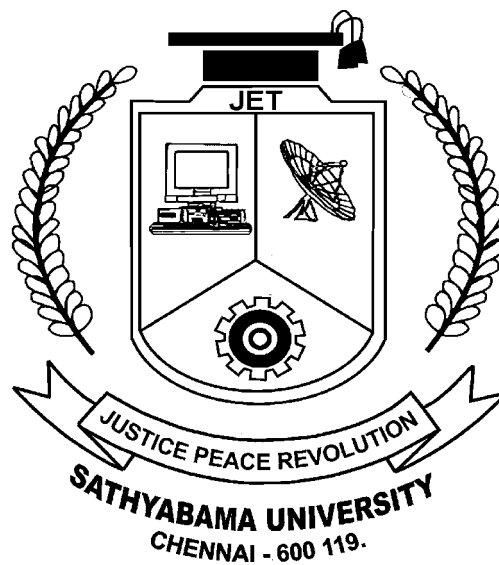# SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 119.

SYLLABUS

MASTER OF COMPUTER APPLICATIONS PROGRAMME
(6 SEMESTERS)
REGULATIONS 2010

SATHYABAMA UNIVERSITY
REGULATIONS – 2010

Effective from the academic year 2010-2011 and applicable to the students admitted to the Degree of Master of Computer Applications. (Six Semesters)

1. **Structure of Programme**

   1.1   Every Programme will have a curriculum with syllabi consisting of theory and practical such as:

   (i)   General core courses like Mathematics.

   (ii) Core course of computer applications.

   (iii) Elective course for specialization in related fields.

   (iv) Computer Practice, Laboratory Work, Industrial Training, Seminar Presentation, Project Work, Educational Tours, Camps etc.

   1.2   Each semester curriculum shall normally have a blend of lecture course not exceeding 7 and practical course not exceeding 4.

   1.3   The medium of instruction, examinations and project report will be English.

2. **Duration of the Programme**

   A student is normally expected to complete the M.C.A. Programme in 6 semesters **but in any case not more than 10 consecutive semesters from the time of commencement of the course.** The Head of the Department shall ensure that every teacher imparts instruction as per the number of hours specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught.

3. **Requirements for Completion of a Semester**

   A candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirement for completion of a semester.

   3.1   He/She secures not less than 90% of overall attendance in that semester.

   3.2   Candidates who do not have the requisite attendance for the semester **will not be permitted to write the University Exams.**

4. **Examinations**

   The examinations shall normally be conducted between October and December during the odd semesters and between March and May in the even semesters. The maximum marks for each theory and practical course (including the project work and Viva Voce examination in the Sixth Semester) shall be 100 with the following breakup.

   (i)   **Theory Courses**

   Internal Assessment   :   20 Marks

   University Exams   :   80 Marks

   (ii) **Practical courses**

   Internal Assessment   :   - -

   University Exams   :   100 Marks

5. **Passing requirements**

   (i)   A candidate who secures not less than 50% of total marks prescribed for the course (For all courses including Theory, Practicals and Project work) with a minimum of 40 marks out of 80 in the University Theory Examinations, shall be declared to have passed in the Examination.

   (ii) If a candidate fails to secure a Pass in a particular course, it is mandatory that he/she shall reappear for the examination in that course during the next semester when examination is conducted in that course. However the Internal Assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

6. **Eligibility for the Award of Degree**

A student shall be declared to be eligible for the award of the M.C.A. degree provided the student has successfully completed the course requirements and has passed all the prescribed examinations in all the 6 semesters within the maximum period specified in clause 2.

7. **Award of Credits and Grades**

All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, Letter Grades will be awarded as per the range of total marks (out of 100) obtained by the candidate as given below:

RANGE OF MARKS FOR GRADES

Range of Marks	Grade	Grade Points (GP)
90-100	A++	10
80-89	A+	9
70-79	B++	8
60-69	B+	7
50-59	C	6
00-49	F	0
ABSENT	W	0

CUMULATIVE GRADE POINT AVERAGE CALCULATION

The CGPA calculation on a 10 scale basis is used to describe the overall performance of a student in all courses from first semester to the last semester. F and W grades will be excluded for calculating GPA and CGPA.

$$CGPA = \frac{\Sigma_i \, C_i \, GP_i}{\Sigma_i \, C_i}$$

where C_i - Credits for the subject

   GP_i - Grade Point for the subject

   Σ_i - Sum of all subjects successfully cleared during all the semesters

8.   Classification of the Degree Awarded

1   A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the semesters in **his/her first appearance** within a maximum period of 6 consecutive semesters after commencement of study securing a **CGPA not less than 9.0** shall be declared to have passed the examination in **First Class – Exemplary.**

2.   A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the semesters in **his/her first appearance** within 6 consecutive semesters after commencement of study securing a **CGPA not less than 7.5** shall be declared to have passed the examination in **First Class with Distinction.**

3.   A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the semesters within a maximum period of 6 consecutive semesters after commencement of study securing a **CGPA not less than 6.0** shall be declared to have passed the examination in **First Class.**

4   All other candidates who qualify for the award of the Degree having passed the examination in all the courses of all the semesters within a maximum period of 10 consecutive semesters after his/her commencement of study securing a **CGPA not less than 5.0** shall be declared to have passed the examination in **Second Class.**

5   A candidate who is absent in semester examination in a course/project work after having registered for the same, shall be considered to have appeared in that examination for the purpose of classification of degree. **For all the above mentioned classification of Degree, the break of study during the programme, will be counted for the purpose of classification of degree.**

6   A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 1 week from the declaration of results, on payment of a prescribed fee along with prescribed application to the Controller of Examinations through the Head of Department. The Controller of Examination will arrange for the revaluation and the result will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses and for project work.

Final Degree is awarded based on the following :

CGPA ≥ 9.0	-	**First Class - Exemplary**
CGPA ≥ 7.50 < 9.0	-	**First Class with Distinction**
CGPA ≥ 6.00 < 7.50	-	**First Class**
CGPA ≥ 5.00 < 6.00	-	**Second Class**

Minimum CGPA requirements for award of Degree is 5.0 CGPA.

9.   Discipline

Every student is required to observe disciplined and decorous behaviour both inside and outside the University and not to indulge in any activity which will tend to bring down the prestige of the University. If a student indulges in malpractice in any of the University theory / practical examination, he/she shall be liable for punitive action as prescribed by the University from time to time.

10.   Revision of Regulations and Curriculum

The University may revise, amend or change the regulations, scheme of examinations and syllabi from time to time, if found necessary.

MASTER OF COMPUTER APPLICATIONS
REGULATIONS 2010 – CURRICULUM

SEMESTER I

Sl.No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C	Page No.
THEORY							
1	SMTX5001	Mathematical Foundations for Computer Science	3	1	0	4	1
2	SCAX5001	Programming in C	3	0	0	3	2
3	SCAX5002	Computer Fundamentals and Architecture	3	0	0	3	3
4	SCAX5003	Software Engineering	3	0	0	3	4
5	SCAX5004	Fundamentals of Data Structures	3	0	0	3	5
6	SBAX5028	Management Accounting	3	1	0	4	6
PRACTICALS							
7	SCAX6501	C and Data Structures Lab	0	0	4	2	23
		Total Credits				**22**	

SEMESTER II

Sl.No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C	Page No.
THEORY							
1	SMTX5002	Statistical Methods	3	1	0	4	7
2	SCAX5005	Advanced Data Structures and Algorithms	3	0	0	3	8
3	SCAX5006	Microprocessors and Interfacing	3	0	0	3	9
4	SCAX5007	Data Communication and Computer Networks	3	0	0	3	10
5	SCAX5008	Object Oriented Programming	3	0	0	3	11
PRACTICALS							
6	SCAX6502	Microprocessor Lab	0	0	4	2	24
7	SCAX6503	Programming in C++ Lab	0	0	4	2	24
		Total Credits				**20**	

SEMESTER III

Sl.No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C	Page No.
THEORY							
1	SCAX5009	Operating System & its Concepts	3	0	0	3	12
2	SCAX5010	Database Management Systems	3	0	0	3	13
3	SCAX5011	Programming in Java	3	0	0	3	14
4	SCAX5012	Graphics and Multimedia Systems	3	0	0	3	15
5	SBAX5010	Applied Operations Research	3	1	0	4	16
PRACTICALS							
6	SCAX6504	Java Programming Lab	0	0	4	2	25
7	SCAX6505	RDBMS Lab	0	0	4	2	26
		Total Credits				**20**	

SEMESTER IV

Sl.No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C	Page No
THEORY							
1	SCAX5013	Unix and Network Programming	3	0	0	3	17
2	SCAX5014	Data Warehousing and Data Mining	3	0	0	3	18
3	SCAX5015	Advanced Java Programming	3	0	0	3	19
4	–	Elective I	3	0	0	3	
5	–	Elective II	3	0	0	3	
PRACTICALS							
6	SCAX6506	Unix and Network Programming Lab	0	0	4	2	27
7	SCAX6507	J2EE Lab	0	0	4	2	27
					Total Credits	**19**	

SEMESTER V

Sl.No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C	Page No
THEORY							
1	SCAX5016	Object Oriented Analysis and Design	3	0	0	3	20
2	SCAX5017	Network Security	3	0	0	3	21
3	SCAX5018	.NET and XML Programming	3	0	0	3	22
4	–	Elective – III	3	0	0	3	
5	–	Elective – IV	3	0	0	3	
PRACTICALS							
6	SCAX6508	Case Tools Lab	0	0	4	2	28
7	SCAX6509	.NET and XML Programming Lab	0	0	4	2	28
					Total Credits	**19**	

SEMESTER VI

Sl.No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C
1	S51XPROJ	Project Work	0	0	30	15

Total Credits for the Course: 115

ELECTIVE SUBJECTS

Sl. No.	SUBJECT CODE	SUBJECT TITLE	L	T	P	C	Page No.
1.	SCAX5019	Advanced Computer Architecture	3	0	0	3	29
2.	SCAX5020	Enterprise Resource Planning	3	0	0	3	30
3.	SCAX5021	Distributed Computing	3	0	0	3	31
4.	SCAX5022	TCP/IP and Socket Programming	3	0	0	3	32
5.	SCAX5023	Software Quality Management	3	0	0	3	33
6.	SCAX5024	Unix Internals	3	0	0	3	34
7.	SCAX5025	Management Information Systems	3	0	0	3	35
8.	SCAX5026	Network Management Systems	3	0	0	3	36
9.	SCAX5027	Electronic Commerce	3	0	0	3	37
10.	SCAX5028	System Software	3	0	0	3	38
11.	SCAX5029	Software Testing	3	0	0	3	39
12.	SCAX5030	Advanced Software Engineering	3	0	0	3	40
13.	SCAX5031	Wireless Computing	3	0	0	3	41
14.	SCAX5032	Advanced Databases	3	0	0	3	42
15.	SCAX5033	Compiler Design	3	0	0	3	43
16.	SCAX5034	Business Data Processing using COBOL	3	0	0	3	44
17.	SCAX5035	Neural Networks	3	0	0	3	45
18.	SCAX5036	Fuzzy Logic and its Applications	3	0	0	3	46
19.	SCAX5037	Software Project Development	3	0	0	3	47
20.	SCAX5038	Service Oriented Architecture	3	0	0	3	48
21.	SCAX5039	Cloud Computing	3	0	0	3	49
22.	SCAX5040	Software Agents	3	0	0	3	50

L-Lecture Hours;   T-Tutorial Hours;   P-Practical Hours;   C-Credits

SMTX5001	MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE	L	T	P	Credits	Total Marks
		3	1	0	4	100

UNIT I MATHEMATICAL LOGIC   10 hrs.

Statement Calculus – Connectives – Equivalent proportions – Tautological implications – Normal forms – Predicate calculus – Inference theory for statement calculus and Predicate calculus.

UNIT II SET THEORY   10 hrs.

Basic concepts of Set Theory – Laws of set theory – Partition of set – Relations – Types of relations – graph of relation – Hasse Diagram – Functions – Types of functions – Compositions and inverse functions.

UNIT III FUNDAMENTAL PRINCIPLE OF COUNTING   10 hrs.

Introduction to Permutation and Combination – Circular permutation – Relation between permutation and combination (Simple problems). Binomial Theorem (Positive Integral Index only) – General term – Term independent of x – Coefficient of x^n – Solution of linear recurrence relations (Problems only)

UNIT IV NUMERICAL METHODS FOR SOLVING EQUATIONS   10 hrs.

Numerical solution of algebraic and transcendental equations – Bisection method – False position method – Fixed point iteration – Newton-Raphson method – Solution of simultaneous linear algebraic equations – Gauss elimination method – Gauss Jordan method – Crouts method – Gauss Jacobi method – Gauss Siedel method

UNIT V NUMERICAL SOLUTIONS OF DIFFERENTIAL EQUATIONS   10 hrs.

Taylor's method – modified Euler's method – Runge- kutta method of fourth order - Predictor Corrector methods – Milne's method – Adams bash forth method.

TEXT / REFERENCE BOOKS:

1. Tremblay.S and Manohar R., Discrete mathematics structure with application to computer science, McGraw-Hill, 1975.
2. Kenneth H. Rosen, Discrete mathematics and its applications, Edition 6, McGraw-Hill, 2007.
3. Venkatraman M.K., Discrete Structures, National Pub. Co, Madras. 1992.
4. Kandaswamy P and others, Numerical Methods, Edition 4, S.Chand publications, 2002
5. Venkataraman M.K, Numerical Methods in Science and Engineering, National Publications. Co, Madras. 1992.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration:3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
        with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
        with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5001	PROGRAMMING IN C	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   9 hrs.

History of C – Structured Programming Language – The C Character Set – Identifiers – Keywords – Data Types & its sizes – Access Modifiers - Escape Sequences – Data Type Conversions – Operators – Statements – Library Functions – Header Files – The main() function – Conditional Statements – Loops– Input Output Operations – Character I/O – String I/O – Formatting input/output.

UNIT II   10 hrs.

Arrays – Types of Arrays– Declaring Arrays – Initializing Arrays – Accessing Array Elements – Strings – String Library Functions – Functions – Function Prototyping – return statement – nested functions – Function arguments – Actual Vs Formal Parameters – Recursion.

UNIT III   11 hrs.

Pointers – Pointer Variables – Initialization of Pointers – Pointer Arithmetic – Pointers and Arrays – Pointers Concepts in Functions – Call by value – Call by reference – Pointers to Pointers – Arrays as Function Arguments - Multiple Indirection.

UNIT IV   11 hrs.

Structures – Declaration – Definition – Initialization – Array of Structures – Pointers to Structures – Nested Structures – Unions – Declaration – Definition – Initialization – typedef – enum .

UNIT V   9 hrs.

File I/O – Error Handling during I/O – Random Access Functions in files – Command Line Arguments – Dynamic Memory Allocation – Storage Classes – Macros and Preprocessor Directives

TEXT / REFERENCE BOOKS:

1. Gotfred. B.S., Programming With C, Schaum's Outline Series ,Tata McGraw Hill Edition
2. Balagurusamy.E, Programming in ANSI C, Second Edition, Tata McGraw Hill-1999.

USEFUL WEBSITES:

http://www.java2s.com/Tutorial/C/CatalogC.htm

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration:3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5002	COMPUTER FUNDAMENTALS AND ARCHITECTURE	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   9 hrs.

Number system – conversion – complements – Binary codes – logic gates – truth tables. Boolean algebra – axioms & theorems – simplification of Boolean functions – Karnaugh map – Mc Clausky method

UNIT II   11 hrs.

Adders – Subtractors - Decoders – Encoders – Multiplexers – DeMultiplexers - Flip-flops: RS,D,JK & T flip-flops – Registers – Shift registers – Counters : ripple counter – BCD counters - synchronous counters - Counter Design

UNIT III   9 hrs.

Memory hierarchy – Main memory - RAM – ROM – Auxiliary memory - Associative memory – Cache memory – Virtual memory – Memory management hardware

UNIT IV   11 hrs.

General Register Organization- Stack Organization – Instruction Formats – Addressing Modes – Data transfer and Manipulation – Program Control – RISC

UNIT V   10 hrs.

Peripheral Devices - I/O Interface – Asynchronous Data transfer – Modes of transfer - Priority interrupt - DMA – I/O processor

TEXT / REFERENCE BOOKS:

1. Morris Mano M , Logic and Computer Design Fundamentals, 4th Edition PHI 2008
2. Morris Mano M, Computer System Architecture, 3rd Edition, PHI 1993
3. John.P.Hayes, Computer Architecture and Organization, 3rd Edition, McGraw Hill – 1998.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
     with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
     with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5003	SOFTWARE ENGINEERING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **10 hrs.**

Project and Process - Project Management Concepts - Software Process and Projects metrics – Different SDLC Methodologies – Waterfall Model, Rapid Prototypes – Spiral Model, Iterative Model, V Model

UNIT II   **9 hrs.**

Software Project Planning - Risk Management - Project Scheduling and tracking - Software Quality Assurance

UNIT III   **11 hrs.**

Software Configuration Management - System Engineering - Analysis Concepts and Principles

UNIT IV   **10 hrs.**

Analysis Modeling - Design Concepts and Principles - Design Methods

UNIT V   **10 hrs.**

Design for Real-time Systems - Software Testing Methods - Software Testing Strategies - Technical Metrics for software – Agile Methodologies

TEXT / REFERENCE BOOKS:

1. Pressman. R. S. ,Software Engineering - Fourth Edition- McGraw Hill International Edition 1997.
2. Richard Fairley, Software Engineering - (Design Reliability and Management), -Tata McGraw hill Edition -1983.
3. Fleeger.P Software Engineering, - Prentice Hall, 1999.
4. Carlo Ghezzi, Mehdi Jazayari, Dino Mandrioli Fundamentals of Software Engineering, - Prentice Hall of India 1991.
5. Sommerville.I, Software Engineering, 5th Edition, - Addison Wesley, 1996.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5004	FUNDAMENTALS OF DATA STRUCTURES	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **9 hrs.**

Arrays- Representation of arrays - Operations on arrays –Ordered Lists - Polynomials.

UNIT II   **11 hrs.**

Basic Operations (Creation, Insertion, Modification, Deletion, Traversal And Counting the no. of nodes) in Singly Linked Lists, Doubly Linked Lists And Circular Linked Lists – Applications Of Linked Lists – Generalized Lists.

UNIT III   **10 hrs.**

Stacks – Array based representation – Linked list based representation – Applications of Stack (Towers of Hanoi, Reversing a String, Balanced Parenthesis, Evaluation of Arithmetic expressions) – Queues – Array based representation – Linked list based representation – Priority Queues – Circular Queues – Dequeues

UNIT IV   **11 hrs.**

Trees- Binary Trees - Binary tree representations - Binary Tree Traversals - Threaded Binary Trees -Applications of Trees –Sets Representation

UNIT V   **9 hrs.**

Graphs - Representation of Graphs - Graph Traversals – Single Source Shortest Path - All Pairs Shortest Path.

TEXT / REFERENCE BOOKS:

1. Horowitz.E, Sahni.S, Fundamentals of Data Structures, Second Edition
2. Thomas H.Coreman, Charles E.Leiserson, Ronald L.Rivest, Introduction to algorithms - PHI, 2002.
3. Alfred V. Aho, Jeffrey D. Ullman, John E. Hopcroft, Data Structures and Algorithms, Addison Wesley, 1983.

USEFUL WEBSITES:

1. http://en.wikibooks.org/wiki/Data_Structures

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration:3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SBAX5028	MANAGEMENT ACCOUNTING	L	T	P	Credits	Total Marks
		3	1	0	4	100

UNIT I   10 hrs.

Concepts and conventions of accounting – classification of Accounts- Preparation of final accounts (simple adjustments) - Management Accounting Managerial uses – Management Accounting Vs cost Accounting- Management accounting Vs Financial Accounting – Limitations.

UNIT II   10 hrs.

Definition of marginal costing – marginal costing Vs absorption costing – BEP Analysis – Assumptions – Break Even Chart – Application of Marginal costing: Make or Buy Decisions and key factor problems.

UNIT III   10 hrs.

Definition – classification of ratios – computation of ratio from final accounts and preparation of final account from ratio

UNIT IV   10 hrs.

Definition – steps for implementation – Zero base budget – Master budget – preparation of cash and flexible budgets.

UNIT V   10 hrs.

Definition – process –methods in capital budgeting - capital rationing.

TEXT / REFERENCE BOOKS:

1. Dr. S.N. Maheswari Financial and Management Accounting, Sultan Chand & Sons, Fifth Revised Edition 2009.
2. Dr. L. N. Hingorani, A.R. Ramanathan and T.S. Grewal, Management Accounting – Text, Sultan Chand & Sons, Fifth Revised Edition 2009.
3. Pandey. I.M., Management Accounting, Vikas Publishing Houst Pvt. Ltd. Third revised Edition, 2009.
4. Sahaf. M.A. ,Management Accounting Principles and Practices, Vikas Publishing House Pvt. Ltd. Second revised Edition 2009.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks: 80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
        with a minimum of 2 questions from each unit-8 questions to be answered - **8 Theory Questions and 4 problems**

40 marks

Part B: 6 Questions to be set each carrying 10 marks
        with a minimum of 1 question from each unit-4 questions to be answered - **2 Theory Questions and 4 problems**

40 marks

SMTX5002	STATISTICAL METHODS	L	T	P	Credits	Total Marks
		3	1	0	4	100

UNIT I   10 hrs.

Karl Pearson's Co-efficient of Correlation – Spearman's Rank Coefficient of Correlation – Linear regression – Method of least squares – Fitting the curves of the form $y = a + bx$, $y = a + bx + cx^2$, $y = ab^x$, $y = ax^b$ – Multiple and partial correlation (Three variables only)

UNIT II   10 hrs.

Sample space – Events – Axiomatic approach to probability – Conditional probability – Independent events – Baye's formula – Random variables – Continuous and Discrete Random variables – Distribution function of a Random variable – Characteristic of distribution – Expectation and Variance

UNIT III   10 hrs.

Bivariate distribution - Conditional and Marginal distribution – Discrete distributions : Binomial, Poisson – Continuous Distributions : Normal.

UNIT IV   10 hrs.

Concepts of sampling – Methods of sampling – Simple random sampling – Systematic Sampling and Stratified Random Sampling (Descriptions only) Test of hypothesis – Critical region, two types of error – Level of significance – Power of the test – Large sample tests for mean and proportion – exact test based on normal, t, F,and Chi square distribution.

UNIT V   10 hrs.

Basic principles of experimentation – Analysis of Variance – One-way and Two-way classification – Time series analysis - Measurement of trend and seasonal variation.

TEXT / REFERENCE BOOKS:

1. Irwin Miller, Marylees Miller, John E. Freund, Mathematical Statistics Edition 6, Prentice Hall, 1999
2. Veerarajan. T, Probability, Statistics and Random Processes, Edition 3,Tata McGraw-Hill,2002.
3. Murray R. Spiegel , Schaum's Outline of Theory and Problems of Probability and Statistics, Tata McGraw-Hill, 1975.
4. Gupta S.C , Fundamentals of Statistics, Himalaya Publisher, 1984
5. Vittal P.R , Business Statistics, Margham Publications, 3rd edition, 2002

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5005	ADVANCED DATA STRUCTURES AND ALGORITHMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   11 hrs.

Abstract Data Types - Asymptotic Notations – Efficiency - Complexity Analysis - Sorting – Bubble Sort – Insertion Sort- Shell Sort - Selection Sort – Quick Sort – Merge Sort - Heap Sort – Radix Sort – Searching – Linear Search – Binary Search – Fibonacci Search.

UNIT II   11 hrs.

Splay Trees – AVL Trees - B-Trees – Data structures for Disjoint sets: Disjoint set operations – Linked List representation of disjoint sets.

UNIT III   9 hrs.

Divide and Conquer: Finding The Maximum and Minimum – Strassen's matrix multiplication- Dynamic Programming – Longest Common Subsequence Problem – Chained Matrix Multiplication

UNIT IV   10 hrs.

Greedy Method: Tree Vertex Splitting - Knapsack Problem - Minimum Cost Spanning Tree : Kruskal's Algorithm – Prim's Algorithm – Sollins Algorithm.

UNIT V   9 hrs.

Backtracking: 8 Queens Problem – Sum of Subsets – Graph coloring

Branch and Bound: Travelling Salesman Problem

TEXT/ REFERENCE BOOKS:

1. Thomas H.Coreman, Charles E.Leiserson, Ronald L.Rivest , Introduction to algorithms, - PHI, 2002.
2. Horowitz.E and Sahni.S, Fundamentals of Data Structures, Galgotia, 1976.
3. Horowitz.E, Sahni.S and Rajasekaran.S, Computer Algorithms,– Galgotia, 1999.
4. Sudharsan.P, John Manoj Kumar.J, Data structures & Algorithms First Edition-– RBA Publications –2009
5. Sudharsan.P, John Manoj Kumar.J, C++ & Data structures, First Edition – RBA Publications –-2009

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5006	MICROPROCESSORS AND INTERFACING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

8086 Architecture – Addressing modes – Instruction set – Assembler Directives - Introduction to Assembly Language Programming – Development steps – Construction – Writing programs and Development Tools.

UNIT II   10 hrs.

Standard program structures – Simple Programs – Jumps – While do – Repeat – until – Delay loops – Strings – Procedures – Macros.

UNIT III   10 hrs.

Minimum/Maximum mode signals - Troubleshooting - 8086 interrupts - Programmable timer/counter - Interrupt Controller

UNIT IV   10 hrs.

Parallel ports - Handshaking - Interfacing D/A, A/D, Stepper motor, Temperature control DMA

UNIT V   10 hrs.

DRAMS - Cache Memories - Co-Processors – Brief study on 80286,80386,80486, Pentium Processor Architecture.

TEXT / REFERENCE BOOKS:

1. Douglas V.Hall, Microprocessors and Interfacing- The McGraw.Hill, 2006
2. Mohamed Rafiquzzaman, Introduction to Microprocessors and Microcomputer-Based System Design- CRC Press, 1995.
3. Walter A.Tribel, Avtar Singh, The 8088 and 8086 Microprocessors Programming, Interfacing, Software, Hardware and Applications-Prentice Hall of India Pvt. Ltd,2002.
4. Godse.A.P, Godse.D.A, Microprocessors and its Applications-Technical Publications Pune, 2008.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5007	DATA COMMUNICATION AND COMPUTER NETWORKS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **11 hrs.**

Introduction to Data Communication – Network - Protocols & Standards - Standards Organizations - Line Configuration, Topology - Transmission Mode - Categories of Networks - OSI Model - Layers of OSI Model

UNIT II   **10 hrs.**

Analog and Digital Signals - Encoding and Modulation - Parallel and Serial Transmission - Guided Media - Unguided Media - Performance - Types of Error - Error Detection - Error Correction

UNIT III   **10 hrs.**

Data link Control - Line Discipline - Flow Control - Error Control, Multiplexing -Types of Multiplexing – Ethernet - Token Bus - Token Ring – FDDI - IEEE 802.6 - Circuit Switching-Packet Switching - Message Switching - Connectionless Services

UNIT IV   **10 hrs.**

ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer - ATM Layers - ATM Topology - ATM Protocol

UNIT V   **9 hrs.**

Repeaters – Bridges – Routers – Gateway - Routing Algorithms - TCP/IP – Overview - Network Layer - Addressing – SubNet - Transport Layer - Application Layer - Worldwide Web

TEXT / REFERENCE BOOKS:

1. Behrouz A. Forouzan, Introduction of Data Communication and Networking, - Tata McGrawHill, 1999.
2. Andrew S Tanenbaum ,Computer Networks,Third edition, Tata McGraw Hill,2006
3. Fred Halsall ,Data Communications, Computer Networks and Open Systems, 4th Edition , Addison Wesley,, 2000.
4. Jean Walrand ,Communication Network (A first course), Second Edition, Tata McGraw Hill ,1998.

USEFUL WEBSITES:

1. www.eeng.dcu.ie/~ee210/
2. www.cs.sfu.ca/CC/371/jcliu/Notes.htm
3. www.wepapers.com/Papers/51771/Notes_on__Computer_Networks

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks
Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5008	OBJECT ORIENTED PROGRAMMING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   9 hrs.

Introduction to OOP - Overview of C++ - Classes – Structures - Union – Access Specifiers - Constructors –- Types of Constructors - Destructors – Member variables – Member functions - Scope Resolution Operator –new – delete - Passing Objects to Functions - Function Returning Objects

UNIT II   11 hrs.

This Pointer - References - Function Overloading - Default arguments - Inline Functions – Overloading Constructors - Pointers to Functions - Ambiguity in Function Overloading - Friend Functions - Friend Classes - Operator Overloading - Member Operator Functions - Friend Operator Function - Overloading some Special Operators like [ ] , ( ), and Comma operator, Overloading << and >>

UNIT III   10 hrs.

Static Members - Inheritance - Types of Inheritance - Protected Members –Calling multiple constructors – Overriding functions - Virtual Base Class - Polymorphism - Virtual Function - Pure Virtual Functions – Virtual Destructors – Implementing Abstract classes – Memory Management in C++ - malloc() vs new – free() vs delete.

UNIT IV   11 hrs.

Templates - Class Templates and Generic Classes - Function Templates and Generic Functions - Overloading a Function Template - Power of Templates - Exception Handling - Derived Class Exception - Overloading Generic Functions - Exception Handling Functions – terminate( ) - unexpected ( ) – Uncaught Exception - Rethrowing an exception

UNIT V   9 hrs.

I/O Streams – Streams and Buffers - Formations I/O with IOS class functions and manipulators - Creating own Manipulator - File I/O - Name Spaces - Conversion Functions - Standard Template Library (STL) – Containers – Iterators – Common Operations

TEXT / REFERENCE BOOKS:

1. Balagurusamy.E, Object Oriented Programming with C++ - Third Edition -Tata McGraw Hill - 2007

2. Venugopal.K.R, Rajkumar, Ravishankar.T, Mastering C++ - Tata McGraw Hill - 2003

3. Herbert Shildt, The Complete Reference C++ - Third edition - Tata McGrawHill -2003

4. Bjanne Stroustrup, The C++ Programmers Reference- 3rd Edition - Addison Wesley- 2000

USEFUL WEBSITES:

1. www.idiap.ch/~fleuret/.../Francois_Fleuret_-_C++_Lecture_Notes.pdf

2. www.personal.rdg.ac.uk/~shs97vfr/SE2B2%20notes/Std_C++_Notes_03.pdf

3. www.compgeom.com/~piyush/teach/3330/slides/index.html

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
     with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
     with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5009	OPERATING SYSTEM AND ITS CONCEPTS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   9 hrs.

Introduction – Multiprogramming - Time Sharing - Distributed System – Real time Systems – I/O Structure - Dual Mode Operation - Hardware Protection - General System Architecture - Operating System - Services System Calls - System Programs - System Design and Implementation

UNIT II   10 hrs.

Process Management: Process Concept - Concurrent Processes - Scheduling concepts - CPU Scheduling - CPU Scheduling Algorithms - Multiple-Processor Scheduling - Critical Section -Synchronization Hardware - Semaphores, Classical problems of synchronization, Inter Process communication. Deadlocks: Characterization, Prevention, Avoidance and Detection

UNIT III   11 hrs.

Storage Management – Swapping – Contiguous Memory Allocation - Paging -Segmentation - Paged Segmentation - Virtual memory - Demand Paging - Page Replacement algorithms, Thrashing. Mass Storage Structure - Disk Structure - Disk Scheduling – Disk Management

UNIT IV   10 hrs.

File System interface – File Concept – Access Methods – Directory Structure – File System Mounting – File sharing – File Protection. File System Implementation: File System Structure – File system implementation – Directory implementation – Allocation methods – Free space management – Efficiency and Performance – Recovery. Protection: Domains of protection – Access matrix – Implementation of access matrix.

UNIT V   10 hrs.

Case Studies: LINUX and Windows XP Operating Systems

TEXT / REFERENCE BOOKS:

1. Silberchatz.A and Galvin.P.B - Operating System Concepts, - Addison Wesley Publishing Company - Sixth Edition
2. Godbole.A.S. - Operating System -Tata McGraw Hill -1999
3. William Stallings - Operating Systems, Fourth Edition - PHI
4. Andrew S Tanenbaum - Operating Systems: Design and Implementation, Third Edition - PHI

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
     with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
     with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5010	DATABASE MANAGEMENT SYSTEMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Basic Concepts: Database and Database users – Database system concepts and architecture – Data modeling using Entity Relationship model – Enhanced entity relationship and object modeling – Record storage and file organizations – Index Structures for files

UNIT II   10 hrs.

Relational Model, Languages and Systems: The Relational Data Model, Relational Constraints, and the relational Algebra – SQL – The Relational Database Standard – ER and EER to Relational Mapping and Other Relational Languages – Examples of Relational Database Management Systems: Oracle and Microsoft Access.

UNIT III   10 hrs.

Database Design, Theory and Methodology: Functional dependencies and normalization for relational database – Relational database design algorithms and further dependencies – Practical database design and tuning

UNIT IV   10 hrs.

System Implementation Techniques: Database system architectures and the system catalog – Query processing and optimization

UNIT V   10 hrs.

Transaction processing concepts – Concurrency control techniques – Database recovery techniques – Database security and Authorization. Introduction to Emerging Database Technologies and Application

TEXT / REFERENCE BOOKS:

1. Elmasri & Navathe , Fundamentals of Database Systems,6th Edition, Addison Wesley, 2010
2. Korth ,Silberschatz & Sudarshan ,Database System Concepts ,5th Edition, Tata McGraw Hill, 2010
3. Raghu Ramakrishnan & Johannesgerhrke, Data Base Management Systems,3rd Edition , Tata Mc Graw Hill , 2002

Useful Websites:

1. http://nptel.iitm.ac.in/courses/IIT-MADRAS/Intro_to_Database_Systems_Design/index.php

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
      with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
      with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5011	PROGRAMMING IN JAVA	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **9 hrs.**

Introduction to Java – Features of Java – Object Oriented Concepts - Lexical Issues – Data Types – Variables – Arrays – Operators – Control Statements

UNIT II   **11 hrs.**

Classes – Objects - Constructors - Overloading method – Access Control – Static and Final methods and variables – Inner Classes – String Class – Inheritance – Overriding methods – Using Super – Abstract Class

UNIT III   **11 hrs.**

Packages – Access Protection – Importing Packages – Interfaces – Exception Handling – throw and throws – thread – Synchronization – Messaging – Runnable interface – Inter thread Communication – Deadlock – Suspending, Resume and Stopping threads – Multithread

UNIT IV   **9 hrs.**

I/O Streams – File Streams – String Buffer – Char Array – Java Utilities: StringTokenizer – Date – Calendar – Random – Timer – Collections: ArrayList – Vector.

UNIT V   **10 hrs.**

Applet class – Event handling – AWT Controls – Layout Managers and Menus - Swing

JDBC / ODBC Database Connection - Java Bean.

TEXT / REFERENCE BOOKS:

1. Patrick Naughton,The Complete Reference Java ,Fifth edition, Tata McGraw-Hill.
2. Bruce Eckel,Thinking in Java, Pearson Education – 2000
3. Mike Cohn, Bryan Morgan, Michael, Dan Joshi,Java Developer 's Reference, Sams.net Publishing, 1996
4. Michael Morrison, Java Unleashed, 3rd edition, SAMS Publishing

USEFUL WEBSITES:

1. www.java.sun.com

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks
Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5012	GRAPHICS AND MULTIMEDIA SYSTEMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **9 hrs.**

Video Display Devices - Raster Scan Systems – Input Devices - Hard Copy Devices – Graphics Software -Output Primitives - Attributes of Output Primitives

UNIT II   **10 hrs.**

Two-dimensional Transformation - Clipping – Window - Viewpoint mapping

UNIT III   **11 hrs.**

Three Dimensional Concepts - 3D Transformations - 3D Viewing - Visible-Surface Detection: Back-Face Detection - Depth-Buffer Method -Scan Line Method - A-Buffer Method

UNIT IV   **11 hrs.**

Multimedia Authoring Tools: Types of Authoring Tools – Card-and-Page-Based Authoring Tools – Icon - Based Authoring Tools – Time- Based Authoring Tools – Object-Oriented Based Authoring Tools – Cross-Platform Authoring Notes - Font Editing and Design Tools – Hypermedia and Hypertext – Multimedia System Sounds – MIDI Versus Digital Audio – Making MIDI Audio – Audio File Formats– Adding Sound to Your Multimedia Project

UNIT V   **9 hrs.**

Images: Making Still Images – Color – Image File Formats – Animation: The Power of Motion – Principles of Animation – Making Animations that Work – Video: Using Video – How Video works - Broadcast Video Standards – Integrating Computers and Television – Shooting and Editing Video – Video Tips – Recording Formats – Digital Video

TEXT / REFERENCE BOOKS:

1. Hearn.D and Baker. M.P. - Computer Graphics - 2nd Edition –PHI 1996
2. Tay Vaughan - Multimedia: Making it Work– 4th Edition – Tata McGraw Hill Edition –1999
3. Neumann. W.M. and Sproull. R.F. - Principle of Interactive Computer Graphics - McGraw Hill – 1979
4. Ranjan Parekh, Principles of multimedia – Sixth edition, Tata McGraw Hill - 2008

SBAX5010	APPLIED OPERATIONS RESEARCH	L	T	P	Credits	Total Marks
		3	1	0	4	100

UNIT I   10 hrs.

Concept of Operations Research - Meaning and Models in OR - Utilization of OR Models for Managerial Decision Making.

Linear Programming Problems - Formulation, Graphical Method and Simplex Method of Solving LPP.

UNIT II   10 hrs.

Transportation Problems - Initial Solution by North West Corner Method, Least Cost Method and VAM Method; MODI Method of Deriving Optimum Solution.

Assignment Problems-Hungarian Method of Solving Minimisation and Maximisation Problems.

UNIT III   10 hrs.

Network Analysis - CPM - Network Diagram Construction, Identification of Critical Path, Calculation of Floats. PERT- Calculation of Estimated Time, Standard Deviation and Probability.

Sequencing - Sequencing of 'N' Number of Jobs on Two, Three and Four Machines.

UNIT IV   10 hrs.

Replacement Problems - Replacement of Assets that Deteriorates with Time - with and without Time Value of Money Consideration; Replacement of Assets that Fail Suddenly.

Theory of Games - Pure and Mixed Strategies - Saddle Point, Dominance Property and Graphical Method of Solving Games.

UNIT V   10 hrs.

Inventory Models - ABC Analysis, Costs Involved in Inventory Management - EOQ Calculation, Deterministic Demand Inventory Models.

Waiting Line Models - Features of a Waiting Line Model - Kendall Notations - M/M/1; M/M/C; and M/M/1; FIFO/N/N Models only.

TEXT / REFERENCE BOOKS:

1. Hamdy Taha, Operations Research – Pearson Education
2. Sharma.J.K., Operations Research - Macmillan Business Books
3. Pandian.K, Operations Research – Peeyam Publications
4. Sundaresan.V, Ganapathy Subramanian. K.S, Ganesan. K, Resource Management Technique, Lakshmi Publications
5. Kantiswaroop, Operations Research - Sultan Chand & Sons

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
         with a minimum of 2 questions from each unit-8 questions to be answered - **8 Theory Questions and 4 problems**

                                                                                                                        40 marks

Part B: 6 Questions to be set each carrying 10 marks
         with a minimum of 1 question from each unit-4 questions to be answered - All problems   40 marks

SCAX5013	UNIX AND NETWORK PROGRAMMING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Introduction - Overview of UNIX Operating System - Basic commands – Shell Script - File System: File I/O - Files and directories - Standard I/O library - System data files and information

UNIT II   10 hrs.

Processes: Environment of a UNIX process - Process control - Process relationships - Signals - Terminal I/O

(Implementation using System V)

UNIT III   10 hrs.

Inter Process Communication: Introduction - Message passing - Synchronization - Shared memory

(Implementation using System V)

UNIT IV   10 hrs.

Sockets: Introduction - TCP sockets - I/O multiplexing - Socket options - UDP sockets - Name and address conversions

UNIT V   10 hrs.

Applications: Raw sockets - Debugging techniques - TCP echo client server - UDP echo client server - Ping - Trace route - Client server applications

TEXT / REFERENCE BOOKS:

1. Richard Stevens.W, Stephen A. Rago , Advanced programming in the UNIX environment, 2nd Edition - Addison Wesley,2005
2. Richard Stevens.W , Bill Fenner, Andrew M. Rudoff, UNIX Network Programming Volume1 : The Sockets Networking API,, 3rd edition - Addison-Wesley Professional,2004
3. W. Richard Stevens,UNIX Network Programming, Volume 2: Interprocess Communications, 2nd Edition, Prentice Hall; 2003
4. Kay A. Robbins, Steven Robbins, UNIX systems programming: communication, concurrency, and threads,2nd edition, Prentice Hall PTR, 2003

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5014	DATA WAREHOUSING AND DATA MINING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Relation to Statistics, Databases - Data Mining Functionalities - Steps in Data Mining Process-Architecture of a Typical Data Mining System - Classification of Data Mining Systems - Overview of Data Mining Techniques

UNIT II   10 hrs.

Data Preprocessing - Data Cleaning, Integration, Transformation, Reduction, Discretization - Concept Hierarchies - Concept Description: Data Generalization and Summarization Based Characterization - Mining Association Rules In Large Databases

UNIT III   10 hrs.

Classification and Prediction: Issues Regarding Classification and Prediction-Classification by Decision Tree Induction - Bayesian Classification - Other Classification Methods – Prediction -Cluster Analysis: Types of Data In Cluster Analysis - Categorization of Major Clustering Methods: Partitioning Methods – Hierarchical Methods

UNIT IV   10 hrs.

Data Warehousing Components - Multi Dimensional Data Model - Data Warehouse Architecture - Data Warehouse Implementation - Mapping the Data Warehouse to Multiprocessor Architecture - OLAP – Need - Categorization of OLAP Tools

UNIT V   10 hrs.

Applications of Data Mining - Social Impacts Of Data Mining – Tools - An Introduction To DB Miner - Case Studies - Mining WWW - Mining Text Database - Mining Spatial Databases

TEXT / REFERENCE BOOKS:

1. Jiawei Han, Micheline Kamber ,Data Mining: Concepts and Techniques,2nd Edition - Morgan Kaufmann Publishers, 2006
2. Alex Berson, Stephen J. Smith ,Data Warehousing, Data Mining & OLAP,13th Reprint - Tata McGraw- Hill, 2008
3. Ralph Kimball ,The Data Warehouse Life Cycle Toolkit, 2nd edition ,John Wiley & Sons.2008
4. Sean Kelly ,Data Warehousing In Action, reprint 2008 , John Wiley & Sons 2008

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5015	**ADVANCED JAVA PROGRAMMING**	L	T	P	**Credits**	**Total Marks**
		3	0	0	3	100

UNIT I   11 hrs.

J2EE Platform: Programming for the Enterprise – The Enterprise today – Enterprise Architecture Styles – J2EE Run Times – J2EE API -J2EE Architecture – Containers – Introduction to J2EE Technologies – Naming and Directory Services.

Data Base Programming with JDBC - JDBC/ODBC Bridge – Establishing a connection – Creating and Executing SQL statements – Querying – Prepare statements – Scrollable and Updatable Result Sets - javax.sql packages – JDBC Data Sources – Connection Pooling.

Remote Method Invocation: Introduction – Interface – Implementation – Server – Client

UNIT II   9 hrs.

Java Script:-Embedding Java Script In HTML - Variables - Literal - Conversion Functions - Arrays - Java Script Programming - Statements – Functions - Events Handling - Working With Objects – Date, Math, String, Window, Calendar -Connecting To Search Engines

UNIT III   10 hrs.

Introduction to Servlet Programming - HTTP Protocols - Servlet Life Cycle – Servlet Configuration - Servlet Implementations – Servlet Request / Response Interfaces – Servlet to Servlet Communication – Servlet to Applet Communication

UNIT IV   10 hrs.

Advanced Servlets: Approach to Session Tracking - HTTP Session Interface – Demonstrating Session - Lifecycle with cookies – A simple Shopping cart using Sessions – Servlet Context Interface – Servlet Context Lifecycle - Event Handling – Servlet Collaboration – Servlet Chaining – Request Dispatching

UNIT V   10 hrs.

Java Server Pages: Introduction to JSP –JSP Directives – Scripting elements – Standard Actions - Implicit objects – Scope – JSP Sample Program – Design Strategies. Introduction to Enterprise Java Beans - Introduction to Struts

TEXT / REFERENCE BOOKS:

1. Subrahmanyam Allamaraju, Cedric Buest, John Davies, Tyler Jewell, Rod Johnson, Andy Longshaw, Ramesh Nagappan, P. G. Sarang, Alex Toussaint, Sameer Tyagi, Gary Watson, Marc Wilcox, Alan Williamson - Professional Java Server Programming J2EE – 1.3 edition – Wrox Publications - 2000
2. Jim Keogh - Complete Reference, J2EE- Tata McGraw Hills, 2004
3. Thomas A. Powell, Fritz Schneider - JavaScript: the complete reference - McGraw-Hill/Osborne - 2004

USEFUL WEBSITES:

1. http://www.w3schools.com/js/
2. www.roseindia.net

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5016	OBJECT ORIENTED ANALYSIS AND DESIGN	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

System Development - Object Basics - Development Life Cycle – Methodologies - Patterns -Frameworks - Unified Approach – UML

UNIT II   10 hrs.

Use Case Model - Object Analysis - Object Relations - Attributes - Methods - Class and Object Responsibilities - Case Studies

UNIT III   10 hrs.

Design Processes - Design Axioms - Class Design - Object Storage - Object Interoperability - Case Studies

UNIT IV   10 hrs.

User Interface Design - View Layer Classes - Micro-Level Processes - View Layer Interfaces -Case Studies

UNIT V   10 hrs.

Quality Assurance Tests - Testing Strategies - Object Orientation on Testing - Test Classes -Test Plans - Continuous Testing - Debugging Principles - System Usability - Measuring User Satisfaction - Case Studies

TEXT / REFERENCE BOOKS:

1. Ali Bahrami - Object Oriented Systems Development -McGraw Hill International Edition -1999
2. Pressman. R.S - Software Engineering, - 4th Edition - McGraw Hill International Edition -1997
3. Craig Larman, Pearson, Applying UML and Patterns, 2nd Edition 2002
4. Grady Booch, James Rumbaugh, Ivar Jacobson, Addison Wesley Long man The Unified Modeling Language User Guide -1999
5. Bernd Bruegge, Allen H. Dutoit, Object Oriented Software Engineering using UML, Patterns and Java - Pearson 2004

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5017	NETWORK SECURITY	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **12 hrs.**

Introduction: Attack, Services and Mechanisms – Network security model – Classical Encryption techniques – Block cipher – DES- Triple DES -AES- RC4

UNIT II   **10 hrs.**

Public Key Encryption: RSA algorithm – Diffie Hellman Key Exchange – Key Management – Message Authentication and Hashing functions

UNIT III   **10 hrs.**

SHA -512 - HMAC – CMAC – Digital signatures – Authentication protocols – Authentication applications

UNIT IV   **9 hrs.**

Electronic mail security – IP Security – Web security

UNIT V   **9 hrs.**

System Security: Intruders – Viruses – Worms – Firewalls

TEXT / REFERENCE BOOKS:

1. William Stallings ,Cryptography and Network Security, Fourth Edition- PHI, New Delhi 1999
2. Schneier, Toha - Wiley and Sons, Bruc - Applied Cryptography 2nd edition , 1996
3. Douglas R. Stinson Cryptography - Theory and Practice- CRC Press 1995

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5018	.NET AND XML PROGRAMMING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Overview of .NET – Advantages of .NET over the other languages, overview of .NET binaries, Intermediate Language, metadata, .NET Namespaces, Common Language runtime, common type system, common Language Specification

Introducing ASP .NET – ASP.NET namespaces - Creating and deploying ASP .NET applications – Web forms – Basic Web controls – working with events – Rich web controls: AdRotator Control, Calendar Control – Custom web controls – Validation controls

UNIT II   10 hrs.

Web Development and ASP.NET- Web applications and Web servers, HTML form Development, Client side Scripting, GET and POST, ASP.NET application, Caching in ASP .NET – ASP .NET security – Localizing ASP .NET applications.

UNIT III   10 hrs.

Introduction to ADO.NET- ADO Vs ADO.NET - Building Data Table, Data View, Data Set, Data Relations, ADO.NET managed Providers, OleDb Managed Provider – OleDb Data Adapter Type

UNIT IV   10 hrs.

XML-XML structure – elements, well formed XML, XML Namespaces - working with DTD- Adding DTDs to documents - defining DTD entities - defining Parameter entities - Working with attributes – Defining attributes, defining multiple attributes, using predefined attributes - CSS basics - Adding CSS to document, CSS selections, Controlling fonts - Need of XSL, XSL basics, XSL transformations, Introduction to Schemas- Defining simple elements and types. XML query

UNIT V   10 hrs.

Introduction to web services – Web services Architecture – SOAP – Building a web service – WSDL – UDDI.

Ajax – Improving web page performance using Ajax - Programming in Ajax.

TEXT / REFERENCE BOOKS:

1. Mridula Parihar, et. al., ASP .NET Bible, Wiley Dreamtech India Pvt. Ltd., 2002
2. Mark Birbeck, stev Livingstone, Stephen F. Mohr , Jonathan Pinnock , Steven Livingston, Professional XML, 2nd Edition, Wrox Publications, 2000
3. Alex Homer et. al., Professional ASP .NET 1.1, Wiley Dreamtech India Pvt. Ltd., 2004
4. Eric Ladd, Jim O' Donnel, Using HTML 4, XML and Java, Prentice Hall of India - QUE, 1999
5. Andrew Troelsen, C# and the .NET Platform, APress, 2001

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
  with a minimum of 2 questions from each unit-8 questions to be answered 40 marks

Part B: 6 Questions to be set each carrying 10 marks
  with a minimum of 1 question from each unit-4 questions to be answered 40 marks

SCAX6501	C AND DATA STRUCTURES LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. (i) Find the maximum of 3 numbers using if statement

   (ii) Find the value of X^N

2. (i) To verify whether the given number is armstrong or not

   (ii) Prime Numbers between two limits

3. (i) Pascal's Triangle

   (ii) To generate Fibonacci series

4. String Manipulations

5. Matrix Multiplication

6. Programs that use both recursive and non-recursive functions

   (i) To find the factorial of a given integer.

   (ii) To find the GCD (greatest common divisor) of given two integers.

7. To count the number of lines, words and characters in a file.

8. Implementation of Stack

9. Implementation of Queue

10. Basic Operations in a Singly Linked List

11. Basic Operations in a Doubly Linked List

12. Basic Operations in a Circular Linked List

13. Binary Tree Traversals

14. Graph Traversals

SCAX6502	MICROPROCESSOR LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. Multibyte Addition/Subtraction

2. Computing LCM

3. Computing GCD of N numbers

4. Insertion Sort

5. Selection Sort

6. Linear Search

7. Matrix Multiplication

8. Computing Factorial

9. Computing NCR

10. Computing Fibonacci Number

11. Finding Memory size

12. Clearing Screen

13. Moving string of Characters on the CRT

14. Checking Password

15. Displaying Command Line Parameter

SCAX6503	PROGRAMMING IN C++ LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. Creating Database for Mailing Address (Using Structure and File Concept).

2. Operator overloading

3. Friend functions

4. Types of inheritance

5. Virtual functions

6. Exception Handling

7. Sorting Algorithms

    a. Insertion Sort

    b. Selection Sort

    c. Bubble Sort

    d. Quick Sort

    e. Heap Sort

8. Searching Algorithms

    a. Linear Search

    b. Binary Search

9. Spanning Tree - Kruskals Algorithm

10. 4-Queens Problem

SCAX6504	JAVA PROGRAMMING LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. Finding area and Perimeter of a circle using BufferedReader Class

2. Substring removal from a String using StringBuffer class.

3. Determining the orders of the numbers generated randomly using Random class

4. Usage of Calendar class and manipulation

5. String manipulation using CharArray

6. Usage of Vector class

7. Implementing Thread based applications and exception handling

8. Application using synchronization such as Thread based, Class based and synchronized Statement
   Using Applets and Swings:

9. Implementation of Point class for image manipulation

10. Working with frames and other controls

11. Working with Dialog and Menus

12. Working with Panel and Layout

13. Incorporating Graphics

14. Working with Colors and fonts

15. Database creation for storing email addresses and manipulation using Swing

SCAX6505	RDBMS LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. Using Oracle & DB2 DDL Commands:

To create a table

To alter a table

To drop a table

To create a view

To drop a view

2. Using Oracle & DB2 DML Commands:

To insert, delete and update rows into a table

To write a simple queries using SELECT

To write queries using SELECT and WHERE clause

To write queries using Logical operators

To write queries using NULL

To write queries using NVL function

To write queries for pattern matching

To write queries using order by clause

To write queries using Distinct clause

To write queries using Arithmetic Expressions

To write queries using Arithmetic Function

To write queries using Group Function

To write queries using Group by Clause

To write queries using Having clause

To write queries using Character Function

To write queries using Date Function

To write queries using Sub queries

To write queries using Join

3. Using PL/SQL:

To create Cursor and work on that

To create PL/SQL code for Exception

To create PL/SQL code using Control Statement

To create PL/SQL code using Procedures and Functions

4. Database Applications using VB.NET

SCAX6506	UNIX AND NETWORK PROGRAMMING LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. Basic UNIX Commands & Shell Programs

2. Implementation of System Calls related to File System

3. Program using Signals and Terminal I/O

4. Process Creation, Execution

5. Pipes

6. Shared Memory

7. Semaphores

8. Message Queues

9. Socket Programming - TCP Sockets

10. Socket Programming - UDP Sockets

SCAX6507	J2EE LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

1. Application Using JDBC and AWT

    a. Students Information System

    b. Library information System

2. Client Validation using Java Script Programs.

3. Web Application Using Servlet

    a. HTTP Handling (GetRequest and PostRequest)

    b. Session and Cookies

    c. Applet to Servlet Communication

4. Web Application Using JSP

    a. Use Bean Methods

    b. Shopping cart using Session

5. Calculator application using RMI

SCAX6508	CASE TOOLS LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

Prepare the following documents for the applications 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 Developments and Debugging

5. Software Testing: Prepare test plan, perform validation testing, Coverage analysis, memory leaks, develop test case hierarchy, Site check and Site monitor.

LIST OF APPLICATIONS

1. Quiz System
2. Online Ticket Reservation System
3. Payroll System
4. ATM Systems
5. Remote Procedure Call Implementation

SCAX6509	.NET AND XML PROGRAMMING LAB	L	T	P	Credits	Total Marks
		0	0	4	2	100

A. Using ASP. NET

1. Simple .NET Applications
2. Creating web forms application projects
3. Usage of web controls
4. Working with events
5. Usage of Rich web controls
6. Usage of Validation controls
7. Building and testing custom controls
8. Forms based authentication
9. Creating and testing a web service
10. Creating a consumer application
11. Building a simple database

B. Using XML

12. XML and DTD
13. XML and XML Schema
14. Displaying XML with CSS
15. Displaying XML with XSLT
16. Using XQuery

SCAX5019	**ADVANCED COMPUTER ARCHITECTURE**	**L**	**T**	**P**	**Credits**	**Total Marks**
		3	0	0	3	100

UNIT I   **10 hrs.**

Review of Fundamentals: Computer Arithmetic – fixed point – floating point - BCD operations

UNIT II   **11 hrs.**

CPU Architecture: Instruction sets of different machines - CISC Vs RISC - Pipelining issues - Super Scalar Architectures

UNIT III   **9 hrs.**

Memory Design: Virtual memory - Cache design for different architectures and multiprocessor environments - Evaluating Memory Performance

UNIT IV   **10 hrs.**

I/O Design: Speed limits - Interfacing to different types of I/O devices - Performance measures

UNIT V   **10 hrs.**

Parallel Architectures: Data flow - Vector processors - EPIC - Case Studies

TEXT / REFERENCE BOOKS:

1. Patterson. D.A and Hennessy. J.L ,Computer Architecture - A Quantitative Approach, Morgan Kaufmann Publishers, 2nd edition 1996
2. Vincent P. Heuring, Harry F. Jordan - Computer Systems Design and Architecture, Addison Wesley, 1999

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
  with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
  with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5020	ENTERPRISE RESOURCE PLANNING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   9 hrs.

Introduction to ERP- Its Evolution, its Growth, Its Advantages , Its need, Integrated Management information, Business Modeling, Integrated Data Model. Chain – Supply and demand chain-Extended Supply chain

UNIT II   10 hrs.

ERP and Related Technologies- BPR, MIS, DSS, EIS, Data Warehousing, Data Mining, OLAP . A Manufacturing Perspective-MRP, BOM, Closed Loop MRP,MRP-II,DRP,JIT and Kanban, CAD/CAM, PDM, Data Management, Benefits of PDM,MTO and MTS,ATO,CRM

UNIT III   10 hrs.

Benefits of ERP, ERP Modules – Finance, Plant Maintenance, Quality Management ,Materials Management. ERP Market : SAP AG, People Soft, BAAN and ORACLE, JD Edwards.

UNIT IV   10 hrs.

ERP Implementation Life Cycle – Pro-evaluation Screeing, package Evaluation, Project planning phase, Gap – Analysis, reengineering, Configuaration, implementation team-Training, Testing ,Going Live, END-User Training .Post implementation, Business Models and BAPIs. Convergence on Windows NT, Application platforms, New Business segment and Features

UNIT V   11 hrs.

ERP Procurement Issues – Market Trends – Outsourcing ERP – Economics – Hidden Cost Issues – ROI – Analysis of cases from five companies

TEXT / REFERENCE BOOKS:

1. Alexis Leon , Enterprise Resource Planning - Tata McGraw-Hill, New Delhi, 2004
2. Alexis Leon , Enterprise Resource Planning Demystified - Tata McGraw-Hill, New Delhi, 2006

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5021	DISTRIBUTED COMPUTING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Fundamentals and Message Passing :Fundamentals: Evolution of distributing computing system – Distributed computing system Models- Issues in Designing a distributed operating system- Message Passing: Desirable features of a good message passing system – Issues in IPC by message passing –Synchronization – Buffering – Multi datagram messages – Encoding and decoding of message data – process addressing - failure handling – Group Communication

UNIT II   11 hrs.

Remote Procedure Calls: Introduction – The RPC Model – Transparency of RPC – Implementing RPC mechanism – Stub generation– RPC messages – Marshaling arguments and results – Server Management parameter – Passing Semantics– call semantics – Communication protocols for RPC's – Complicated RPC's – Client Server Binding –Exception Handling – Security – some special types of RPC's – RPC in Heterogeneous environments –Light Weight RPC – Optimization for Better performance – Case studies : SUN RPC , DCE RPC

UNIT III   9 hrs.

Distributed Shared Memory and Synchronization: Distributed shared Memory: General Architecture of DSM systems – Design and Implementation issues of DSM – Granularity – Structure of shared memory space – Consistency Models – Replacement strategy – Thrashing – Other approaches to DSM – Heterogeneous DSM – Advantages of DSM. Synchronization: Clock synchronization – Event ordering – mutual exclusion – Deadlock – Election Algorithms

UNIT IV   11 hrs.

Resource and Process Management: Resource Management: Introduction – Desirable features of a good global scheduling algorithm – Task assignment approach – Load Balancing approach – Load sharing approach. -Process management: Introduction – process migration – Threads

UNIT V   9 hrs.

Distributed File Systems and Security :Distributed File Systems: Desirable features of a good distributed file system – File models – File accessing Models – File sharing semantics – File caching schemes – File Replications – Fault tolerance – atomic Transactions– Design principles – case study: DCE distributed file service. Security: Potential attacks to computer systems – cryptography – Authentication – access control – Digital signatures – Design principles – Case study : DCE security service

TEXT / REFERENCE BOOKS:

1. Pardeep K. Sinha, Distributed Operating Systems,Prentic-Hall India -1997.
2. George Coulouris, Jean Dollimore and Tim Kindberg - Distributed Systems Concepts and Design , Pearson Education, 3rd Edition 2002.
3. Sape Mullender - Distributed Systems ,Addison Wesley, 2nd Edition, 1993.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5022	TCP / IP AND SOCKET PROGRAMMING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **10 hrs.**

Internetworking Concept and Architectural Model - Classful Internet Addresses - Mapping Internet Addresses to Physical Addresses (ARP) - Determining and Internet Address at startup(RARP) – Internet Protocol: connectionless Datagram Delivery – Internet Protocol: Routing IP Datagram

UNIT II   **10 hrs.**

Internet Protocol: Error and Control Messages (ICMP) - Classless and Subnet Address Extensions (CIDR)– Protocol Layering – UDP – Reliable Stream Transport Service(TCP)

UNIT III   **10 hrs.**

Routing: Cores, Peers and Algorithms – Internet Multicasting – TCP/IP over ATM networks - Mobile IP – Private Network Interconnection (NAT, VPN)

UNIT IV   **10 hrs.**

Client-server Model of interaction – Socket Interface: Creating socket, sending and receiving data, obtaining local and Remote socket Addresses, host names, internal host domain – set socket options- socket Library calls – Obtaining Information about Hosts, networks, Protocols, network services

UNIT V   **10 hrs.**

Applications of Socket Programming: FTP, SMTP, POP, HTTP, SNMP, RTP - Internet Security and Firewall Design (IPsec) - Future of TCP/IP (IPv6)

TEXT / REFERENCE BOOKS:

1. Douglas E. Comer, Internetworking with TCP/IP Vol.1: Principles, Protocols, and Architecture, Fourth edition,Prentice Hall India,2006
2. Richard Stevens ,Bill Fenner ,Andrew M. Rudoff, UNIX Network Programming Volume1 : The Sockets Networking API, 3rd edition - Addison-Wesley Professional,2004
3. Behrouz A. Forouzan, TCP/IP Protocol Suite,3rd edition,Tata McGraw Hill, 2005

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5023	SOFTWARE QUALITY MANAGEMENT	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Software Process assessment overview - Assessment phases - Assessment principles - Assessment conduct -Implementation consideration - Quality management - Elements of software quality system – Quality control tools - Quality assurance plan - Considerations – Verification and Validation

UNIT II   10 hrs.

Need for configuration Management - Software product nomenclature - configuration management functions - Baselines - Responsibilities - Need for automated tools - plan – SCM support functions - The requirement phase Design control - The implementation phase - Test phase - SCM Tools - Configuration accounting and audit.

UNIT III   10 hrs.

Definitions - Reason for software standards - Benefits - Establishing standards - Guidelines - Types of reviews - Inspection of objectives - Basic inspection principles - The conduct of inspection - Inspection training

UNIT IV   10 hrs.

Testing: principles - Types - Planning - Development - Execution and reporting – Tools and methods - Real Time testing - quality management paradigm - Quality motivation – Measurement criteria - Establishing a software quality program - Estimating software quality.

Risk Management: Types of Risk – Risk management process

UNIT V   10 hrs.

Principles of software defect prevention - Process changes for defect prevention - Defect prevention considerations - Managements role - Framework for software process change - Managing resistance to software process change – Quality system implementation: Planning the implementation – implementation strategies.

TEXT / REFERENCE BOOKS:

1. Watts S. Humphrey – Managing the software process, Addison Wesley, 1999
2. John W.Horch – Practical guide to Software Quality Assurance – Second Edition
3. Tsum S.Chow - Software Quality Assurance a Practical Approach, IEEE Computer Society press, 1985.
4. Richard E. Fairley - Software Engineering - A Practitioner's approach, McGraw Hill, 1982.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5024	UNIX INTERNALS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Unix operating system - History - System structure –Users Perspective- OS Services- Hardware-Architecture-System Concepts- Kernel data structures – System Administration – Buffer Cache- Heaters – Structure of the Buffer Pool- Scenarios-Reading and writing Disk Blocks.

UNIT II   10 hrs.

INODES - Structure of a regular file- Directories – Conversion of a path name to an INODE - Super Block- INODE assignment – Disk Blocks- System calls for the file system

UNIT III   10 hrs.

Process States and Transitions – Layout of System Memory – Context of a Process – Manipulation of the process address space – Sleep – Process Control – Creation – Signals – Awaiting process termination – The Shell – System Boot and Init Process – Process Scheduling and Time – System calls for time – Clock.

UNIT IV   10 hrs.

Swapping – Segmentation - Demand Paging – Driver Interfaces – Disk Drivers – Terminal Drivers – Streams

UNIT V   10 hrs.

Process Tracing – System V IPC – Network Communications - Sockets – Problem of Multiprocessor Systems – Solution with Master and Slave Processors – Semaphores – Distributed Unix Systems – Satellite Processors – Newcastle connection – Transparent distributed file systems – System Calls

TEXT / REFERENCE BOOKS:

1. Bach M.J., - The Design of the Unix Operating System, Prentice Hall India, 1986.
2. Goodheart B., Cox.J. - The Magic Garden Explained, Prentice Hall India, 1994
3. Leffler S.J., Mckusick M.K., Karels M.J and Quarterman J.S., The Design and Implementation of the 4.3 BSD Unix Operating System, - Addison Wesley, 1998.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5025	MANAGEMENT INFORMATION SYSTEMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Definition – Computer based user machine system – Integrated system – Need for a database – Utilization of models – Evolution – Subsystems – Organizational subsystems – Activities subsystems

UNIT II   10 hrs.

Basic model – Hierarchical – Specialization – Formalization – Centralization – Modifications of basic organizational structure – Project organization – Lateral relations – Matrix organization – Organizational culture and power organizational change

UNIT III   10 hrs.

Operating elements – Physical components – Processing functions – Outputs – MIS support for decision making – Structured programmable decisions – Unstructured non-programmable decisions – MIS structure based on management activity and organizational functions – Synthesis of MIS structure

UNIT IV   10 hrs.

Data representation – Communication network – Distributed systems – Logical data concepts – Physical storage devices – File organizations – Data base organization – Transaction processing-Database/managerial Database-Comparison of DBMS-design principles of Database-Administration-Advantages and Disadvantages of Database

UNIT V   10 hrs.

System Analysis and Design(SAD):The work of a system analyst-system design-Data collection and preparation-Detail system design-Implementation-Evaluation and Maintenance of MIS-Pit falls in MIS Development-Developing strategy – Lifecycle definition stage – Lifecycle development stage –Project management

TEXT / REFERENCE BOOKS:

1. Gordon B. Davis, Margrethe H. Olson - Management Information Systems: Conceptual Foundations, Structure and Development – 2nd Edition, Tata-Mc Graw Hill International Book Company, 2000
2. Wainright Martin.E, Carol V. Brown, Danial W. DeHayes, Jeffrey A. Hoffer, William C. Perkins, Managing Information Technology, 3rd Edition - Prentice Hall International edition 1999.
3. Harold Koontz, Heinz Weihrich - Essentials of Management, 5th EditionTata McGraw Hill 1998

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
  with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
  with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5026	NETWORK MANAGEMENT SYSTEMS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Data Communication and Networks Management Overview: Analogy of Telephone Network Management – Distributed Computing Environments – Communications Protocols & Standards – Case histories of Networking and Management – Challenges of Information Technology Managers – Network Management Goals , Organization, and Functions – Network & System management – Network Management System Platform – Current status and Future of Network management.

UNIT II   10 hrs.

SNMP, Broadband, and TMN Management: Standard, Models and Language – SNMPv1 Network Management: Organization, Information, Communication and Functional model – SNMPv2: System Architecture- Structure of Management Information – SNMPv2 Protocol – SNMpv3: Documentation Architecture – Applications

UNIT III   10 hrs.

SNMP Management: RMON – Remote Monitoring – RMON SMI & MIB – RMON1 – RMON2 – ATM remote monitoring – A Case study of Internet Traffic Using RMON

UNIT IV   8 hrs.

Broadband Network Management: Broadband Access Networks and Technologies – HFC Technology – HFC Management – DSL Technology – Asymmetric Digital Subscriber Line Technology

Telecommunication Management Network: Why TMN – TMN Conceptual Model – TMN Standards – TMN Architecture – TMN Management Service Architecture Implementation Issues

UNIT V   12 hrs.

Network Management Tools and Systems: Network Management Tools- Network Statistics Measurement Systems – History of Enterprise Management – Network Management Systems – Commercial Network Management Systems – System Management

Network Management Applications: Fault management – Performance Management – security Management.

TEXT / REFERENCE BOOKS:

1. Mani Subramanian, Network Management Principles and Practice, Pearson Education, Fourth Indian Reprint , 2003
2. Divakara K. Udupa, Network Management Systems Essentials, McGraw-Hill / TAB Electronics
3. Douglas E Comer, Automated Network Management Systems, Prentice Hall.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
     with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
     with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5027	ELECTRONIC COMMERCE	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   9 hrs.

Networks and Commercial Transactions - Internet and Other Novelties - Electronic Transactions Today - Commercial Transactions - Establishing Trust - Internet Environment - Internet Advantage - World Wide Web.

UNIT II   10 hrs.

Why Internet Is Insecure? Internet Security Holes - Cryptography: Objective - Codes and Ciphers - Breaking Encryption Schemes - Data Encryption Standard - Trusted Key Distribution and Verification - Cryptographic Applications - Encryption - Digital Signature – Non-repudiation and Message Integrity

UNIT III   10 hrs.

Traditional Transactions: Updating - Offline and Online Transactions - Secure Web Servers - Required Facilities - Digital Currencies and Payment Systems - Protocols for the Public Transport - Security Protocols - SET - Credit Card Business Basics.

Unit IV   10 hrs.

Online Commerce Options - Functions and Features - Payment Systems: Electronic, Digital and Virtual Internet Payment System - Account Setup and Costs - Virtual Transaction Process - InfoHaus - Security Considerations – CyberCash: Model - Security - Customer Protection - Client Application - Selling through CyberCash.

Unit V   11 hrs.

Servers and Commercial Environments - Payment Methods - Server Market Orientation - Netscape Commerce Server - Microsoft Internet Servers - Digital Currencies - DigiCash - Using E-Cash – E-Cash Client Software and Implementation - Smart Cards - The Chip - Electronic Data Interchange - Internet Strategies, Techniques and Tools.

TEXT / REFERENCE BOOKS:

1. Pete Loshin, Pal Murphy – Electronic Commerce- Online Ordering and Digital Money, 2nd Edition, Charles River media, Jaico Publishing House, Mumbai, 1997
2. Jeffrey F.Rayport and Bernard J. Jaworski - Introduction to E-Commerce, 2nd Edition, Tata Mc-Graw Hill Pvt., Ltd., 2003
3. Greenstein - Electronic Commerce, Tata Mc-Graw Hill Pvt., Ltd., 2000

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
        with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
        with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5028	SYSTEM SOFTWARE	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Introduction: Basic concepts - Machine structure - Instruction formats - Addressing modes - Typical Architectures

UNIT II   10 hrs.

Assemblers: Functions – Features - Machine dependent - Machine independent - Design options - One pass – Multi-pass – Implementation – Examples

UNIT III   10 hrs.

Loaders and Linkers: Functions – Features – Relocation - Program Linking - Linking loader implementation - Automatic library search - Loader option - Linkage editors - Dynamic linking - Bootstrap loaders -Examples.

UNIT IV   10 hrs.

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

UNIT V   10 hrs.

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 / REFERENCE BOOKS:

1. Beck.L - System Software, An Introduction to System Programming, Addison Wesley, 1999
2. Dhamdhere.D. M. - Systems Programming and Operating Systems, Tata McGraw Hill Company, 1999
3. Aho. A. V, Ravi Sethi and Ullman. J. D - Compilers Principles, Techniques and Tools, Addison Wesley, 1988

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5029	SOFTWARE TESTING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Introduction: Software testing – Role of software testing – A structural approach to testing – Test strategy – methods for developing test strategy

UNIT II   10 hrs.

Life Cycle Testing Approach: Test plan – Requirements testing – Walk through test tool – Risk matrix test tool – Testing for requirements phase and design phase – Design renew test tool – Test data and volume test tools

UNIT III   10 hrs.

Installation: Installation phase testing – Tools for acceptance test – Software acceptance process – Software maintenance – Methodologies for testing – Training and change installation

UNIT IV   10 hrs.

Testing Methods: Tools and techniques – Cost estimate – For testing – Testing phase of life cycle – Point accumulation tracking system – Performance analysis of testing – Inspection plan and test plan documents-GUI Tools – Win runner- Silk test -QTP-Load runner

UNIT V   10 hrs.

Testing Strategy: Rapid prototyping – Spiral testing – Tool selection processes – Structural system testing – Documentation of test results – Test effectiveness evaluation – Test measurement process – Test metrics

TEXT / REFERENCE BOOKS:

1. William Perry ,Effective Methods for Software Testing, Second Edition, Wiley, 2000
2. Ron Patton ,Software Testing, - Second Edition,Sams,2005
3. Watts S.Humphrey, Managing The Software Process, Second Edition, Addison-Wesley Professional,1989

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5030	ADVANCED SOFTWARE ENGINEERING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Software Project Management: Comparison between Process and Product – Scheduling and tracking – Management activities – Software Process and its Problems in all Phases – Problems with Software Production – IEEE Standard for Software project management plan.

UNIT II   10 hrs.

Requirements and Specification: Requirement Analysis – Definition – Specification – Formal Specification – Algebraic Specification – Structural Specification – Error Specification – Model Based Specification – Z Schemas – Z Specification Process.

UNIT III   10 hrs.

Object Oriented Software Engineering: Introduction to Object Oriented Development – Architecture – Object Oriented Testing, Object Oriented Metrics – Objects and Productivity – Object Documentation – MSG Case Study

UNIT IV   10 hrs.

Software Reengineering: Reusability – Characteristics – Reuse Strategy – Assessing Reuse Maturity – Reengineering for Reuse – Case Studies – Raytheon Missile Systems Division, NASA Software etc

UNIT V   10 hrs.

Process and Product Improvements: Integrated Environments – Platform Services – Frameworks Services – SEI Process Maturity Model – Process Classification

TEXT / REFERENCE BOOKS:

1. Stephen. R. Schach - Software Engineering With Java, Tata McGraw Hill, 1998
2. Even-Andre etal - Software Reuse – A Holistic Approach, John Wiley and Sons, 1996
3. Ivar Jacobson etal - Object Oriented Software Engineering – A Use Case Driven Approach, ISE, 1992
4. Ian Sommerville - Software Engineering, Addison Wesley (5E), 1996

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5031	WIRELESS COMPUTING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Global System for Mobile Communication (GSM) system overview: GSM Mobile Services ,System architecture, Radio interface GSM protocols Architecture for signaling, Localization and calling, Handover, Security, General Packet Radio Services (GPRS): GPRS Architecture

UNIT II   10 hrs.

Infrared Vs radio transmission – IEEE 802.11 – System Architecture, Protocol Architecture, Medium Access Control layer – MAC Management - HIPERLAN – Protocol architecture – Bluetooth technology - Bluetooth Physical Layer – Bluetooth MAC Layer

UNIT III   10 hrs.

Wireless ATM : Motivation – ATM Working group – Services – Models – Functions – Radio Access layer – HandOver – Location Management

UNIT IV   10 hrs.

Mobile IP: Goals, assumption and requirement, Entities and terminology, IP packet delivery, Agent advertisement and discovery, registration, tunneling and encapsulation, optimization - Dynamic Host Configuration protocol - Ad hoc Networks: Routing, Destination sequence distance vector, Dynamic source routing, Hierarchical algorithm, Alternative metrics - Traditional TCP: Congestion control, slow start, Fast retransmit/Fast recovery - Indirect TCP – Snooping TCP – mobile TCP – Fast retransmit /Fast recovery – Transmission / timeout freezing. Selective retransmission – Transaction Oriented TCP

UNIT V   10 hrs.

Wireless Application Protocols: WAP Model - WAP Gateway – WAP Protocols – Wireless Local Loop – Introduction to WLL Architecture - WLL Technologies - VoIP Services for Mobile Networks - Global Mobile Satellite Systems

TEXT / REFERENCE BOOKS:

1. Jochen Shiller, Mobile Communications , Pearson Education
2. Yi-Bing Lin & Imrich Chlamtac ,Wireless and Mobile Network Architecture, John Wiley & Sons, 2001
3. William C.Y. Lee ,Mobile Communications Design Fundamentals
4. Mark Ciampa, Thomas ,Guide to Designing and Implementing Wireless LANs, Vikas Publishing House, 2001
5. Ray Rischpater ,Wireless Web Development, Springer Publishing,2000
6. Sandeep Singhal ,The Wireless Application Protocol, Pearson Education Asia, 2000

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5032	ADVANCED DATABASES	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I **10 hrs.**

Relational Model - Querying - Storage Structures - Query Processing – Normalization

UNIT II **10 hrs.**

Introduction to Object Oriented Data Bases - Approaches - Modeling and Design - Persistence - Transaction - Concurrency - Recovery - Database Administration

UNIT III **10 hrs.**

Enhanced Data Models - Client/Server Model - Data Warehousing and Data Mining - Web Databases – Mobile Databases

UNIT IV **10 hrs.**

Rules - Knowledge Bases - Active and Deductive Databases - Distributed Databases and Parallel databases.

UNIT V **10 hrs.**

Security - Integrity - Consistency - Database Tuning - Optimization and Research Issues.

TEXT / REFERENCE BOOKS:

1. Elmasri.R and Navathe. S.B, Fundamentals of Database Systems, Addison Wesley, 2000.
2. Gary W. Hanson and James V. Hanson, Database Management and Design, Prentice Hall of India Pvt Ltd, 1999.
3. Alex Benson, Stephen Smith and Kurt Thearling, Building Data Mining Applications for CRM, Tata McGraw-Hill, 2000. Wesley, 1995

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5033	COMPILER DESIGN	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Phases of Compiler, Lexical Analysis, Syntax Analysis

UNIT II   10 hrs.

Run – time environments - Intermediate Code Generation

UNIT III   10 hrs.

Syntax Directed Translation, Evaluation of Inherited and Synthesized Attributes, Top-down and Bottom-up Translators, Type checking.

UNIT IV   10 hrs.

Code Generation, Design Issues and Register Allocation and Assignment - Representation of Basic Blocks, Flow Graphs

UNIT V   10 hrs.

Code Optimization, Basic Blocks, Loops, and Flow Graphs, Example Compilers.

TEXT / REFERENCE BOOKS:

1. Alfred V.Aho, Ravi Sethi, Jeffery D.Ullman, "Compilers Principles, Techniques and Tools", Addison- Wesley Publishing Company, 1986.
2. Jeans Paul Tramblay and Paul G.Sorenson, The Theory and Practice of compiler Writing", McGraw-Hill Book Company, 1985.
3. Dhamdhere. D.M, "Introduction to System Software" Tata McGraw-Hill Publishing Company, 1986.
4. Alfred V.Aho and Jeffrey D.Ullman, "Principles of Compiler Design" Addison Wesley, 1977.

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Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

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    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5034	BUSINESS DATA PROCESSING USING COBOL	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Introduction to COBOL - COBOL Language Fundamentals - Identification Division, Environment Division. Data Division – Data Description Entries - Moving data and printing information – Editing Characters. Categories of Data, Usage clause - Renames, Redefines

UNIT II   10 hrs.

Procedure Division and Basic verbs:- Arithmetic verbs – Sequence Control verbs, Input – Output verbs, condition and sequence control verb – If and Evaluate, Alter, Copy and call statements

UNIT III   10 hrs.

Table Handling – Occurs Clause – Perform verb, Index, SET & Search verb, Usage of Index and Index data item

UNIT IV   10 hrs.

Character and Handling: Examine verb, Inspect, String and Unstring – Subroutine sub Program, Report writing features

UNIT V   10 hrs.

Sequential File Processing – Indexed File Processing - Interactive Processing – Sorting – Merging the File

TEXT / REFERENCE BOOKS:

1. Stern & Stern Structured COBOL Programming, 7th Edition, John Wiley & Sons, 1997.
2. Philipakis. A. S and Kazmier. L.J – Advanced COBOL, McGraw Hill 1991
3. Roy. M.K , Ghosh Dastidar. D, COBOL Programming, 2nd Edition, Tata McGraw Hill, 2008

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5035	**NEURAL NETWORKS**	**L**	**T**	**P**	**Credits**	**Total Marks**
		3	0	0	3	100

UNIT I   10 hrs.

Introduction – characteristics of artificial neural networks – learning in Biological systems and machines – Brains and computer – Differences – Learning in simple neurons.

UNIT II   10 hrs.

Perceptron representation – Learning – Linear separability – Problems with Perceptron training algorithms – Multilayer perceptrons – Back propagation training algorithm – applications.

UNIT III   10 hrs.

Counter propagation networks – Training – Full counter propagation networks – Kohonen network algorithm – neighborhood.

UNIT IV   10 hrs.

Hopfield nets-Learning – Energy landscape – Learning in Boltzmann's machines – mean field theory.

UNIT V   10 hrs.

Statistical methods – training – applications – Adaptive resonance theory architecture – implementation – Training Application of neural networks in image processing.

TEXT / REFERENCE BOOKS:

1. Philip D.Wasserman.- Neural Computing - Theory and Practice, Coriolis Group(SD), June 1989
2. Freeman & Skapura. - Algorithms, Application and Programming Techniques, Pearson Education, 2003
3. Beale.R & Jackson.T - Neural Computing - Institute of Physics Publishing, Bristol and Philadelphia.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
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Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5036	FUZZY LOGIC AND ITS APPLICATIONS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   **10 hrs.**

Introduction – Classical sets and Fuzzy Sets – Classical sets – fuzzy sets – sets as points in hyper cubes – classical relations and fuzzy relations – Cartesian product – crisp relations – fuzzy relations – tolerance and equivalence relations – fuzzy tolerance and equivalence relations – Value assignments

UNIT II   **10 hrs.**

Membership functions – Features of the membership functions – standard forms and boundaries – Fuzzification – Membership value assignments – Fuzzy to crisp conversions – Lambda cuts for fuzzy sets – Lambda cuts for fuzzy relations – Defuzzification methods – Fuzzy arithmetic, numbers, vectors and the extension principle – Extension principle – Fuzzy numbers – Interval Analysis in arithmetic – Approximate methods of extension – Fuzzy vectors.

UNIT III   **10 hrs.**

Classical logic and fuzzy logic – Classical predicate logic – fuzzy logic – approximate reasoning – fuzzy tautologies, contradictions, equivalence and logical proofs – other forms of the implication operation – other forms of the composition operation – Fuzzy rule based system – natural language – linguistic hedges – rule based systems – graphical techniques of inference.

UNIT IV   **10 hrs.**

Fuzzy nonlinear simulation – fuzzy relational equations – partitioning – nonlinear simulation using fuzzy rule based systems – fuzzy associative memories (FAMs) – Fuzzy decision making – fuzzy synthetic evaluation – fuzzy ordering – preference and consensus – multi-objective decision making - fuzzy bayesian decision method – decision making under fuzzy states and fuzzy actions .

UNIT V   **10 hrs.**

Fuzzy classification – classification by equivalence relations – cluster analysis – cluster validity – c-Means clustering – classification metric – hardening the fuzzy c-Partition – similarity relations from clustering – Fuzzy pattern recognition – feature analysis – partitions of the feature space- single sample identification - multi feature pattern recognition – image processing – syntactic recognition.

TEXT / REFERENCE BOOKS:

1. Timothy J Ross, "Fuzzy Logic With Engineering Applications" – McGraw Hill International Editions 2000– Electrical Engineering Series.
2. Debjani Chakraborty, S. Nanda, Dutta Majumdar. D, Fuzzy Logic and its Applications in Technology and Management – Narosa, 2007

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

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    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5037	SOFTWARE PROJECT DEVELOPMENT	L	T	P	Credits	Total Marks
		3	0	0	3	100

Unit I BASIC CONCEPTS AND IN STREAM ACTIVITIES IN PROJECTS   10 hrs.

Introduction to Product Life Cycle – Project initiation: Project Planning, execution and tracking; Project wind-up; concept of process/project database

Unit II ENGINEERING AND PEOPLE ISSUES IN PROJECT MANAGEMENT   10 hrs.

Phases – Engineering activities and management issues in each phase.

Unit III UMBRELLA ACTIVITIES IN PROJECTS   10 hrs.

Metrics, Configuration management, Software Quality Assurance; Risk Analysis

Unit IV FORMAT PROCESS MODELS AND THEIR USE   10 hrs.

Definition and format model for a process; The ISO 9001 and CMM models and their relevance to project management; other emerging models like people CMM.

Unit V MS PROJECT   10 hrs.

Defining the Project – Tasks – Task Linkages – Resources – Network Diagram View – Shortening your project – Overallocations – Resolving overallocations – Printing Project Reports.

TEXT / REFERENCE BOOKS:

1. Ramesh Gopalaswamy, Managing Global Software Projects, Tata McGraw Hill, 2001.
2. Humphrey, Watts, Managing the software process, Addison Wesley, 1986.
3. Pressman, Roger, Software Engineering, A Practitioner's approach, McGraw Hill, 1997.
4. DeMarco and Lister, " Peopleware "
5. Wheelwright and Clark, Revolutionising product development, The Free Press, 1993.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
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    with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5038	SERVICE ORIENTED ARCHITECTURE	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I SOA AND WEB SERVICES FUNDAMENTALS   10 hrs.

Introducing SOA - The Evolution of SOA - Web Services and Primitive SOA

UNIT II SOA AND WS-* EXTENSIONS   10 hrs.

Web Services and Contemporary SOA: Activity Management and Composition - Advanced Messaging – Metadata - Security.

UNIT III SOA AND SERVICE ORIENTATION   10 hrs.

Principles of Service-Orientation - Service Layers

UNIT IV BUILDING SOA: PLANNING AND ANALYSIS   10 hrs.

SOA Delivery Strategies - Service-Oriented Analysis: Introduction - Service Modeling

UNIT V BUILDING SOA: TECHNOLOGY AND DESIGN   10 hrs.

Service-Oriented Design: Introduction - SOA Composition Guidelines - Service Design - Business Process Design

TEXT / REFERENCE BOOKS:

1. Thomas Erl, "Service-Oriented Architecture Concepts, Technology, and Design" - Prentice Hall, Aug 2005
2. Thomas Erl, "SOA Principles of Service Design" - Prentice Hall, July 2007
3. Thomas Erl, "Service-Oriented Architecture A Field Guide to Integrating XML and Web Services" - Prentice Hall, April 2004

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
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SCAX5039	CLOUD COMPUTING	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I   10 hrs.

Introduction – Cloud Application Architectures – Cloud Infrastructure Models – Amazon S3 – Amazon EC2

UNIT II   10 hrs.

Cloud Cost Model – Service Levels for Cloud Applications – Web Application Design – Machine Image Design – Privacy Design – Database Management

UNIT III   10 hrs.

Data Security – Network Security – Host Security – Disaster Recovery Planning – Disasters in the cloud – Disaster Management – Capacity Planning – Cloud Scale

UNIT IV   10 hrs.

Using Cloud Services: Online Calendar applications – Event Management – Contact Management – Project Management – Word processing – Spreadsheet Applications – Presentations – Databases – Sharing Digital Photos

UNIT V   10 hrs.

Developing Cloud Applications using Google AppEngine and Microsoft Azure

TEXT / REFERENCE BOOKS:

1. George Reese, Cloud Application Architecture, O'Reilly Publications, First Edition, 2009
2. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publications, First Printing, 2008
3. Toby Velte, Anthony Velte, Robert Elsenpeter Cloud Computing, A Practical Approach,McGrawHill, 2010

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
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        with a minimum of 1 question from each unit-4 questions to be answered   40 marks

SCAX5040	SOFTWARE AGENTS	L	T	P	Credits	Total Marks
		3	0	0	3	100

UNIT I INTRODUCTION   10 hrs.

Agent Definition - Agent Programming Paradigms - Agent Vs Object - Aglet - Mobile Agents – Agent Frameworks - Agent Reasoning

UNIT II SOFTWARE AGENTS   10 hrs.

Processes - threads - daemons - Components - Java Beans - ActiveX - Sockets, RPCs - Distributed Computing -Aglets Programming - Jini Architecture - Actors and Agents - Typed and proactive messages

UNIT III AGENT COLLABORATION   10 hrs.

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 KNOWLEDGE BASED AGENTS   10 hrs.

Interface Agents - Agent Communication Languages - Agent Knowledge representation - Agent adaptability -Belief Desire Intension - Mobile Agent Applications

UNIT V SECURITY ISSUES   10 hrs.

Agent Security Issues - Mobile Agents Security - Protecting Agents against Malicious Hosts - Untrusted Agent - Black Box Security - Authentication for agents - Security issues for aglets

TEXT / REFERENCE BOOKS:

1. Bigus & Bigus, Constructing Intelligent agents with Java, Wiley, 1997.
2. Bradshaw, Software Agents, MIT Press, 2000.
3. Russel & Norvig, Artificial Intelligence: a modern approach, Prentice Hall, 1994.
4. Richard Murch, Tony Johnson, Intelligent Software Agents, Prentice Hall, 2000
5. Michael Wooldridge, An Introduction to Multi Agent Systems, John Wiley, 2002.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks:80   Exam Duration: 3 hrs.

Part A: 12 Questions to be set each carrying 5 marks
    with a minimum of 2 questions from each unit-8 questions to be answered   40 marks

Part B: 6 Questions to be set each carrying 10 marks
    with a minimum of 1 question from each unit-4 questions to be answered   40 marks