Chen, Etienne E.Kerre, Geert Wets, Intelligent Data Mining, Springer,2007
8. Paul Zikopoulos ,Dirk deRoos , Krishnan Parasuraman , Thomas Deutsch , James Giles, David Corrigan , Harness the Power of Big Data The IBM Big Data Platform, Tata McGraw Hill Publications, 2012
9. Michael Minelli (Author), Michele Chambers (Author), Ambiga Dhiraj (Author) , Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses,Wiley Publications,2013
10. Zikopoulos, Paul, Chris Eaton, Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, Tata McGraw Hill Publications, 2011