GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

TWENTY NINETH MEETING

OF THE

ACADEMIC COUNCIL

DATE : 29th October 2010

TIME : 11:00 A.M.

VENUE : Conference Room

MINUTES

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

KASHMERE GATE, DELHI-110403

TWENTY NINETH MEETING OF THE ACADEMIC COUNCIL TO BE HELD ON 29.10.2010

INDEX

Item No. 29.22 : To report the approval granted by the Vice Chancellor to the revised Scheme of Examination & detailed Syllabai for LL.M programme.

The Council noted and approved the action taken by the Vice-Chancellor.

Item No. 29.23 To report the approval granted by the Vice Chancellor to the revised Scheme of examination & Syllabus of Ist year of B.Arch. programme.

The Council noted and approved the action taken by the Vice-Chancellor.

Item No. 29.24: To report the approval granted by the Vice Chancellor to the revised Scheme of Examination & detailed Syllabai for B.Tech (Tool Engineering & Civil Engineering programmes.

The Council noted and approved the action taken by the Vice-Chancellor.

Item No. 29.25: To report the approval granted by the Vice Chancellor to the Modification in Scheme of Examination & detailed Syllabi for (a) MCA (SE) (b) MCA programme running at affiliated Institutes of the University (c) add a paper of Data Ware House & Data Mining i.e. ITR-733 as one of the elective subject to M.Tech. (IT) programme (d) Scheme of Examination & syllabus of 9th to 12th Semester of B.Tech./M.Tech (CSE) programme.

The Council noted and approved the action taken by the Vice-Chancellor.

Item No. 29.26: To report the approval granted by the Vice Chancellor to the Revised Scheme of Examination & detailed Syllabi for MBA (Regular), MBA (Weekend) General, MBA (Weekend) Banking & Insurance, MBA (Weekend) Real Estate, B.Tech-MBA Dual Degree, BBA (General), BBA (Banking & Insurance), BBA (Tour & Travel Management), BBA (International Hospitality Management) Programmes

The Council noted and approved the action taken by the Vice-Chancellor.

SCHEME OF EXAMINATION

& DETAILED SYALLBUS

for

Master of Computer Applications (Software Engineering)

Entrepreneurship | Employability | Skill Development

Guru Gobind Singh Indraprastha University
Sector 16/C, Dwarka, New Delhi –110 078
www.ipu.ac.in

Approved in the 29th meeting of the Academic Council held on 29.10.2010 vide Agenda item 29.25 w.e.f. 2010

SCHEME/SYLLABUS

MASTER OF COMPUTER APPLICATIONS (SOFTWARE ENGINEERING)

University School of Information Communication & Technology
(Formerly USIT)

First Semester				
Code No.	**Paper**	**L**	**T/P**	**Credits**
IT – 601	Information Technology	3	1	4
IT – 603	Computer Architecture	3	1	4
IT – 605	Programming and Data Structure	3	1	4
IT-607	Foundations of computer Science	3	1	4
BA – 609	Mathematics – I	3	1	4
Practicals				
IT – 651	Information Technology Lab	0	4	2
IT – 653	Programming and Data Structure Lab	0	4	2
IT – 655	Computer Architecture Lab	0	4	2
	TOTAL	**15**	**17**	**26**

Second Semester				
Code No.	**Paper**	**L**	**T/P**	**Credits**
IT – 602	Software Engineering	3	1	4
IT – 604	Database Management Systems	3	1	4
IT – 606	Object Oriented Programming	3	1	4
MS – 608	Organizational Behaviour	3	1	4
BA – 610	Mathematics – II	3	1	4
Practicals				
IT – 652	Software Engineering Lab	0	2	1
IT – 654	Database Management Systems Lab	0	2	1
IT – 656	Object Oriented Programming Lab	0	4	2
IT- 658*	Term Paper	0	4	2
	TOTAL	**15**	**17**	**26**

***NUES**

Third Semester				
Code No.	**Paper**	**L**	**T/P**	**Credits**
IT – 701	Java Programming	3	1	4
IT – 703	Algorithm Analysis and Design	3	1	4
IT – 705	Web Technology	3	1	4
IT – 707	Computer Networks	3	1	4
IT – 709	Operating Systems	3	1	4
Practicals				
IT – 751	Java Programming Lab	0	2	1
IT – 753	Algorithm Analysis and Design Lab	0	2	1
IT – 755	Web Technology Lab	0	2	1
IT – 757	Computer Networks Lab	0	2	1
	TOTAL	**15**	**13**	**24**

Fourth Semester				
Code No.	**Paper**	**L**	**T/P**	**Credits**
IT – 702	Data Warehousing & Data Mining	3	1	4
IT – 704	Object Oriented Software Engineering	3	1	4
IT – 706	Computer Graphics	3	1	4
Electives (Select any one)				
IT – 708	Enterprise Computing in Java	3	1	4
IT – 710	Microprocessors	3	1	4
IT – 712	Software Metrics	3	1	4
IT – 714	Front End Design Tools	3	1	4
IT – 716	Digital Signal Processing	3	1	4
IT - 718	Network Security	3	1	4
IT-720	.Net Programming	3	1	4
Practicals				
IT – 752	Data Warehousing & Data Mining Lab	0	2	1
IT – 754	Object Oriented Software Engineering Lab	0	2	1
IT – 756	Computer Graphics Lab	0	2	1
IT - 758	Elective Lab	0	2	1
IT - 760	Minor Project	0	8	4
	TOTAL	**12**	**20**	**24**

Fifth Semester				
Code No.	**Paper**	**L**	**T/P**	**Credits**
IT – 801	Software Verification, Validation & Testing	3	1	4
IT – 803	Linux administration and Programming	3	1	4
IT – 805	Advanced Computer Networks	3	1	4
IT – 807	Multimedia Applications	3	1	4
Electives (Select any two)				
IT – 809	Digital Image Processing	3	1	4
IT – 811	Advanced Computer Architecture	3	1	4
IT – 813	Compiler Construction	3	1	4
IT – 815	Software Project Management	3	1	4
IT – 817	Fuzzy Sets & Logic	3	1	4
IT – 819	Neural Networks	3	1	4
IT – 821	Simulation & Modeling	3	1	4
IT – 823	Introduction to Multi agent Systems	3	1	4
IT – 825	Artificial Intelligence	3	1	4
IT-827	Reliability Engineering	3	1	4
IT-829	Software Quality Management	3	1	4
IT-831	Mobile Computing	3	1	4
IT– 833	Software Requirements & Estimation	3	1	4
Practicals				
IT – 851	Software Verification, Validation & Testing Lab	0	2	1
IT – 853	Linux & X-Windows Programming	0	2	1
IT – 855	Advanced Computer Networks	0	2	1
IT – 857	Multimedia Applications	0	2	1
	TOTAL	**18**	**14**	**28**

Sixth Semester				
Code No.	**Paper**	**L**	**T/P**	**Credits**
IT – 854	Dissertation	0	30	26
IT – 856*	Seminar and Progress Reports	0	10	06
	TOTAL	**6**	**40**	**32**

***NUES**

The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format. The student will have to present the progress ofthe work through seminars and progress reports.

Note:

1. The total number of the credits of the MCA(SE) programme = 160.

2. Each student shall be required to appear for examinations in all courses. However, for theaward of the degree a student shall be required to earn the minimum of 150 credits.

Paper ID: 44601			L	T/P	C
Code: IT601	Paper	Information Technology	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Unit I

Computers, capabilities, types of computers, computer anatomy, functional, block diagrams, CPU purpose of registers in CPU, Microprocessors, CISC & RISC Processors, Functions of I/O devices, VDU, storage devices, Areas of applications in information technology.

Unit II: (Qualitative treatment only)

Introduction to flow charts and algorithms, Machine language, instructions, stored program, concept of assembly language, assembler, high level language, compiler, operating systems, types of OS, typical instructions of DOS/UNIX, GUI-Windows 98/NT

Unit III:

Introduction to signals and basic communication processes, trigonometric and exponential Fourier series, representation of periodic functions by fourier series, fourier transforms, impulse functions, concept of convolution in time domain and frequency domain, noise, types of noise, S/N ratio, noise figure.

Unit IV:

Internet & world wide web, IT today, word processing and desk top publishing, spread sheet and data base applications, multimedia, Introduction to Telecommunication, communication network architecture, structure of telecommunication networks, transmission media, modulation, multiplexing, modems, ISDN, Elementary ideas of wireless services: TDMA, FDMA, CDMA, WLL.

Text:

1. P.K. Sinha, “Computer fundamental”, BPB Publication
2. ITLESL “Introduction to Information Technology” by Pearson Education
3. Wayne Tomasi, “Data communication” PHI, India
4. Simon Haykins, “Communication Systems”, John Wiley and Sons
5. James Martin, “Telecommunications and the compute”, PHI, India.

References:

1. A. Leon and M. Leon, “Introduction to Computers”, Vikas Publishing HOuse
2. Rajaraman V., “Fundamentals of Computers”, PHI
3. Sanders D. H., “Computers Today”, McGraw Hill.
4. Rappaport Theodore, “Wireless communications”, Pearson Education, India.

Paper ID: 44603			L	T/P	C
Code: IT603	Paper	: Computer Architecture	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Introduction: A Brief history of Processors, The VON NEUMANN model, The system Bus model, A Typical computer system. Digital Logic Circuits: Logic gates , Boolean algebra, K-maps , combinational circuits, flip-flops, sequential circuits. Digital Components: Integrated circuits, multiplexers, encoders, demultiplexers, decoders, shift registers, binary counters, memory units.

UNIT II

Data Representation: Binary numbers, binary codes, fixed point representation, floating point representation, error detection codes. Computer Arithmetic: Introduction, addition and subtraction, multiplication algorithms, division algorithms, floating point arithmetic operation, decimal arithmetic unit, decimal arithmetic operations. Register Transfer and Micro operation: Register transfer language, register transfer, bus and memory transfer, arithmetic micro operations, logic micro operations, shift micro operations.

UNIT III

Basic Computer Organization and Design: Instruction codes, computer registers, computer instructions, timing & control, instruction cycle, memory reference instructions, input- output and interrupts ,design of basic computer, design of accumulator logic. Microprogrammed Control Unit : Control memory, address sequencing. Central Processing Unit: Introduction, general register organization, stack organization, instruction formats, addressing modes.

UNIT IV

Input – Output Organization: Peripheral devices, input – Output interface, asynchronous data transfer, modes of data transfer, priority interrupt, direct memory access, input – output processor.Memory Organization: Memory hierarchy, main memory, auxiliary memory, associative memory, cache memory, virtual memory, memory management hardware.

Text:

1. Mano ,M “Computer System and Architecture”, Pearson Education

References:

1. Pal Chaudhuri, P. “Computer Organization & Design”, PHI.
2. Malvino “Digital Computer Electronics: An Introduction to Microcomputers,3/e”, Mc Graw Hill.
3. Malvino “Digital Principals and Applications,4/e”, Mc Graw Hill.
4. Hayes.J.P, ”Computer Architecture and Organization”, Mc Graw Hill .
5. Stallings,W “Computer Organization & Architecture”, PHI.

Paper ID: 44605			L	T/P	C
Code: IT605	Paper :	Programming and Data Structures	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Employability &Skill Employability

UNIT - I

Algorithm / pseudo code, flowchart, program development steps, structure of C program, A Simple C program, basic data types, use of sizeof(),operators like arithmetic, relational , logical , increment ,decrement , conditional , bit-wise , assignment etc.. Expressions, type conversions, conditional expressions, precedence and order of evaluation. Input-output statements, statements and blocks, if and switch statements, loops- while, do-while and for statements, break, continue, goto and labels, Designing structured programs, Functions, basics, parameter passing (Call by Value , Call by Reference) storage classes- extern, auto, register, static, scope rules

UNIT - II

standard library functions, recursive functions, header files, C preprocessor, Arrays- concepts, arrays and functions, two-dimensional and multi-dimensional arrays, applications of arrays. pointers- concepts, initialization of pointer variables, pointers and function arguments, address arithmetic, Character pointers and functions, pointers to pointers, pointers and multidimensional arrays, dynamic memory managements functions, text files and binary files, streams, Formatted I/o ,File I/O and File Handling in C , command line arguments

UNIT - III

Derived types- structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, Introduction to data structures, singly linked lists, doubly linked lists, circular list representing stacks and queues in C using arrays and linked lists, infix to post fix conversion, postfix expression evaluation.

UNIT - IV

Trees- Binary tress, terminology, representation, implementation of Tree in C , different traversals techniques , graphs- terminology, representation, graph traversals (dfs & bfs) , applications of Trees

TEXT BOOKS:

1. B.A. Forouzan and R.F. Gilberg, “Computer science, a structured programming approach using C” , Third edition, Cengage Learning.
2. R.Kruse, C.L. Tondo, BP Leung, Shashi M, “Data Structures and Program Design in C”, Second Edition, Pearson Education.

REFERENCES :

1. A.S.Tanenbaum, Y. Langsam, and M.J. Augenstein, “DataStructures Using C”, Pearson Education
2. B.W. Kernighan, Dennis M.Ritchie, “The C Programming Language”, Pearson Education
3. S. Sahni and E. Horowitz, “Data Structures”, Galgotia Publications.
4. Anany Levitin, “Introduction to the Design and Analysis of Algorithm”, Pearson Education Asia, 2003.
5. Kamthane, “Introduction to Data Structure in C”, Pearson Education

Paper ID: 44607			L	T/P	C
Code: IT607	Paper	: Foundations of Computer Science	3	1	4

INSTRUCTIONS TO PAPER SETTERS:		Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.	
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks	

Unit – 1:

Formal Logic: Statement, Symbolic Representation and Tautologies, Quantifiers, Predicates and validity, Normal forms. Propositional Logic, Predicate Logic. Direct Proof, Proof by Contraposition, Proof by exhausting cases and proof by contradiction. Sets, Subsets, power sets, binary and unary operations on a set, set operations/set identities, fundamental counting principles, principle of inclusion and exclusion, pigeonhole principle, permutation and combination, Pascal's triangles, binominal theorem. Relation, properties of binary relation, closures, partial ordering, equivalence relation, properties of function, composition of function, inverse, Permutation function, composition of cycles. Discrete Function Counting Theorem.

Unit – 2:

Lattices: definition, sub lattices, direct product, homomorphism, definition of Boolean algebra, properties, isomorphic structures (in particulars, structures with binary operations) sub algebra, direct product and homo-morphism, Boolean function, Boolean expression, representation & minimization of Boolean function. Principle of Well Ordering, principle of mathematical induction, principle of complete induction. Recursive definitions, solution methods for linear, first-order recurrence relations with constant coefficients, Analysis of Algorithms involving recurrence relations – comparison based sorting and searching algorithms, solution method for a divide-and-conquer recurrence relation. Growth of Functions, Masters Theorem.

Unit – 3:

GCD, LCM, Fundamental Theorem of Arithmetic, primes, Congruences, Euler f function, Fermat's Little Theorem, Euler's Generalization of FLT, Wilson's Theorem, The functions t and s, Mobius μ function, Arithmetic Functions, primitive roots, Quadratic congruences and quadratic reciprocity law, Primality and Factoring, Simple Cryptosystems, RSA Cryptosystem. Groups, Group identity and uniqueness, inverse and its uniqueness, isomorphism and homomorphism, subgroups, Cosets and Lagrange's theorem, Permutation group and Cayley's theorem (without proof), Error Correcting codes and groups, Normal subgroup and quotient groups.

Unit – 4:

Graph Terminology, Isomorphism, Isomorphism as relations, Cut-Vertices, Menger's Theorem, Planar graphs, Euler's formula (proof), four color problem (without proof) and the chromatic number of a graph, Euler graphs, Hamiltonian graphs, five color theorem, Vertex Coloring, Edge Coloring. Trees terminology, in order, preorder & post order trees traversal algorithms, directed graphs, Computer representation of graphs, Shortest path and minimal spanning trees and algorithms, Depth-first and breadth first searches, trees associated with DFS & BFS, Connected components. Complexity Analysis and proof of correctness of the graph MST, traversal and shortest path algorithms.

Text Books:

1. J.P. Tremblay & R. Mamohan, "Discrete Mathematical Structure with Application to Computer Science," TMH, New Delhi (2000).

2. Kolman, Busby & Ross “Discrete Mathematical Structures”, Pearsons Education.
3. D.S. Malik and M. K. Sen, “Discrete Mathematical Structures”, Thomson Learning, 2006.
4. C.L.Liu, “Elements of Discrete Mathematics”, McGraw Hill Book Company.
5. G. Haggard,J. Schlipf and S. Whitesides, “Discrete Mathematics for Computer Science”, Thomson Learning, 2006

Reference Books

1. J. L. Hein, “Discrete Structures, Logic and Computability”, Narosa, 2002.
2. Neal Koblitz, “A course in number theory and cryptography”, Springer – Verlag, 1994.
3. V. Shoup, “A Computational Introduction to Number Theory and Algebra”, CUP, 2005.
4. John F. Humphreys, “A Course in Group Theory”, OUP, 2001.
5. G. Chartrand, P. Zhang, “Introduction to graph theory”, TMH, 2005.
6. A .V. Aho, J . E . Hopcroft, J . D . Ulman “The Design & Analysis of Computer Algorithms”, Pearson Education.
7. T .H . Cormen, C . E . Leiserson, R .L . Rivest “Introduction to Algorithms”, PHI/Pearson.
8. V . Manber “Introduction to Algorithms – A Creative Approach”, Pearson Education.
9. Ellis Horowitz and Sartaz Sahani “Fundamentals of Computer Algorithms”, Computer Science Press.
10. Iyengar, Chandrasekaran and Venkatesh, “Discrete Mathematics”, Vikas Publication.

Paper ID: 44609		L	T/P	C
Code: BA-609	Paper : Mathematics I	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Probability: Sample space, events, axioms, conditional probability, Baye's rule and random variables: discrete and continuous, distribution and density functions, marginal and conditional distributions, stochastic independence.

UNIT II

Expectation: expectation of a function, conditional expectation and variance, moment , moment generating function, cumulant generating functions , skew ness, kurtosis, characteristic functions, distributions: discrete and continuous distributions.

UNIT - III

Probability distributions: Random variables, mean and variance of a probability distribution, Chebyshev theorem, law of large number, central limit theorem, binomial distribution, Poisson distribution, , Poisson approximation to binomial distribution, Poisson distribution, Poisson approximation to binomial distribution, Poisson processes.

UNIT - IV

Probability Densities: Continuous random variables, normal distribution, normal approximation to the binomial distribution .Sampling distributions: Population and samples, sampling distribution of the mean (s known), sampling distribution of the mean (s unknown), sampling distribution of the variance. Testing of statistical hypothesis, F-test, T-test, chi-sq –test.

Text Books

1. Irwin Miller and John .E . Freund "Probability & Statistics for Engineers" PHI
2. Spiegel, "Probability And Statistics" , Schaum Series.

Reference Books:

1. S.C.Gupta & V.K.Kapur "Fundamentals of Mathematical Statistics".

Paper ID: 44602			**L**	**T/P**	**C**
Code: IT602	**Paper**	**: Software Engineering**	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development ,Employability &Entrepreneurship

UNIT 1:

Software Crisis, Software Processes, Software life cycle models: Waterfall, Prototype, Evolutionary and Spiral models, Overview of Quality Standards like ISO 9001, SEI-CMM Size Metrics like LOC, Token Count, Function Count, Design Metrics, Data Structure Metrics, Information Flow Metrics.Cost estimation, static, Single and multivariate models, COCOMO model, Putnam Resource Allocation Model, Risk management.

UNIT II

Software Requirement Analysis and Specifications: Problem Analysis, Data Flow Diagrams, Data Dictionaries, Entity-Relationship diagrams, Software Requirement and Specifications, Behavioural and non-behavioural requirements, Software Prototyping.Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design, User Interface Design.

UNIT III

Failure and Faults, Reliability Models: Basic Model, Logarithmic Poisson Model, Calender time Component, Reliability Allocation.Software process, Functional testing: Boundary value analysis, Equivalence class testing, Decision table testing, Cause effect graphing, Structural testing: Path testing, Data flow and mutation testing, unit testing, integration and system testing, Debugging, Testing Tools & Standards.

UNIT IV

Management of Maintenance, Maintenance Process, Maintenance Models, Reverse Engineering, Software Re-engineering, Configuration Management, Documentation.

Text Books:

1. R. S. Pressman, “Software Engineering – A practitioner’s approach”, 3rd ed., McGraw Hill Int. Ed., 1992.
2. K.K. Aggarwal & Yogesh Singh, “Software Engineering”, New Age International, 2001.

Reference Books:

1. R. Fairley, “Software Engineering Concepts”, Tata McGraw Hill, 1997.
2. P. Jalote, “An Integrated approach to Software Engineering”, Narosa, 1991.
3. Stephen R. Schach, “Classical & Object Oriented Software Engineering”, IRWIN, 1996.
4. James Peter, W Pedrycz, “Software Engineering”, John Wiley & Sons
5. Sommerville, “Software Engineering”, Addison Wesley, 1999.

Paper ID: 44604			L	T/P	C
Code: IT604	Paper	: Data Base Management Systems	3	1	4

INSTRUCTIONS TO PAPER SETTERS:		Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.	
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks	

SKILL DEVELOPMENT and EMPLOYABILITY

UNIT 1:

Basic concepts: database & database users, characteristics of the database, database systems, concepts and architecture, date models, schemas & instances, DBMS architecture & data independence, database languages & interfaces, data modelling using the entity-relationship approach. Overview of hierarchical, Network & Relational Data Base Management Systems.

UNIT 2

Relational model, languages & systems: relational data model & relational algebra: relational model concepts, relational model constraints, relational algebra, SQL- a relational database language: date definition in SQL, view and queries in SQL, specifying constraints and indexes in sql, a relational database management systems, DB2

UNIT 3:

DB2 Architecture, Logical Data Structures Physical Data Structure, Instances, Table Spaces, Types of Tablespaces, Internal Memory Structure, Background Processes, Data Types, Roles & Privileges, Stored Procedures, User Defined Functions, Cursors, Error Handling, Triggers.

UNIT 4:

Relational data base design: function dependencies & normalization for relational dataases: functional dependencies, normal forms based on primary keys, (1NF, 2NF, 3NF & BCNF), lossless join and dependency preserving decomposition. Concurrency control & recovery techniques: concurrency control techniques, locking techniques, time stamp ordering, granularity of data items, recovery techniques: recovery concepts, database backup and recovery from catastrophic failures. Concepts of object oriented database management systems, Distributed Data Base Management Systems.

Text Books:

1. Elmsari and Navathe, “Fundamentals of database systems”, Pearson Education
2. Desai, B., “An introduction to database concepts”, Galgotia publications.

Reference Books:

1. Date, C. J. , “An introduction to database systems”, 7rd Edition, Addison Wesley.
2. S.K.Singh, “Database Systems: Concept, Design, and Applications”, Pearson Education
3. Kiffer, “Database Systems: An Application oriented Approach”, Pearson Education
4. Ullman, J. D., “Principals of database systems”, Galgotia publications.
5. DB2 Manuals

Paper ID: 44606			L	T/P	C
Code: IT606	Paper	: Object Oriented Programming	3	1	4

INSTRUCTIONS TO PAPER SETTERS:		Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.	
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks	

Skill Development & Employability

UNIT 1

Objects, relating to other paradigms (functional, data decomposition), basic terms and ideas (abstraction, encapsulation, inheritance, polymorphism).Overview of C.

UNIT II

Encapsulation, information hiding, abstract data types, object & classes: attributes, methods. C++ class declaration, state identity and behavior of an object, constructors and destructors, instantiation of objects, default parameter value, object types, C++ garbage collection, dynamic memory allocation, metaclass.

UNIT III

Inheritance, Class hierarchy, derivation – public, private & protected, aggregation, omposition vs classification hierarchies, polymorphism, operator overloading, parametric polymorphism

UNIT IV

Generic function – template function, function name overloading, overriding inheritance methods, run time polymorphism. Standard C++ classes, using multiple inheritances, persistent objects, streams and files,

Text Books:

1. S. B. Lippman & J. Lajoie, “C++ Primer”, 3rd Edition, Addison Wesley.
2. A. R. Venugopal , Rajkumar, T. Ravishankar, “Mastering C++”,TMH.

Reference Books:

1. E. Balaguruswamy, “Objected Oriented Programming with C++”, TMH.
2. D . Parasons, “Object Oriented Programming with C++”, BPB Publication.
3. R. Lafore, “Object Oriented Programming using C++”, Galgotia Publication
4. R. S. Pressman “Software Engineering”, Mc Graw Hill
5. Rumbaugh et. al. “ Object Oriented Modelling & Design” , Prentice Hall
6. G . Booch “Object Oriented Design & Applications”, Benjamin,Cummings.
7. R. S. Pressman, “Software Engineering”, McGraw Hill.
8. Steven C. Lawlor, “The Art of Programming Computer Science with C++”, Vikas Publication

Paper ID: 44608			L	T/P	C
Code: MS-608	Paper : Organizational Behaviour		3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Entrepreneurship and Employability

UNIT I

Introduction: Meaning and nature of management; management systems and process, Tasks and responsibilities of a professional manager; Managerial skills.

UNIT II

Organization Structure and Processes: Organizational climate and culture, Management ethos; Organizational Structure and Design; Managerial Communication; planning process; Controlling. Behavioral Dynamics: Individual determinants of Organization Behavior; Perceptions, Learning, Personality, Attitudes and Values, Motivation; Stress and its management.

UNIT III

Interactive Aspects of Organizational Behavior; Analysis inter-personal relations; Group Dynamics; Management of Organizational Conflicts; Leadership Styles.

UNIT IV

Decision Making: Organizational Context of Decisions, Decision Making Models; Problem Solving and Decision Making.

Text Books :

1. Luthans Fred., "Organizational Behaviour", McGraw Hill, 1998.
2. Robbins (4th ed.), "Essentials of organizational behaviour", Prentice Hall of India Pvt. Ltd., New Delhi, 1995.

Reference Books:

1. Hersey and Blanchard (6th ed.), "Management of organizational behaviour: utilising human resources", Prentice Hall of India Pvt. Ltd., New Delhi, 1996.
2. Dwivedi, R. S., "Human relations and organizational behaviour: a global perspective", Macmillan India Ltd., Delhi, 1995.
3. Arnold, John, Robertson, Ivan t. and Cooper, Cary, l., "Work psychology: understanding human behaviour in the workplace", Macmillan India Ltd., Delhi, 1996.

Paper ID: 44610			L	T/P	C
Code: BA-610	Paper	Mathematics II	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Linear programming : graphical methods for two dimensional problems – central problem of linear programming – various definitions – statements of basic theorems and properties – phase i and phase ii of the simplex method – revised simplex method –primal and dual – dual simplex method – sensitivity analysis – transportation problem and its solution – assignment problem and its solution by Hungarian method.

UNIT II

Integer programming: Gomory cutting plane methods – branch and bound method.Queuing theory: characteristics of queuing systems – steady state m/m/1,m/m/1/k and m/m/c queuing models.Replacement theory : replacement of items that deteriorate – replacement of items that fail group replacement and individual replacement.

UNIT III

Inventory theory : costs involved in inventory problems – single item deterministic models – economic lot size models without shortages and with shortages having partition rate infinite and finite.

UNIT IV

Pert and CP/M : arrow network- time estimates – earliest expected time, latest allowable occurrence time, latest allowable occurrence time and slack – critical path – probability of meeting scheduled date of completion of project – calculation of CP/M network – various floats for activities – critical path – updating project – operation time cost trade off curve – selection of schedule based on cost analysis

Text Books

1. Gillet, B.E.., “Introduction to Operation Research: a computer oriented algorithmic approach “ Tata McGraw Hill, NY.
2. Gross D., and Harris, C. M., “Fundamentals of queueing theory “, John Willey and Sons, NY.

Reference Books:

1. Hillier F., and Lieberman, G. J. , “Introduction to Operation Research”, Holden Day ,NY.
2. Kambo, N.S., “Mathematical Programming Techniques”, McGraw Hill.
3. Kanti Swaroop, Gupta P. K., Man Mohan, “Operations Research”, Sultan Chand and Sons.
4. Taha, H. A., “Operations Research – An Introduction”, McMillan Publishing Company, NY.

Paper ID: 44701		L	T/P	C
Code: IT701	Paper : Java Programming	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development ,Employability &Entrepreneurship

Unit I

Overview and characteristics of Java, Java program Compilation and Execution Process Organization of the Java Virtual Machine , JVM as an interpreter and emulator , Instruction Set, class File Format, Verification, Class Area, Java Stack, Heap, Garbage Collection. Security Promises of the JVM, Security Architecture and Security Policy. Class loaders and security aspects, sandbox model

Unit II

Java Fundamentals , Data Types & Literals Variables, Wrapper Classes, Arrays ,Arithmetic Operators, Logical Operators , Control of Flow , Classes and Instances , Class Member Modifiers Anonymous Inner Class Interfaces and Abstract Classes , inheritance , throw and throws clauses , user defined Exceptions , The StringBuffer Class ,tokenizer ,applets , Life cycle of applet and Security concerns

Unit III

Threads: Creating Threads , Thread Priority ,Blocked States , Extending Thread Class , Runnable Interface , Starting Threads ,Thread Synchronization , Synchronize Threads , Sync Code Block , Overriding Synced Methods , Thread Communication , wait , notify and notify all. AWT Components , Component Class, Container Class, LayoutManager Interface Default Layouts , Insets and Dimensions , BorderLayout , FlowLayout , GridLayout , CardLayout GridBagLayout AWT Events , Event Models , Listeners ,Class Listener ,Adapters , ActionEvent Methods FocusEvent KeyEvent ,Mouse Events ,WindowEvent

Unit IV

Input/OutputStream , Stream Filters,Buffered Streams ,Data input and OutputStream, PrintStream RandomAccessFile , JDBC , Database connectivity with Oracle , Object serialization , Sockets , development of client Server applications , design of multithreaded server .Remote Method invocation , Java Native interfaces , Development of a JNI based application , Collection API Interfaces , Vector , stack, Hashtable classes , enumerations , set , List , Map , Iterators .

Text Books:

1. Bill Verrens ,Inside the Java Virtual Machine, TataMcGraw Hill
2. Herbert schidlt , The complete reference Java , Seventh Edition , TataMcGraw Hill
3. Sierra and Bates , Head First Java , O'Reilly
4. Horstmann Cay , Big Java , Wiley –India
5. Horstmann, "Core Java" Pearson Education

Reference Books:

1. Malik D.S , *Java Programming* , Second edition , Thomson course Technology
2. Johnson Richard , *Java Programming and Object Oriented application Development* , Thomson course Technology
3. Horstmann Cay , *Object Oriented Design and Patterns* , Wiley –India
4. Bhave M.P., "Programming with Java", Pearson Education

Paper ID: 44703			L	T/P	C
Code: IT703	Paper :	Algorithm analysis and Design	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

SKILL DEVELOPMENT & EMPLOYABILITY

UNIT I

Notion of Algorithm, Growth of functions, Summations, Recurrences: The substitution method, The iteration method, The master method (including proof) ,Asymptotic Notations and Basic Efficiency Classes. Use of Big O , Ω , Θ in analysis .Mathematical Analysis of few Non-recursive and Recursive Algorithms , Proof of Correctness .

UNIT II

Sorting and Searching Techniques , Selection Sort , Bubble Sort , Insertion Sort , Sequential Search Binary Search , Depth first Search and Breadth First Search. , Balanced Search trees , AVL Trees , , Red-Black trees , Heaps and Heap sort , Hash Tables, disjoint set and their implementation , Divide and conquer Paradigm of Problem solving , complexity analysis and understanding of Merge sort , Quick Sort , Binary, Search Trees, Sorting in linear time, Medians and Order statistics

UNIT III

Greedy Techniques, Prim's Algorithm, Kruskal's Algorithm , Dijkstra's and Bellman Ford Algorithm , Huffman trees. Knapsack Problem , Dynamic Programming paradigm , Warshall's and Floyd's Algorithm , Optimal Binary Search trees , Matrix multiplication Problem , 0/1 Knapsack Problem , maximum network flow problem , naive string matching algorithm , string matching with finite automata Knuth morris Pratt, algorithm , The Rabin-Karp Algorithm

UNIT IV

Backtracking, n-Queen's Problem, Hamiltonian Circuit problem, Subset-Sum problem, Branch and bound , Assignment problem , Traveling salesman problem. Introduction to Computability, Polynomial-time verification, NP-Completeness and Reducibility, NP-Completeness Proof, NP-Complete problems, Proof of cook's theorem.

Text Book:

1. Jon Kleinberg and Eva Tardos , Algorithm Design, Pearson Edition, 2006.
2. "Algorithms" Sanjoy Dasgupta , Christos Papadimitriou Umesh Vazirani TMH
3. "Introduction to Algorithms", T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, PHI

Reference Books:

1. "Algorithms" , Johnsonbaugh , Pearson
2. "Introduction to the Design and Analysis of Algorithm", Anany Levitin, Pearson Education
3. "Computer Algorithms - Introduction to Design and Analysis", Sara Baase and Allen Van Gelder, Pearson Education
4.. A.V.Aho, J.E. Hopcroft and J.D.Ullman, "The Design and Analysis Of Computer Algorithms", Pearson Education

Paper ID: 44705		L	T/P	C
Code: IT705	Paper : Web Technology	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Deveoplment, Employability & Entrepreneurship

Unit I

Web Design & Development : Key issues and challenges. HTML : Building web pages with HTML tags , Internet & Web: Introduction of Internet and Web, Internet protocols and applications. Frames, DHTML. Hosting Website & Security: Hosting a Website and it's Security issues, cyber laws.

Unit II

Dreamweaver etc. Graphical and Animation Tools: Use of Different graphical and animation tools like HTML Editors & Tools: Use of different HTML editors and tools like Microsoft Front Page, Abode Photoshop ,Gif Animator, Macromedia flash etc .

Unit III

Interactivity: Forms, Creating interactive & dynamic web pages . Comparison of ASP, PHP and JSP technologies. Active Server Pages : Interactivity with database using ASP, ASP request & response objects, ASP Server Objects.

Unit IV

Web Technologies: Latest trends & technologies in Web industry. Java for web : Overview of Java beans , Java Servlets , Java applets , Java Script . ASP.NET , E-Commerce, Web engineering , Semantic web . VB Script, Microsoft Visual Interdev IDE , Overview of Visual Basic & VB.NET.

Text Book:

1. Achyut S Godbole and Atul Kahate, "Web Technologies", Tata McGraw Hill
2. C. Xavier, "Web Technology & Design ", Tata McGraw Hill.
3. Ann Navarro, " Effective Web Design", BPB publications.
4. Raj Kamal, "Internet & Web Design", Tata McGraw Hill
5. Raj Kamal, "Internet and Web Technologies", TMH
6. E Stephen,Will Train, "HTML 4.0", BPB publication
7. ASP 3 Programming , Eric A. Smith , IDG Books India. Active Server Pages by Heith Morneau, Vikas Publishing House
8. Active Server Pages by Heith Morneau, Vikas Publishing House
9. B. Reselman et al, "Using Visual Basic 6", PHI
10. E. Petroutsos, "Mastering Visual Basic 6.0", BPB.

Reference Books:

1. VK Jain, "Advanced programming in web design",Cyber tech publications
2. Rick Dranell, "HTML4 unleashed", Techmedia Publication.
3. TM Ramachandran , "Internet & Web development", Dhruv publications
4. James L Mohler and Jon Duff, "Designing interactive web sites",Delmar Thomson learning .
5. Ivan Bay Ross, "HTML,DHTML,Java script,Perl CGI" , BPB
6. Java-2 The complete Reference by Patrick Naughton and Herbertz Schildt, TMH.

Paper ID: 44707			L	T/P	C
Code: IT707	Paper	: Computer Networks	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Employability & Skill Development

UNIT I

Uses of Computer Networks, Network Architecture, Reference Model (ISO-OSI, TCP/IP-Overview, IP Address Classes, Subneting, Domain Name Registration & Registers

UNIT II

The Physical Layer: Theoretical basis for data communication, transmission media-Magnetic Media, Twisted Pair, Baseband Coaxial Cable, Broadband Coaxial Cable, Fibre Cable, Structured Cabling, Cable Mounting, Cable Testing, Wireless transmission, the telephone system, narrowband ISDN, broadband ISDN and ATM. The Data Link Layer: Data link layer design issues, error detection and correction, data link protocols, sliding window protocols, Examples of Data Link Protocols.

UNIT III

The Medium Access Sublayer: The channel allocation problem, multiple access protocols, IEEE standard 802 for LANS and MANS, high-speed LANs, satellite networks, Network devices-repeaters, hubs, switches and bridges.The Network Layer: Network layer design issues, routing algorithms, congestion control algorithm, internetworking, the network layer in the internet, the network layer in ATM networks.

UNIT IV

Introduction, Communication Systems, Signal and data, Channel Characteristics, Transmission modes, Synchronous and asynchronous transmission, Guided Media (Twisted pair, Co-axial cable, Optical fiber), Unguided Media (Radio, VHF, microwave, satellite), Infrared Transmission, Fibre Optics Communication : Components (Source, Channel Detector), Concept of Modulation, Pulse Code Modulation (PCM), Shift Keying [ASK,FSK, PSK, QPSK, DPSK], Encoding techniques and CODEC, Classification of Modems, Standards and Protocols, Protocols used by Modem to Transfer files, Establishing a Connection

Text Book:

1. Tananbaum A.S., “Computer Networks”, 3rd Ed, PHI, 1999.
2. Stalling W, “Data & Computer Communications”, 8th Edition, PHI
3. B. Forouzan, "Data Communication and Networking", First Edition, 1999, Tata McGraw Hill
4. W. Stallings, "Data and Communication", Sixth Edition, 2002, Prentice Hall of India

Reference Books:

1. Black U., “Computer Networks-Protocols, Standards and Interfaces”, PHI, 1996.
2. Stallings W., “Computer Communication Networks”, PHI.
3. Laura Chappell (ed), “Introduction to Cisco Router Configuration”, Techmedia, 1999.
4. Michael A. Miller, “Data & Network Communication”, Vikas Publication
5. William A. Shay, “Understanding Data Communication & Networks”, Vikas Publication

Paper ID: 44709		L	T/P	C
Code: IT709	Paper : Operating Systems	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Importance of Operating Systems; Basic Concepts and Terminology; An Operating System Resource Manager: Memory Management Functions, Processor Management Functions, Device Management Functions, and Information Management Functions;.

UNIT II

Single Contiguous Allocation: H/W Support, S/W Support, Advantages, Disadvantages ; Introduction to Multiprogramming : Concept of Multiprogramming , Measure of System I/O Wait Percentage, Relevance of Multiprogramming to Memory Management ; Partitioned Allocation, Relocatable Partitioned Memory Management, Paged Memory Management, Demand-Paged Memory Management, Segmented Memory Management, Segmented and Demand –Paged Memory Management, Other Memory Management Schemes (Swapping, Overlays);

UNIT III

State Model : Job Scheduler, Process Scheduling , Job and Process Synchronization, Structure of Processor Management ; Job Scheduling : Functions, Policies, Job Scheduling in Nonmultiprogrammed Environment, Job Scheduling in Nonmultiprogrammed environment, Job Scheduling in multiprogrammed environment ; Process Scheduling, Multiprocessor Systems : Separate Systems, Coordinated Job Scheduling, Master/Slave Scheduling, Homogeneous Processor scheduling ; Process Synchronization : Race Condition, Synchronization Mechanism, Deadly Embrace, Synchronization Performance Considerations;

UNIT IV

Techniques for Device Management : Dedicated Devices, Shared Devices, Virtual Devices ; Device Characteristics- Hardware Considerations : Input or Output Devices, Storage Devices; Channels and Control Units : Independent Device Operation, Buffering, Multiple Paths, Block Multiplexing ; Device Allocation Considerations; Virtual Devices;Information Management: Introduction; A Simple File System; General Model of a File System; Symbolic File System; Basic File System, Access Control Verification; Logical File System; Physical File System; **Case studies**: DOS, Windows XP and 2000, Linux. Influential operating systems (Early systems, Atlas, Mach, MULTICS, IBM OS/360).**Special Purpose systems:** Real Time systems, Multimedia systems

Text Book:

1. Madnick E., Donovan J., “Operating Systems”, Tata McGraw Hill.
2. Silbershatz and Galvin, “ Operating System Concepts”, Addison Wesley.

Reference Books:

1. Tannenbaum, “Operating systems”, PHI.4. Peterson, “Operating System”.

Paper ID: 44702		L	T/P	C
Code: IT702	Paper : Data Warehousing and Data Mining	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

The Compelling Need for data warehousing: Escalating Need for strategic information, failures of Past decision-support systems, operational versus decision-support systems, data warehousing – the only viable solution, data warehouse defined Data warehouse – The building Blocks: Defining Features, data warehouses and data marts, overview of the components, metadata in the data warehouse Defining the business requirements: Dimensional analysis, information packages – a new concept, requirements gathering methods, requirements definition: scope and content

UNIT II

Principles of dimensional modeling: Objectives, From Requirements to data design, the STAR schema, STAR Schema Keys, Advantages of the STAR Schema Dimensional Modeling: Updates to the Dimension tables, miscellaneous dimensions, the snowflake schema, aggregate fact tables, families of STARS

UNIT III

OLAP in the Data Warehouse: Demand for Online analytical processing, need for multidimensional analysis, fast access and powerful calculations, limitations of other analysis methods, OLAP is the answer, OLAP definitions and rules, OLAP characteristics, major features and functions, general features, dimensional analysis, what are hypercubes? Drill-down and roll-up, slice-and-dice or rotation, OLAP models, overview of variations, the MOLAP model, the ROLAP model, ROLAP versus MOLAP, OLAP implementation considerations

UNIT IV

Data Mining Basics: What is Data Mining, Data Mining Defined, The knowledge discovery process, OLAP versus data mining, data mining and the data warehouse, Major Data Mining Techniques, Cluster detection, decision trees, memory-based reasoning, link analysis, neural networks, genetic algorithms, moving into data mining, Data Mining Applications, Benefits of data mining, applications in retail industry, applications in telecommunications industry, applications in banking and finance.

Text Book:

1. Paul Raj Poonia, “Fundamentals of Data Warehousing”, John Wiley & Sons, 2003.
2. Sam Anahony, “Data Warehousing in the real world: A practical guide for building decision support systems”, John Wiley, 2004

Reference Books:

1. W. H. Inmon, “Building the operational data store”, 2nd Ed., John Wiley, 1999.
2. Kamber and Han, “Data Mining Concepts and Techniques”, Hartcourt India P. Ltd., 2001

Paper ID: 44704		L	T/P	C
Code: IT704	Paper : Object Oriented Software Engineering	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Introduction to Software Engineering: Software Engineering Development, Software Engineering Development, Software Life Cycle Models, Standards for developing life cycle models.

UNIT II

Object Methodology & Requirement Elicitation: Introduction to Object Oriented Methodology, Overview of Requirements Elicitation, Requirements Model-Action & Use cases, Requirements Elicitation Activities, Managing Requirements Elicitation

UNIT III

Architecture: Model Architecture, Requirements Model, Analysis Model, Design Model, Implementation Model, Test Model Modeling with UML: Basic Building Blocks of UML, A Conceptual Model of UML, Basic Structural Modeling, UML Diagrams

UNIT IV

System Analysis: Analysis Model, Dynamic Modelling & Testing, System Design: Design concepts & activities, Design models, Block design, Testing, Testing Object Oriented Systems: Introduction, Testing Activities & Techniques, The Testing Process, Managing Testing, Case Studies

Text Books:

1. Stephen R. Scach, “Classical & Object Oriented Software Engineering with UML and Java”, McGraw Hill, 1999.

Paper ID: 44706		L	T/P	C
Code: IT706	Paper : Computer Graphics	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Unit I

Basic raster graphics algorithms for drawing 2 D Primitives liner, circles, ellipses, arcs, clipping, clipping circles, ellipses & polygon.

Unit II

Polygon Meshes in 3D, curves, cubic & surfaces, Solid modeling. Geometric Transformation: 2D, 3D transformations, window to view port transformations, acromatic and color models. Graphics Hardware: Hardcopy & display techniques, Input devices, image scanners

Unit III

Shading Tech: Transparency, Shadows, Object reflection, Gouraud & Phong shading techniques. Visible surface determination techniques for visible line determination, Z-buffer algorithm, scanline algorithm, algorithm for oct-tres, algorithm for curve surfaces, visible surfaces ray-tracing, recursive ray tracing, radio-city methods.

Unit IV

Elementary filtering tech, elementary Image Processing techniques, Geometric & multi-pass transformation mechanisms for image storage & retrieval. Procedural models, fractals, grammar-based models, multi-particle system, volume rendering.

Text Book:

1. Foley et. al., “Computer Graphics Principles & practice”, AWL.

Reference Books:

1. R.H. Bartels, J.C. Beatty and B.A. Barsky, “An Introduction to Splines for use in Computer Graphics and Geometric Modeling”, Morgan Kaufmann Publishers Inc., 1987.
2. D. Hearn and P. Baker, “Computer Graphics”, Prentice Hall, 1986.
3. W. Newman and R. Sproul, “Principles of Interactive Computer Graphics, McGraw-Hill, 1973.
4. R. Plastock and G. Kalley, “Theory and Problems of Computer Graphics”, Schaum’s Series, McGraw Hill, 1986.
5. F.P. Preparata and M.I. Shamos, “Computational Geometry: An Introduction”, Springer-Verlag New York Inc., 1985.
6. D. Rogers and J. Adams, “Mathematical Elements for Computer Graphics”, MacGraw-Hill International Edition, 1989.
7. David F. Rogers, “Procedural Elements for Computer Graphics”, McGraw Hill Book Company, 1985.
8. Alan Watt and Mark Watt, “Advanced Animation and Rendering Techniques”, Addison-Wesley, 1992.

Paper ID: 44708		L	T/P	C
Code: IT708	Paper : Enterprise Computing in Java	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Deveoplment, Employability & Entrepreneurship

UNIT I

J2EE: Introduction to J2EE, Building J2EE Applications, JDBC, Servlets and Web Applications, Java Server Pages and Model/View/Controller, J2EE Web Services Overview, Introduction to EJB, Session EJBs, Entity EJBs, JMS and message driven Beans, Transactions and Security, Application Servers (Case Study of any one of IBM Websphere, BEA Weblogic, JBoss)

UNIT II

Hibernate: Principles of Object Relational Mapping, Hibernate configuration, HQL making objects persistent, Hibernate semantics, Session management, flushing, concurrency and Hibernate, Optimistic and Pessimistic Locking, Object mapping Mapping simple properties, Single and multi valued associations, Bi-directional associations, Indexed collections, Using Hibernate Template, Querying, Session management, Transaction integration and demarcation.

UNIT III

Spring: Introduction of Spring Framework: Spring Architecture, Spring Framework definition, Spring & MVC, Factory Pattern, BeanFactory, Spring Context definition, Inversion of Control (IoC), Spring AOP, Application Context and BeanFactory, Spring ORM, Mapping API for JDO, Hibernate, Hibernate Mapping, JDO Mapping, iBATIS, Spring Abstract Transaction layer, Employing Spring transaction, Using EJB declarative transactions, Integration process, integrating Spring MVC in web application, MVC in web application, MVC Framework.

UNIT IV

Web Services: Introduction to XML, Service-Oriented Architectures SOAP, SOAP message structure, handling errors WSDL, UDDI, Java Web Service implementations JAX-RPC, Web service clients in Java, Introduction to Ajax.

Text Books:

1. Jim Farley, William Crawford, O'Reilly and Associates, "Java Enterprise in a Nutshell", 2005
2. Brett McLaughlin, O'Reilly, "Java and XML, 2nd Edition, 2001

Reference Books:

1. Elliott Rusty Harold and W. Scott Means, O'Reilly, "XML in a Nutshell", 2001
2. James Cooper, "Java Design Pattersn: A Tutorial", Addison Wesley
3. Govind Sesadri, "Enterprise java Computing: Application and Architectures", Cambridge University Publications, 1999

Paper ID: 44710			L	T/P	C
Code: IT710	Paper	: Microprocessors	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Architecture of 8086, instruction set, assembly language programming, assembler directives, procedures and macros.

UNIT II

8086 minimum mode, system timing diagram, addressing memory and ports in microprocessors based systems,

UNIT III

Interrupts and interrupt service procedures, interfacing 8086 with 8251, 8254, 8255, 8259, 8279, A/D and D/A converters.

UNIT IV

8086 maximum mode, DMA transfer, interfacing and refreshing dynamic RAM, 8087, overview of architecture of 80386, 486 and Pentium processors and power PC.

Text Books:

1. D.V. Hall, “Microprocessors and Interfacing”, TMH, 2nd edition.

Reference Books:

1. Peter Able, “IBM PC assembly language programming.”, PHI
2. James L. Antonakes, “An Introduction to the Intel Family of Microprocessors”, Published by Addison Wesley.
3. Liu Gibson, “Microprocessor Systems: The 8086/8088 family Architecture, Programming & Design”, Published by PHI.

Paper ID: 44712		L	T/P	C
Code: IT712	Paper : Software Metrics	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Introduction: What is measurement and why do it? Measurement in software engineering, scope of software metrics.

The Basics of Measurement: Representational theory, Measurement & Models, Measurement Scales and Scale Types, Meaningfulness in Measurement

UNIT II

A Goal Framework for Software Measurement: Classifying software measures, Determining what to measure, Applying the framework

Empirical Investigation & Data Collection: Four Principles of Investigation, Planning formal experiments, What is good data, How to define the data, How to collect data, When to collect data.

UNIT III

Analyzing Software Measurement Data: Analyzing the results of experiments, Analysis Techniques, Overview of statistical tests. Measuring Internal Product Attributes, Size and Structure: Aspects of Software Size, Length, Reuse, Functionality, Complexity, Types of Structural Measures, Modularity and information flow attributes, Object Oriented Metrics, Measuring External Product Attributes: Modeling Software Quality, Measuring aspects of quality

UNIT IV

Measurement and Management: Planning a measurement program, Measurement in practice, empirical research in software engineering

Text Books:

1. Norman E. Fenton & Shari Lawrence Pfleefer, “Software Metrics”, Thomson Computer Press,1996.

Reference Books:

1. Kan, “Metrics and Models in Software quality Engineering” , Pearson education

Paper ID: 44714		L	T /P	C
Code: IT714	Paper: Front End Design Tools	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Visual Basic:Variable Names, Data Types, Assignment, If-then, if-then-else, if then-elseif-else, expression, print statement, arrays, variable declaration, built-in & User Defined types, Subroutine and functions, Boolean Operators, Arithmetic Operator, For-.next, do loop, while-wend, procedures/Public, Private, and Static & Dim Statement.

UNIT II

Structure of VB program, Forms & built in controls, Properties and events, Code Module, Scale Modes, Printer Object (Printing text, setting Fonts, graphics) Common dialog Boxes, picture controls, image-controls, send keys, MS-Common controls, Error Handling, Classes, Control Arrays, MDI, SDI.

UNIT III

Database Interface: Review of ANSI SQL, ODBC, Pass through ODBC, DAO, MS-Jet Engine, DB-Engine, Workspaces, Databases, recordsets, Data bound controls, ActiveX controls, ADO, Active X Data controls, RDO, Data view Window, Data Environment Designer, Crystal Report and Data Report Utility.

UNIT IV

Help Writing: Building a help, System, Building & Topics File, Labeling the topics,Creating a help project, primary & secondary help window, linking to internet, Adding Multimedia, Using HTML help workshop, content sensitive help, help file.

Overview of COM/DCOM, using Windows API Functions, MAPI interface, Microsoft Transaction Server, Visual source safe.

Text Books:

1. B. Reselman et al, “Using Visual Basic 6”, PHI
2. Mohd. Azam, “Programming with Visual Basic 6.0”, Vikas Publication
3. B. Siler & J. Spotts, “Using Visual Basic 6”, PHI

Reference Books:

1. E. Petroutsos, “Mastering Visual Basic 6.0”, BPB.
2. G. Perry, “Teach Yourself Visual Basic 6 in 21 days ”, Techmedia.
3. E. Brierley, Anthony Prince, & David Rinaldi, “Visual Basic 6: How-to”, Techmedia
4. V.K. Jain, “Introduction to OOP and VB”, Vikas Publication.

Paper ID: 44716			L	T/P	C
Code: IT716	Paper	: Digital Signal Processing	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Discrete time signals and systems, Z-transforms, structures for digital filters, design procedures for FIR and IIR filters. Frequency transformations: linear phase design; DFT. Methods for computing FFT. Noise analysis of digital filters, power spectrum estimation. Signals and signal Processing: characterization & classification of signals, typical Signal Processing operations, example of typical Signals, typical Signals Processing applications. Time Domain Representation of Signals & Systems: Discrete Time Signals, Operations on Sequences, the sampling process, Discrete-Time systems, Time-Domain characterization of LTI Discrete-Time systems, state-space representation of LTI Discrete-Time systems, random signals.

UNIT II

Transform-Domain Representation of Signals: the Discrete-Time Fourier Transform, Discrete Fourier Transform, DFT properties, computation of the DFT of real sequences, Linear Convolution using the DFT. Z-transforms, Inverse z-transform, properties of z-transform, transform domain representations of random signals.Transform-Domain Representation of LTI Systems: the frequency response, the transfer function, types of transfer function, minimum-phase and maximum-Phase transfer functions, complementary transfer functions, Discrete-Time processing of random signals.

UNIT III

Digital Processing of Continuous-Time Signals : sampling of Continuous Signals, Analog Filter Design, Anti-aliasing Filter Design, Sample-and-hold circuits, A/D & D/A converter, Reconstruction Filter Design.

UNIT IV

Digital Filter Structure: Block Diagram representation, Signal Flow Graph Representation, Equivalent Structures, bone FIR Digital Filter Structures, IIR Filter Structures, State-space structure, all pass filters, tunable IIR Digital filters. cascaded Lattice realization of IIR and FIR filters, Parallel all pass realization of IIR transfer function, Digital Sine-Cosine generator.Digital Filter Design: Impulse invariance method of IIR filter design, Bilinear Transform method of IIR Filter Design, Design of Digital IIR notch filters, FIR filter Design based on truncated fonner sens, FIR filter design based on Frequency Sampling approach. Applications of DSP.

Text Book:

1. Sanjit K. Mitra, “Applications DSP a Computer based approach” , TMH.
2. Allan Y. Oppenhein & Ronald W. Schater , "Applications DSP”.

Paper ID:44718		L	T/P	C
Code: IT 718	Paper : Network Security	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT 1

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

UNIT 2:

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

UNIT 3:

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

UNIT 4:

Authentication Applications: Kerberos – X.509, Authentication Service – Electronic Mail Security – PGP – S/MIME - IP Security – Web Security.
Intrusion detection – password management – Viruses and related Threats – Virus Counter measures – Firewall Design Principles – Trusted Systems.

Text:

1. William Stalling “Cryptography and Network Security” Fourth Ed., Prentice Hall, 2006
2. Frouzen “Cryptography and Network Security” Fourth Ed., Prentice Hall, 2006

Reference:

1 Charles P. Pfleeger, Shari Lawrence Pfleeger, “Security in Computing” 3rd Edition, Prentice Hall, 2003
2. Jeff Crume “Inside Internet Security” Addison Wesley, 2003

Paper ID:44720		L	T/P	C
Code: IT720	Paper: .NET Programming	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

Unit -1

Introduction to Three-Tier Architecture, overview of .NET Framework , Common Language Runtime (CLR) , The .NET Framework Class Library , familiarization with visual studio .NET IDE , Design Window, Code Window, Server , Explorer, Toolbox, Docking Windows, Properties Explorer, Solution Explorer, Object Browser, Dynamic Help, Task List Explorer, Features of VS.NET, XML Editor, Creating a Project, Add Reference, Build the Project, Debugging a Project

Unit 2:

Introducing C# Programming , introduction, basic language constructs, types (reference and value, relations between types) , delegates, generics, collections, strings , exceptions, threads , Networking

Unit 3:

Windows Forms, Adding Controls, Adding an Event Handler, Adding Controls at Runtime
Attaching an Event Handler at Runtime, Writing a Simple Text Editor, Creating a Menu Adding a New Form, Creating a Multiple Document Interface, Creating a Dialog Form Using Form Inheritance, Adding a Tab-Control, Anchoring Controls, Changing the Startup Form, Connecting the dialog, Using ListView and TreeView controls, Building an ImageList and add them to the ListView, Using details inside the ListView, Attaching a Context Menu, Adding a TreeView, Implementing Drag and Drop, Creating Controls at run time, Creating a User Control, Adding a Property, Adding Functionality, Writing a Custom Control, Testing the Control.

Unit 4:

ADO.NET Architecture, Understanding the ConnectionObject, Building the Connection String, Understanding the CommandObject, Understanding DataReaders,Understanding DataSets and DataAdapters, DataTable, DataColumn, DataRow, Differences between DataReader Model and DataSet Model, Understanding the DataViewObject, Working with System.Data.OleDb, Using DataReaders, Using DataSets, Working with SQL.NET, Using Stored Procedures, Working with Odbc.NET, Using DSN Connection , Introducing the ASP.NET Architecture, ASP.NET Server Controls, Working with User, Controls, Custom Controls, Understanding the Web.config File, Using the Global.asax Page

Text book:

1. “Programming C#, 3rd Edition “ Jesse Liberty , O’really
2. C# for Programmers, Deitel and Deitel, Pearson
3 . “Understanding .NET”, Chappell, David, , Addison Wesley, 2006

Paper ID: 44801		L	T/P	C
Code: IT801	Paper: Software Verification, Validation & Testing	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Incident, Test Cases, Testing Process, Limitations of Testing, V Shaped Software Life Cycle Model, No

Introduction: What is software testing and why it is so hard?, Some Software Failures, Error, Fault, Failure, absolute proof of correctness, Overview of Graph Theory.

Verification Testing: Verification Methods, SRS Verification, Software Design Document Verification, Code Reviews, User Documentation Verification, Software Project Audits.

UNIT II

Cause Effect Graphing Technique.

Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Structural Testing: Identification of Independent Paths: Control Flow Graph, DD-Paths, Cyclomatic

Complexity, Graph Matrix, Control Flow Testing, Data Flow Testing, Slice Based Testing, Mutation testing.

UNIT III

Applicability. Validity Checks: Strategy for Data Validity, Guidelines for Generating Validity Checks.

Use Case Testing: Use Case Diagrams and Use Cases, Generation of Test Cases from Use Cases, Database testing

Selection, Minimization, Prioritization of test cases for Regression Testing: Regression Testing, Regression Test Case Selection, Prioritization guidelines, Priority category Scheme, Code Coverage Techniques for Prioritization of Test Cases, Risk Analysis

UNIT IV

Testing Activities: Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging Object Oriented Integration and System Testing.

Object Oriented Testing: Issues in Object Oriented Testing, Path testing, Class Testing, state based testing,

Metrics and Models in Software Testing: What are Software Metrics, categories of Metrics, object Oriented Metrics used in testing, What should we measure during testing?, Software Quality Attributes

Prediction Model: Reliability Modes, Fault Prediction Model.

Text Books:

1. William Perry, “Effective Methods for Software Testing”, John Wiley & Sons, New York, 1995.

2. Cem Kaner, Jack Falk, Nguyen Quoc, “Testing Computer Software”, Second Edition, Van Nostrand Reinhold, New York, 1993.
3. Boris Beizer, “Software Testing Techniques”, Second Volume, Second Edition, Van Nostrand Reinhold, New York, 1990.
4. Louise Tamres, “Software Testing”, Pearson Education Asia, 2002
5. Aditaya p. mathur, “Foundations of Software Testing”, Pearsons Education

Reference Books:

1. Roger S. Pressman, “Software Engineering – A Practitioner’s Approach”, Fifth Edition, McGraw-Hill International Edition, New Delhi, 2001.
2. Boris Beizer, “Black-Box Testing – Techniques for Functional Testing of Software and Systems”, John Wiley & Sons Inc., New York, 1995.
3. K.K. Aggarwal & Yogesh Singh, “Software Engineering”, New Age International Publishers, New Delhi, 2003.
4. Marc Roper, “Software Testing”, McGraw-Hill Book Co., London, 1994.
5. Gordon Schulmeyer, “Zero Defect Software”, McGraw-Hill, New York, 1990.
6. Watts Humphrey, “Managing the Software Process”, Addison Wesley Pub. Co. Inc., Massachusetts, 1989. z
7. Boris Beizer, “Software System Testing and Quality Assurance”, Van Nostrand Reinhold, New York, 1984.
8. Glenford Myers, “The Art of Software Testing”, John Wiley & Sons Inc., New York, 1979.
9. Paul C. Jorgenson, Software Testing A Craftsman’s approach, CRC Press, 1997.

Paper ID: 44803		L	T/P	C
Code: IT803	Paper : Linux administration and Programming	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

Unit I

Linux Operating System Concepts and Architecture , User Space, Kernel Space, Processes and Daemons, Process Control , , Linux File system, User, Group and Resource Management , Configuration Files, File system Permissions, Access Permissions and Security, , /proc file system , Common File system Commands, Partitioning and Disk Management, Installing and Selecting Software, Selecting Services for Startup, Configuration , Utilities, Updating Software and Package Management , System Startup, Shutdown and Reboot , System Boot Process Run levels, Rc.d and init.d

Unit II

Linux distribution Apache Installation, Configuration files , Networking in Linux overview , network configuration , configuring Linux firewall , DNS , FTP , network file system , network Information service (NIS) , Samba , LDAP , Data Backup, Restore and Disaster Recovery

Unit III

Introduction to shell and Kernel programming : Why shell programming? , Creating a script, Variables, Shell commands and control structures, Kernel Basics, General kernel responsibilities, Kernel organization, Kernel modules

Unit IV

Using Kernel Services , System calls , Signals and interrupts , Managing memory , Address architecture, address space , Virtual memory, memory mapping , Paging, switching, caching , Managing Processes , Process, kernel thread, tasklet , Context switch and scheduling , Interrupts, signals, and exceptions , Managing Times and Synchronization , Kernel timer, hardware clocks , IPC , Linux device driver architecture

Text Books:

1 Steve shah , Wale soyinka “Linux system administration : A Beginners guide “, , TMH

2. Peterson, “The Complete reference Linux”, Tata McGraw Hill.

3. Alessandro Rubini & Jonathan Corbet , “ Linux Device Drivers*”, 2nd Edition* O'Reilly & Associates, ISBN 0-596-00008-1

Reference Books:

1. “Beginning Linux Programming” Wrox Press
2. Daniel P. Bovet & Marco Cesati “Understanding the Linux Kernel” , O'Reilly

Paper ID: 44805		L	T/P	C
Code: IT 805	Paper: Advanced Computer Networks	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Review of Physical, Data link layer, TCP/IP: Datalink Protocols; ARP and RARP.Network Layer: Routing algorithms and protocols, Congestion control algorithm, Router Operation, Router configuration, Internetworking, IP Protocol, IPv6 (an overview), Network layer in ATM Network.

UNIT II

Transport Layer: Transport Service, Transport Protocol (TCP, UDP, ATM AAL layer protocol).

UNIT III

Application layer: Security, DNS, SNMP, RMON, Electronic Mail, WWW.

UNIT IV

Network Security: Malicious softwares (Virus, life cycle of virus, Trojan Horses, Worms, Zombie, Logic Bomb), Basic Encryption techniques (Public key and secret key Encryption), Firewalls (Application and packet filtering), Virtual Private Network, IP SEC (Architecture and modes of operation), Digital signature standard.

Text Books:

1. Tananbaum A.S., “Computer Networks”, 3rd Ed, PHI, 1999.
2. Laura Chappell (ed), “Introduction to Cisco Router Configuration”, Techmedia, 1999.
3. Stallings W., “Networks security”, Pearson education.

Reference Books:

1. Black U., “Computer Networks-Protocols, Standards and Interfaces”, PHI, 1996.
2. Stallings W., “Computer Communication Networks”, PHI.
3. Stallings W., “SNMP, SNMPv2, SNMPv3, RMON 1&2”, 3rd Ed., Addison Wesley, 1999.
4. Michael A. Miller, “Data & Network Communications”, Vikas Publication.
5. William A. Shay, “Understanding Data Communications & Networks”, Vikas Publication.

Paper ID: 44807		L	T/P	C
Code: IT 807	Paper : Multimedia Applications	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employability

UNIT I

Introduction: Concept of Multimedia, Multimedia Applications, Hardware Software requirements, Multimedia products & its evaluation.Components of multimedia: Text, Graphics, Audio, Video.Design & Authoring Tools, Categories of Authority Tools, Types of products.

UNIT II

Introduction, Basic Terminology techniques, Motion Graphics 2D & 3D animation.Introduction to MAYA(Animating Tool)

UNIT III

Fundamentals, Modeling: NURBS, Polygon, Organic, animation, paths & boxes, deformers.

UNIT IV

Rendering & Special Effects: Shading & Texturing Surfaces, Lighting, Special effects.

Text / Reference Books:

1. David Hillman, “Multimedia Technology & Applications”, Galgotia Publications.
2. Rajneesh Agrawal, “Multimedia Systems”, Excel Books.
3. Nigel Chapman & Jenny Chapman, “Digital Multimedia”, Wiley Publications.
4. D.P. Mukherjee, “Fundamentals of Computer Graphics and Multimedia”, PHI.

Paper ID: 44809		L	T/P	C
Code: IT 809	Paper : Digital Image Processing	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employability

UNIT I

Introduction And Digital Image Fundamentals Digital Image Representation, Fundamental Steps in Image Processing, Elements of Digital image processing systems, Sampling and quantization, some basic relationships like neighbours, connectivity, Distance measure between pixels, Imaging Geometry. **Image Transforms**Discrete Fourier Transform, Some properties of the two-dimensional fourier transform, Fast fourier transform, Inverse FFT.

UNIT II

Image Enhancement-Spatial domain methods, Frequency domain methods, Enhancement by point processing, Spatial filtering, Lowpass filtering, Highpass filtering, Homomorphic filtering, Colour Image Processing. **Image Restoration-**Degradation model, Diagnolization of Circulant and Block-Circulant Matrices, Algebraic Approach to Restoration, Inverse filtering, Wiener filter, Constrained Least Square Restoration, Interactive Restoration, Restoration in Spatial Domain.

UNIT III

Image Compression-Coding, Interpixel and Psychovisual Redundancy, Image Compression models, Error free comparison, Lossy compression, Image compression standards.**Image Segmentation-**Detection of Discontinuities, Edge linking and boundary detection, Thresholding, Region Oriented Segmentation, Motion based segmentation.

UNIT IV

Representation and Description-Representation schemes like chain coding, Polygonal Approximatiion, Signatures, Boundary Segments, Skeleton of region, Boundary description, Regional descriptors, Morphology. **Recognition and Interpretation-**Elements of Image Analysis, Pattern and Pattern Classes, Decision-Theoretic Methods, Structural Methods, Interpretatiion.

Text Books:

1. Rafael C. Conzalez & Richard E. Woods, “Digital Image Processing”, AWL.
2. A.K. Jain, “Fundamental of Digital Image Processing”, PHI.

Reference Books:

1. Rosefield Kak, “Digital Picture Processing”,
2. W.K. Pratt, “Digital Image Processing”.

Paper ID: 44811		L	T/P	C
Code: IT 811	Paper: Advanced Computer Architecture	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employability

UNIT I

Parallel computer models: The state of computing , Multiprocessors and multicomputers, Multivector and SIMD computers, Architectural development tracks.Program and network properties :Conditions of parallelism, Data and resource dependences,Hardware and software parallelism,Program partitioning and scheduling, Grain size and latency, Program flow mechanisms,Control flow versus data flow,Data flow architecture,Demand driven mechanisms,Comparisons of flow mechanisms

UNIT II

System Interconnect Architectures : Network properties and routing, Static interconnection networks,Dynamic interconnection Networks,Multiprocessor system interconnects,Hierarchical bus systems, Crossbar switch and multiport memory,Multistage and combining network.Processors and Memory Hierarchy : Advanced processor technology, Instruction-set Architectures,CISC Scalar Processors, RISC Scalar Processors, Superscalar Processors,VLIW Architectures, Vector and Symbolic processors.Memory Technology :Hierarchical memory technology, Inclusion, Coherence and Locality, Memory capacity planning, Virtual Memory Technology

UNIT III

Backplane Bus System :Backplane bus specification, Addressing and timing protocols, Arbitration transaction and interrupt, Cache addressing models, Direct mapping and associative caches. Pipelining :Linear pipeline processor, Nonlinear pipeline processor, Instruction pipeline design, Mechanisms for instruction pipelining, Dynamic instruction scheduling, Branch handling techniques, Arithmetic Pipeline Design, Computer arithmetic principles, Static arithmetic pipeline, Multifunctional arithmetic pipelines

UNIT IV

Vector Processing Principles : Vector instruction types, Vector-access memory schemes.Synchronous Parallel Processing : SIMD Architecture and Programming Principles, SIMD Parallel Algorithms, SIMD Computers and Performance Enhancement

Text Books:

1. Kai Hwang, “Advanced computer architecture”; TMH.

References Books:

1. J.P.Hayes, “computer Architecture and organization”; MGH.
   Harvey G.Cragon,”Memory System and Pipelined processors”; Narosa Publication.
2. V.Rajaranam & C.S.R.Murthy, “Parallel computer”; PHI.
3. R.K.Ghose, Rajan Moona & Phalguni Gupta, “Foundation of Parallel Processing”; Narosa Publications. Kai Hwang and Zu, “Scalable Parallel Computers Architecture”; MGH.
4. Stalling W, “Computer Organisation & Architecture”;PHI.
5. D.Sima, T.Fountain, P.Kasuk, “Advanced Computer Architecture-A Design space Approach,”Addison Wesley,1997.
6. M.J Flynn, “Computer Architecture, Pipelined and Parallel Processor Design”; Narosa Publishing.
7. D.A.Patterson, J.L.Hennessy, “Computer Architecture :A quantitative approach”; Morgan Kauffmann feb,2002.
8. Hwan and Briggs, “ Computer Architecture and Parallel Processing”; MGH.

Paper ID: 44813		L	T/P	C
Code: IT 813	Paper: Compiler Construction	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks: 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employability

UNIT 1- Classification of grammars, Context free grammars, Deterministic finite state automata (DFA) Non-DFA.

UNIT 2- Scanners, Top down parsing, LL grammars, Bottom up parsing, Polish expression Operator Precedence grammar, IR grammars, Comparison of parsing methods, Error handling.Symbol table handling techniques, Organization for non-block and block structured languages.

UNIT 3- Run time storage administration, Static and dynamic allocation, Intermediate forms of source program, Polish N-tuple and syntax trees, Semantic analysis and code generation.

UNIT 4-Code optimization, Folding, redundant sub-expression evaluation, Optimizatiion within iterative loops.

Text / References:

1. Tremblay, et. al., “The Theory and Practice of Compiler Writing”, McGraw Hill, New York, 1985.

Paper ID: 44815		L	T/P	C
Code: IT 815	Paper: Software Project Management	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development, Employability and Entrepreneurship

UNIT I

Importance of software project management What is a project? Problems with Software Projects What is Project Management? Stakeholders in software project; Stages of Project, The Feasibility Study, The Cost-benefit Analysis , Cost-benefit evaluation techniques; Cash flow forecasting

UNIT II

Steps in project initiation, Business Case, Project Charter, Steps in project planning; Team Contract, Defining scope and objectives; work breakdown structure; Deliverables and other products; time, cost, and resource estimation;

UNIT III

Activity planning, Network planning model; Activity-on-arrow network; Precedence network; Forward pass; Backward pass; Critical path; Slack and float.

UNIT IV

Nature and categories of risk in software development; risk Identification; Risk assessment; Risk mitigation, monitoring, and management; Evaluating schedule risk using PERT. Measurement of physical and financial progress; Earned value analysis; Status reports; Milestone reports; Change control. , Project closing, Lesson Learned report

Text Books:

1. Kathy Schwalbe, Information Technology Project Management, Fifth edition, 2008,Thomson learning
2. Bob Hughes and Mike Cotterell, “Software Project Management”, Third Edition 2002,McGraw-Hill
3. Pankaj Jalote, “Software Project Management in Practice”, 2002, Pearson EducationAsia.

Reference Books:

1. Roger S. Pressman, “Software Engineering: A practitioner’s Approach”, Fifth Edition2001 McGraw-Hill
2. Robert T. Futrell, Donald F. Shafer, and Linda I.. Shafer, “Quality Software ProjectManagement” 2002, Pearson Education Asia.
3. Ramesh Gopalaswamy, “Managing Global Software Projects”, 2003, Tata McGraw-Hill

Paper ID: 44817		L	T/P	C
Code: IT817	Paper : Fuzzy Sets & Logic	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function, a-cuts, Properties of a-cuts, Decomposition Theorems, Extension Principle. Operations on Fuzzy Sets: Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations.

UNIT II

Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations.Fuzzy Relations: Crisp & Fuzzy Relations, Projections & Cylindric Extensions, Binary Fuzzy Relations, Binary Relations on single set, Equivalence, Compatibility & Ordering Relations, Morphisms, Fuzzy Relation Equations.

UNIT III

Possibility Theory: Fuzzy Measures, Evidence & Possibility Theory, Possibility versus Probability Theory.Fuzzy Logic: Classical Logic, Multivalued Logics, Fuzzy Propositions, Fuzzy Qualifiers, Linguistic Hedges.

UNIT IV

Unertainty based Information: Information & Uncertainity, Nonspecificity of Fuzzy & Crisp sets, Fuzziness of Fuzzy Sets.Applications of Fuzzy Logic:

Text Book:

1. G.J.Klir & T.A. Folyger,"Fuzzy Sets, Uncertainty & Information", PHI, 1988.
2. G.J.Klir & B.Yuan, "Fuzzy sets & Fuzzy logic," PHI, 1995.

Paper ID: 44819		L	T/P	C
Code: IT819	Subject: Neural Networks	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT 1:

Biological Analogy, Architecture classification, Neural Models, Learning Paradigm and Rule, single unit mapping and the preceptron.

UNIT 2

Feed forward networks – Review of optimization methods, back propagation, variation on backpropagation, FFANN mapping capability, Mathematical properties of FFANN's Generalization, Bios & variance Dilemma, Radiol Basis Function networks.

UNIT 3

Recurrent Networks – Symmetric hopfield networks and associative memory, Boltzmann machine, Adaptive Resonance Networks

UNIT 4

PCA, SOM, LVQ, Hopfield Networks, Associative Memories, RBF Networks, Applications of Artificial Neural Networks to Function Approximation, Regression, Classification, Blind Source Separation, Time Series and Forecasting.

Text / Reference:

1. Haykin S., "Neural Networks-A Comprehensive Foundations", Prentice-Hall International, New Jersey, 1999.

2. Anderson J.A., "An Introduction to Neural Networks", PHI, 1999.

3. Hertz J, Krogh A, R.G. Palmer, "Introduction to the Theory of Neural Computation",

4. Addison-Wesley, California, 1991.

5. Hertz J, Krogh A, R.G. Palmer, "Introduction to the Theory of Neural Computation", Addison-Wesley, California, 1991.

6. Freeman J.A., D.M. Skapura, "Neural Networks: Algorithms, Applications and Programming Techniques", Addison-Wesley, Reading, Mass, (1992).

7. Golden R.M., "Mathematical Methods for Neural Network Analysis and Design", MIT Press, Cambridge, MA, 1996.

8. Cherkassky V., F. Kulier, “Learning from Data-Concepts, Theory and Methods”, John Wiley, New York, 1998.

9. Anderson J.A., E. Rosenfield, “Neurocomputing: Foundatiions of Research, MIT Press, Cambridge, MA, 1988.

10. Kohonen T., “Self-Organizing Maps”, 2nd Ed., Springer Verlag, Berlin, 1997.

11 Patterson D.W., “Artificial Neural Networks: Theory and Applications”, Prentice Hall, Singapore, 1995.

10. Vapnik V.N., “Estimation of Dependencies Based on Empirical Data”, Springer Verlag, Berlin, 1982.

11. Vapnik V.N., “The Nature of Statistical Learning Theory”, Springer Verlag, New York, 1995.

12. Vapnik V.N., “Statistical Learning Theory: Inference from Small Samples”, John Wiley, 1998.

Paper ID: 44821		L	T/P	C
Code: IT821	Paper : Simulation & Modelling	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT 1:

Definition of System, types of system : continuous and discrete, modelling process and definition of a model, computer workloads and preparation of its models,

UNIT 2

Verification and validation modeling procedures, comparing model data with real system data, differential and partial differential equation models, combining discrete event and continuous models.Simulation process:

UNIT 3

Use of simulation, discrete and continuous simulation procedures, simulation of time sharing computer system.

UNIT 4

Simulation Languages : A brief introduction to important discrete and continuous simulation languages, one language may be studied in detail depending on the availability.

Text:

1. Gordon G., “System Simulation”, PHI.

Reference:

1. Banks J., Carson S., Nelson B.L., “Discrete-Event System Simulation”, 2nd Edition, Prentice Hall of India, N. Delhi, 1996.
2. Deo N., “System Simulation with Digital Computers”, Prentice Hall of India, 1979.
3. Law A.M., Kelton W.D., “Simulation Modeling and Analysis”, 2nd Edition, McGraw Hill, N.Y., 1991.

Paper ID: 44823		L	T/P	C
Code: IT823	Paper: Introduction to Multi-Agent System	3	1	4

INSTRUCTIONS TO PAPER SETTERS:		Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.	
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks	

Unit 1. Introduction: what is an agent: agents and objects; agents and expert systems; agents and distributed systems; typical application areas for agent systems.

Unit 2. Intelligent Agents: abstract architectures for agents; tasks for agents. the design of intelligent agents - reasoning agents (e.g., Agent0),agents as reactive systems (e.g., subsumption architecture); hybrid agents (e.g., PRS); layered agents (e.g., Interrap).

Unit 3. Multi-Agent Systems: classifying multi-agent interactions | cooperative versus non-cooperative; zero-sum and other interactions; what is cooperation? how cooperation occurs | the Prisoner's dilemma and Axelrod's experiments; interactions between self-interested agents: auctions systems; negotiation; argumentation

Unit 4. Agent Oriented Programming and Methodologies: interaction languages and protocols: speech acts, KQML/KIF, the FIPA framework, ontologies, coordination languages, interactions between benevolent agents: cooperative distributed problem solving (CDPS), partial global planning; coherence and coordination, Application and Framework : applications of agent systems., study of three different agent Development Framework i.e. JADE , Aglet , Concordia

Text Book :

1. M. Wooldridge, An Introduction to MultiAgent Systems. John Wiley & Sons, 2002. ISBN 0 47149691X.

References:

1. G. Weiss, editor. Multi-Agent Systems. The MIT Press, 1999.

2. J. Ferber. Multi-Agent Systems. Addison-Wesley, 1999.

3. M. Singh and M. Huhns. Readings in Agents. Morgan-Kaufmann Publishers,

1997.

Paper ID: 44825			L	T/P	C
Code: IT825	Paper : Artificial Intelligence		3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

UNIT I

Scope of AI-Games, theorem proving, natural language processing, vision and speech processing, robotics, expert systems, AI techniques- search knowledge, abstraction.**Problem solving-**State space search; Production systems, search space control: depth-first, breadth-first search, heuristic search - Hill climbing, best-first search, branch and bound. Problem Reduction, Constraint Satisfaction End, Means-End Analysis

UNIT II

Knowledge Representation Predicate Logic: Unification, modus pones, resolution, dependency directed backtracking.Rule based Systems : Forward reasoning: conflict resolution, backward reasoning: use of no backtrack.Structured Knowledge Representation: Semantic Nets: slots, exceptions and default frames, conceptual dependency, scripts.

UNIT III

Handling uncertainty-Non-Monotonic Reasoning, Probabilistic reasoning, use of certainty factors, fuzzy logic.

UNIT IV

Learning-Concept of learning, learning automation, genetic algorithm, learning by inductions, neural nets. **Expert Systems-**Need and justification for expert systems, knowledge acquisition, Case studies: MYCIN, RI.

Text Books:

1. E. Rich and K. Knight, “Artificial intelligence”, TMH, 2nd ed., 1992.
2. N.J. Nilsson, “Principles of AI”, Narosa Publ. House, 1990.

Reference Books:

1. D.W. Patterson, “Introduction to AI and Expert Systems”, PHI, 1992.
2. Peter Jackson, “Introduction to Expert Systems”, AWP, M.A., 1992.
3. R.J. Schalkoff, “Artificial Intelligence - an Engineering Approach”, McGraw Hill Int Ed., Singapore, 1992.
4. M. Sasikumar, S. Ramani, “Rule Based Expert Systems”, Narosa Publishing House, 1994.

Paper ID: 44827			L	T/P	C
Code: IT 827	Paper	: Reliability Engineering	3	1	4

INSTRUCTIONS TO PAPER SETTERS:	Maximum Marks : 60
1.	Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2.	Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT 1

Reliability Fundamentals: Introduction, Need for Reliability Engineering, Definition, Causes of Failures, Catastrophic Failures and Degradation Failures, Characteristic Types of Failures, Useful Life of Components, The Exponential Case of Chance Failures, Reliability Measures, Failure Data Analysis.

UNIT 2

Reliability Mathematics: Fundamentals of Set Theory, Probability Theory, Random Variables, Discrete Distributes, Continuous Distributions, Stochastic Processes, Markov Chains

Reliability Analysis of Series Parallel Systems: Introduction, Reliability Block Diagrams, Series Systems, Parallel Systems, Series Parallel Systems, K-out-of-M Systems, Open and Short Circuit Failures, Standby Systems.

Reliability Analysis Nonseries Parallel Systems: Introduction, Path Determination, Boolean Algebra Methods, A Particular Method, Cut Set Approach, Delta-Star Method, Logical Signal Relations Method, Baye's Theorem Method.

UNIT 3

Reliability Prediction: Introduction, Purpose, Classification, Information Sources for Failure Rate Data, General Requirements, Prediction Methodologies, Software Prediction Packages, Role and Limitation of Reliability Prediction.

Reliability Allocation: Introduction, Subsystems Reliability Improvement, Apportionment for New Units, Criticality.

UNIT 4

Redundancy Techniques for Reliability Optimization: Introduction, Signal Redundancy, Time Redundancy, Software Redundancy, Hardware Redundancy.

Maintainability and Availability: Introduction, Forms of Maintenance, Measures of Maintainability and Availability, Maintainability Function, Availability Function, Two Unit Parallel System with Repair, Preventive Maintenance, Provisioning of Spares.

Reliability Testing: Introduction, Kinds of Testing, Component Reliability Measurements, Parametric Methods, Confidence Limits, Accelerated Testing, Equipment Acceptance Testing, Reliability Growth Testing.

Text Book:

1. "Reliability Engineering", K. K. Aggarwal, Kluwar Publications

Paper ID:44829		L	T/P	C
Code: IT 829	Paper: Software Quality Management	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Concepts and Overview: Concepts of Software Quality, Quality Attributes, Software Quality Control and Software Quality Assurance, Evolution of SQA, Major SQA activities, Major SQA issues, Zero defect Software.

Software Quality Assurance: The Philosophy of Assurance, The Meaning of Quality, The Relationship of Assurance to the Software Life-Cycle, SQA Techniques.

UNIT 2

Tailoring the Software Quality Assurance Program: Reviews, Walkthrough, Inspection, and Configuration Audits.
Evaluation: Software Requirements, Preliminary design, Detailed design, Coding and Unit Test, Integration and Testing, System Testing, types of Evaluations.
Configuration Management: Maintaining Product Integrity, Change Management, Version Control, Metrics, Configuration Management Planning.

UNIT 3

Error Reporting: Identification of Defect, Analysis of Defect, Correction of Defect, Implementation of Correction, Regression Testing, Categorization of Defect, Relationship of Development Phases.
Trend Analysis: Error Quality, Error Frequency, Program Unit Complexity, Compilation Frequency.

UNIT 4

Corrective Action as to Cause: Identifying the Requirement for Corrective Action, Determining the Action to be Taken, Implementing the Correcting the corrective Action, Periodic Review of Actions Taken.
Traceability, Records, Software Quality Program Planning, Social Factors: Accuracy, Authority, Benefit, Communication, Consistency, and Retaliation.

Text:

1. Robert Dunn, “Software Quality Concepts and Plans”, Prentice-Hall, 1990.
2. Alan Gillies, “Software Quality, Theory and Management”, Chapman and Hall, 1992.

Reference:

1. Michael Dyer, “The Cleanroom approach to Quality Software Engineering”, Wiley & Sons, 1992.
2. Daniel Freedman, Gerald Weinberg, “Handbook of Walkthroughts, Inspections and Technical Reviews”, Dorset House Publishing, 1990.
3. Tom Gilb, “Principles of Software Engineering Management”, Addison-Wesley, 1988.
4. Tom Gilb, Dorothy Graham, “Software Inspection” Addison-Wesley, 1993.
5. Watts Humphrey, “Managing the Software Process”, Addison-Wesley, 1990.
6. Watts Humphrey, “A Discipline for Software Engineering”, Addison-Wesley, 1995.
7. Arthur Lowell, “Improving Software Quality An Insiders guide to TQM”, 1993, Wiley & Sons.

		L	T/P	C
Paper ID: 44831				
Code: IT-831	**Paper: Mobile Computing**	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT 1

Wireless and Mobile Network Architecture: fundamental challenges, Mobile Devices –PDA and mobile OS, PalmOs, Win CE and Symbian. Principle of Cellular Communication, Overview 1G, 2G, 2.5G and 3G and 4G technologies. GSM. Architecture and Mobility management, hand off management, Network signalling. Mobile Computing

UNIT 2

Mobile IP Protocol Architecture: Mobile IP and IP v 6 and its application in mobile computing. Cellular Digital Packet Data CDPD, VOIP, GPRS Services, Wireless Local Loop-WLL system

Wireless Application Protocol (WAP): The Wireless Application Protocol application environment, wireless application protocol client software, hardware and websites, wireless application protocol gateways, implementing enterprise wireless application protocol strategy

UNIT 3

Wireless Markup Language: An Introduction to Wireless Technologies, Markup Languages , An Introduction to XML, Fundamentals of WML., Writing and Formatting Text , Navigating Between Cards and Decks, Displaying Images, Tables, Using Variables, Acquiring User Input

Wireless Markup Language Script: An Introduction to WMLScript, WMLScript Control Structures, Events, Phone.com Extensions, Usability

UNIT 4

Application of Mobile computing: ASP and Dynamic WAP Sites, XML and XSLT, Dynamic WML Generation with ASP and XSLT, Developing WAP Applications using Emulators.

Distributed Mobile Computing : Distributed OS and file systems, Mobile Computing Software (Pervasive Computing) Development, Strategies and tools, Data Management for Mobile Computing

Text:

2. Yi Bing Lin, "Wireless and Mobile Networks Architecture", John Wiley.
3. Wrox "The Beginning WML and WML Script", Wrox Publication
4. Tomasz Imielinski et.al, Mobile Computing, Kluwer Academic Press 1996.
5. Uwe Hansmann, Pervasive Computing Handbook. The Mobile World, IEE publication 2002
6. Jochen Burkhardt, et.al. Pervasive Computing, Technology and Architecture of Mobile InternetApplications, Addison Wesley, 2002

Paper ID: 44833			L	T/P	C
Code: IT-833	Paper	: Software Requirements and Estimation	3	1	4

INSTRUCTIONS TO PAPER SETTERS: **Maximum Marks : 60**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 20 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks

Skill Development and Employablity

UNIT I

Introduction to software life cycle, Review of Software Life Cycle models, management activities in a software project

UNIT II

Requirements engineering: Requirements Elicitation, Requirement Elicitation techniques, Requirement Analysis, Requirement Analysis Models, Requirement Documentation, Requirement Management

UNIT III

Size Estimation: Function Point Analysis, Mask II FPA, LOC estimation, Conversion between size measures Effort, schedule & cost estimation: Estimation factors, COCOMO-II, Putnam Estimation Model, Estimation by Analogy, Validating Software Estimates

UNIT IV

Tools: Software Estimation Tools Industry Resources; IFPUG, UQAM-SEMRL, COSMIC, IEEE, COCOMO

Text Book:

1. Swapna Kishore, Rajesh Naik, “Software Requirements and Estimation”, TMH
2. Parathasarthy,” Practical software estimation”, Pearson education
3. Leffingwell “Managing Software Requirements: A Use Case Approach” Pearson education

Practicals:

Semester 1:

Paper Code: IT – 651
Subject: Information Technology Lab

This Lab course will be based on Information Technology (IT 601). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 653
Subject: Programming and Data Structure Lab

This Lab course will be based on Programming and Data Structure (IT 605). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 655
Subject: Computer Architecture Lab

This Lab course will be based on Computer Architecture (IT 603). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Semester 2:

Paper Code: IT – 652
Subject: Software Engineering Lab

This Lab course will be based on Software Engineering (IT 602). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 654
Subject: Database Management Systems Lab

This Lab course will be based on Database Management Systems (IT 604). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 656
Subject: Object Oriented Programming Lab

This Lab course will be based on Object Oriented Programming (IT 606). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 658
Subject: Term Paper

Term Paper: For the term paper supervisor shall be allocated in the area of interest of the student by the school. The term paper is NUES mode evaluation. The student has to submit a report on the topic selected. A committee constituted by the dean shall evaluate the student.

Semester 3:

Paper Code: IT – 751
Subject: Java Programming Lab

This Lab course will be based on Java Programming (IT 701). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 753
Subject: Algorithm Analysis and Design Lab

This Lab course will be based on Alogorithm Analysis and Design (IT 703). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 755
Subject: Web Technology Lab

This Lab course will be based on Web Technology (IT 705). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 757
Subject: Computer Networks Lab

This Lab course will be based on Computer Networks (IT 707). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Semester 4:

Paper Code: IT – 752
Subject: Data Warehousing & Data Mining Lab

This Lab course will be based on Data Warehousing & Data Mining (IT 702). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 754
Subject: Object Oriented Software Engineering Lab

This Lab course will be based on Object Oriented Software Engineering (IT 704). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 756
Subject: Computer Graphics Lab

This Lab course will be based on Computer Graphics (IT 706). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 758
Subject: Elective Lab

This Lab course will be based on the Elective Subject offered to the student. The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 760
Subject: Minor Project

For the minor project a supervisor shall be allocated by the School, in the area of interest of the student. The student has to submit a report at the end, duly approved by the supervisor for evaluation.

Semester 5:

Paper Code: IT – 851
Subject: Software Verification, Validation & Testing Lab

This Lab course will be based on Software Verification, Validation & Testing (IT 801). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 853
Subject: Linux & X-Windows Programming Lab

This Lab course will be based on Linux X-Windows Programming (IT 803). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 855
Subject: Advanced Computer Networks Lab

This Lab course will be based on Advanced Computer Networks (IT 805). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Paper Code: IT – 857
Subject: Multimedia Applications Lab

This Lab course will be based on Multimedia Applications (IT 807). The concerned teacher shall announce the list of practicals in the first week of teaching. Atleast 10 practicals have to be performed by the student studying for this paper.

Semester 6:

Paper Code: IT – 854
Subject: Dissertation

For the Dissertation, a supervisor shall be allocated by the school, in the area of interest of the student. The student has to submit a report at the end, duly approved by the supervisor for evaluation.

Paper Code: IT – 856
Subject: Seminar and Progress Reports

Seminar shall be given by the student at scheduled time together with the progress report of the dissertation. The evaluation shall be held by a committee constituted by the Dean of the school. The paper is a NUES paper.