M.Sc. (Information Technology) Session 2016 -17

Duration: 2 Years (Four Semesters)

Eligibility: Graduation in any stream (Under 10+2+3 Scheme) with Minimum of 50% marks

(45% for candidates belonging to the reserved category SC/ST/OBC). Selection: Based on merit in qualifying examination

Scheme of Examination and Course of Study

1. Number of papers and the maximum marks for each paper/practical are shown in the syllabus for the subject concerned. It will be necessary for a candidate to pass in the theory part as well as in the practical part (wherever prescribed) of a subject/Paper separately.
2. A candidate for a pass each of the Previous and the Final Examinations shall be required to obtain (i) at least 36% marks in the aggregate of all the papers prescribed for the examination and (ii) at least 36% marks in practical's/wherever prescribed at the examination, provided that if a candidate fails to secure at least 25% marks in each individual paper work. Wherever prescribed, he shall be deemed to have failed at the examination not withstanding his having obtained the minimum %age of marks required in the aggregate for the examination. No division will be awarded at the previous Examination. Division shall be awarded at the end of the Final Examination taken together, as noted below:

   First Division 60% (On the aggregate marks taken
   Second Division 48% together in the Prev. & Final Exam.)
3. If a candidate clears any papers(s)/practical prescribed at the Examination after a continuous period of three years, then for the purpose of working out his division the minimum pass marks only viz. 25% (36% in the case of Practical) shall be taken into account in respect of such paper(s)/Practical(s)
4. A candidate failing at M.Sc. Previous examination may be provisionally admitted to the M.Sc. final class. Provided that he passes in atleast 50% papers as per Provision of 0.235 (i)
5. A candidate may be allowed grace marks in only one theory papers up to the extent of 1% of the Total marks prescribed for that examination.

   N.B. (i) Non Collegiate candidates are didn't eligible to appear in the examination where practical is involved.

TEACHING AND EXAMINATION SCHEME FOR
M.Sc. (Previous) Information Technology Exam. -2016-17

Semester - I

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Tut.	Exam	Max. Marks
PAPER-101	Algorithmic and Application Programming	3	1	3	100
PAPER-102	Fundamentals of Information Technology	3	1	3	100
PAPER-103	Database Management System	3	1	3	100
PAPER-104	Operating Systems	3	1	3	100
PAPER-105	Mathematical Foundation of InformationTechnology	3	1	3	100
	Practical				
PAPER-106	Programming Laboratory ('C',Window, MS-Office)			3	50
PAPER-107	Programming Laboratory (DBMS, Operating System)			3	50
	Total				600

***for each practical paper students have to submit the project.**

Semester - II

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Tut.	Exam	Max. Marks
PAPER-201	Object Oriented Concepts and Technology	3	1	3	100
PAPER-202	Computer Organization	3	1	3	100
PAPER-203	Internet and Web Technology	3	1	3	100
PAPER-204	Data Communication	3	1	3	100
PAPER-205	Advance Database Management System	3	1	3	100
	Practical				
PAPER-206	Programming Laboratory-1			3	50
PAPER-207	Programme Laboratory -2 (Internet and Web Technology)			3	50
	Total				600

***for each practical paper students have to submit the project.**

TEACHING AND EXAMINATION SCHEME FOR
M. Sc. (Final) Information Technology Exam. -2017-18

Semester - III

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Tut.	Exam	Max. Marks
PAPER-301	**Advanced Internet Application**	**3**	**1**	**3**	**100**
PAPER-302	**Visual Basic Programming**	**3**	**1**	**3**	**100**
PAPER-303	**Electronic Banking & E-Commerce**	**3**	**1**	**3**	**100**
PAPER-304	**Data Warehousing & Mining**	**3**	**1**	**3**	**100**
PAPER-305	**Cyber Law, Internet Security & Cryptography**	**3**	**1**	**3**	**100**
Practical					
PAPER-306	**Programming Laboratory (Visual Basic Programming)**			**3**	**50**
PAPER-307	**Programming Laboratory (Advanced Internet Application)**			**3**	**50**
	Total				**600**

***for each practical paper students have to submit the project.**

Semester - IV

Courses of Study and Examination

Paper	Paper Name	Lecture Hrs./week	Tut.	Exam	Max. Marks
PAPER-401	**Project (Report, Viva-Voce)**				**600**
	Total				**600**

Grant Total of All 4 Semester: 2400

Note: Project work of a batch of 30 students shall be assessed by a panel of external Examiner and Internal Examiner both, in 2 days.

M.Sc. (Previous)
INFORMATION TECHONOLOGY

SEMESTER I
Paper 101-AIgorithmic and Application Programming

Max Marks:100 Duration: 3 Hrs. Min.Marks:36
Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Algorithmic Methodology.

Basic concepts and notation, understanding the Problem, Plan the Logic, Code the Program, Pseudopodia and Flowchart, efficiency of algorithms, analyzing algorithms and problems, complexity measures, basic time analysis of an algorithm, space complexity. Conditionals Control Structures and Program Writing.

Looping, Abstract data types, Data abstraction and basic data structures, data types, Recursion, Characteristics of Recursive functions, Mathematical Induction, Prepositional Logic, First Order Predicate calculus, Resolution Proofs, Rules of Infernce.

Data Structure of Programming concepts:

Arrays Storage allocation functions, Linked allocation, hashed allocation techniques, Sorting, Searching, Sequential, Binary and hashed searching, Internal and external sorting techniques, Bubble sort, Insertion sort, Selections sort, Merge sort, Radix sort and quick sort comparisons, String Manipulations, Representation of strings in contiguous storage, string conversions. Representations of variable-length strings, examples of operations on strings, Data structures and file handling les. File organization, text and Binary files., Opening and closing files, Advanced programming concepts, Introduction only, Recursion, dynamic Memory management and allocation operating system calls inner process communication, advanced file handling and indexing,

Text / Reference Books:

1. A.V.Aho, J.E. Hoperoft, and J.D.Ullman, Data Structures and Algorithms. Pearson Education Asia.
2. R. Johnsonbaugh,Discrete Mathematics, Pearson Education Asia.
3. Sara Baase and Allen Van Gelder-Computer Algorithms, Pearson Education Asia.
4. Jean-Paul Tremblay and Paul G. Sorenson, An Introduction to Data Structures with Applications, TMH Publishing Co. Ltd.

Paper 102 - Fundamentals of Information Technology

Max Marks: 100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Information systems, Data and Information, IT in Business and Industry, IT in home and Play, IT in education and training, IT in entertainment and the Arts, IT in Science, Engg. and Maths, Personal, Social and ethical issues in IT. Overview of the Digital Computer System (Processor, Memory, Input and Output Devices, Storage Devices, Operation Systems, Application Software, Types of Computers)

Representation of Data

Number system (binary, octal, decimal and hexa decimal numbers, conversion from one form to another, fractional numbers and signed numbers, complements, Fixed point and floating Point representations, Boolean algebra (addition, subtraction, multiplication and division), Logic Gates (NOT, OR, AND, NAND, NOR, XOR, XNOR)types of codes (ASCII, EBCDIC, Unicode), encoding and decoding.

Anatomy of a Computer

Introductory level: Emphasis shall be on basic concepts, features available in the component, characteristics and behavior of components, comparison, merits and limitations. Mother Board (Special reference to Intel 810 Chipset motherboard), CISC Micro Processors (Special reference to Pentium, AMD, Cyrix), RISC processors (Motorola; Power PC, and 680x0 series), Memory (ROM, RAM, flash, Cache, Virtual, Buffers, CMOS), types of RAM (FPM, EDO, BEDO, SDRAM), types of memory modules (SIMM, DIMM), System clock Bus(Data, Address, Control), Bus architecture (ISA, MCA, EISA, PCI, AGP) Expansion slots and cards (Network adapter cards, SCSI card, Sound card, TV tuner card, PC card), Ports (Serial, Parallel, AGP, UGP, Fire wire), cables (RS 232, BIN), Input devices (keyboard, mouse, trackball, track pad, pen touch screen, scanner, OMR, OCR< voice input, video input digital camera) Output devices [Monitors (refresh rate, resolutions, standards- CGA, VGA, SVGA, XGA, SXGA; LCD monitors, Video controllers and VRAM), Printers (Dot-matrix, Line, Label, Ink- Jet, Laser, Color Laser thermal wax, dye sublimation, fiery, IRIS), Plotters (pen, Ink- Jet, electrostatic), Voice Output], Storage devices [Storage types (Magnetic, Optical, Magneto-optical, Solid state), random versus sequential access, formation, tracks and sectors, speed storage, capacity, floppy Disk (5.25 inch, 3.5 inch; 2HD, Zip, Super disk, HiFD) Hard Disk (tracks, cylinders, sectors; Hard Drive Interfaces(IDE<EIDE, Fast SCSI, Fast/wide SCSI, Ultra SCSI; Hard Disk Cartridges, RAID)), Optical Disks (pits and lands, CD (ROM, R, RW), DVD, (ROM, R, RAM) Magnetic tape (reels, streamers, DAT, DLT, stripe, Smart Card), Modem (Fax/Data/Voice).

Text / Reference Books:

1. Bernard Grob: Basic Electronic, Tata McGraw Hill.
2. Albert Paul Malvino, Electronic Principles, McGraw Hill.
3. Jacob Millman and Christos, C. Halkias: Electronic Devices and Circuits, Tata McGraw Hill Publishing Company Ltd., 2000.
4. Peter Norton's Introduction to Computers, Third Edition, McGraw Hill.

Paper 103 - Database Management Systems

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Data and Information

Basic Concepts, Problems of Early Information Systems, Advantage of a DBMS. Database Architectures Three levels of the architecture: external, conceptual and internal level] centralized and distributed, Database models : hierarchical [Concepts of a Hierachy, IMS hierarchy], relational [Concepts of relational model, relational algebra, relational calculus], network [Concepts of a Network, DBTG Network DBA Schema declaration] and object oriented database [Only basic information about OODBMS and ORDBMS].

Database query languages

Basic retrieval capability, retrieval and exploration, update commands QBE], client/server design, Standard Query language [Basic SQL Query Nested Queries, Aggregate Operators, Null Values, Embedded SQL, Cursor Dynamic SQL] query optimization [Query evaluation plans, pipelined evaluation. Heritor interface for operators and access methods, relational Query Optimizer].

Data Management Issues

Backup, recovery, maintenance, and performance.

Database Design

Schema Refinement, Functional Dependencies, Normal forms Decompositions.
Normalization, tuning [Tuning indexes, Tuning queries and views, tuning the conceptual schema, DBMS benchmarking], Security [Access control, Discretionary and Mandatory Access control, Encryption] and implementation.
Enterprise wide data applications [Information only], building client/server database [Information only] Object oriented databases, [Information only] Internet databases [Information only] Open database connectivity [ODBC] [Information Only], Accessing remote data sources, Transaction Management [Information only].
Database and Tools:

MS-Access, SQL, Visual Basic, ORACLE (Wherever required these tools should be used).

Text / Reference Books:

1. Ramakrishnan and Gharke, Database Management Systems, Tata McGraw Hill Pub. Co. Ltd.
2. Date, Database Management Systems, Pearson Education Asia.
3. Gerald V Post, Database Management Systems, Tata McGraw Hill.
4. Leon and Leon, SQL, Tata McGraw Hill Pub. Co. Ltd.
5. Ivan Bayross, Database Technologies, Sybex Computer Books Inc.
6. Abbey and Corey, Oracle 8i, Tata McGraw Hill Pub. Co.Ltd.
7. Occardi, Relational Database, BPB Publication.

Paper 104 - Operating Systems

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Operating Systems

Functions of operating systems, characteristics of Operating Systems (single/multi user, single/multi tasking, portability), Information Management (File Systems, Device Drivers, Terminal I/O) Process Management (Process definition, control, interacting processes, implementation of interacting Processes, threads, scheduling)Memory Management (Contiguous, Non-Contiguous, Paging, Segmentation, Virtual memory), Deadlocks, Security and Protection, Parallel Processing.

DOS

Booting sequence, system files and commands, file and directories, overview of MS - DOS commands-internal and external commands, FDISK and Disk organization.

Windows

Graphical User Interfaces, Windows 98 Installation, Scan Disk, Task Bars, Toolbars, Settings, Control Panel, Files and Folders management, Windows Explorer, Installing and Running Program, Using Accessories, Getting Help; Copying, Moving and Sharing Information between programs, Backing up files, Configuring keyboard and mouse, adding and removing hardware, setting up printers and fonts, working with sound, graphics and video, configuring windows by using the Accessibility Wizard, configuring modem, connection to PPP and SLIP Accounts, creating Windows Peer Net-work, Connecting Windows 98PC to Novell Netware and Windows NT Net-works and Windows NT Networks, Sharing drive and printers, compressing disk and partitions. Tuning Windows 98 for maximum performance, registering programs and file types, troubleshooting Windows 98.

UNIX

Logging in and out, Directory, Redirecting input and output, cat command, viz Editor, Shell Scripts, Shell and sub-shell variables, Meta characters, sort, head, tail, split, cut, paste, find, tr, dd commands, gripping and sedding, UUCP, Unix and Networking, Accessing the Internet, Unix system administration, shell programming.

Text / Reference Books:

1. GaryNutt : Operating Systems- A Modem Perspective (IInd Edition) TMH 2000
2. DM Dhamdhere : Systems Programming and Operating Systems (Second Edition), Tata McGraw Hill Pub.Co.Ltd.2000.
3. Stuart E. Madnick, John. J. Donovan: Operating Systems, Tata McGraw Hill Pub.Co. Ltd.,2000.
4. Achyut S Godbole: Operating Systems, Tata McGraw Hill Pub. Co.Ltd. 2000.
5. Harvey M. Deitel, Operating Systems, Pearsons Education, 2001.
6. Tanenbaum AS, Modern Operating Systems, PHI Publications.
7. Ritchie : Operating Systems, BPB Publications.
8. Paul McFedries, Windows 98 Unleashed, Techmedia.

Paper 105 - Mathematical Foundation of Information Technology

Max Marks:100 **Duration: 3 Hrs.** **Min.Marks:36**

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Number Systems : natural numbers, integers, rational numbers, real numbers, complex numbers, arithmetic modulo a positive integer (binary, octal, decimal and hexadecimal number systems), radix representation of integers, representing negative and rational numbers, floating point notation.

Binary Arithmetic, 2's complement arithmetic, conversion of numbers from one of binary/octal/decimal/hexadecimal number system to other number systems, Codes (Natural BCD, Excess-3, Gray, Octal, Hexadecimal, Alphanumeric-EBCDIC and ASCII), Error codes.

Logic and Proofs: Proposition, Conjunction, Disjunction, Negation, Compound proposition, Condition, Propositions (Hypothesis, Conclusion, necessary and sufficient condition and Logical equivalence, De Morgan's laws, quantifiers, Universally quantified statement, generalized De Morgan's Laws for Logic, component of mathematical system (axiom, definitions, undefined terms, theorm, leema and corollary), proofs (direct proofs, Indirect Proofs, proof by contra-positive), valid argument, deductive reasoning, modus ponens (rules of inference), universal instantiation, universal generalization, existential instantiation, universal generalization resolution, principle of mathematical induction, structural induction.

Sets, Venn diagrams, ordered pairs, sequences and string, relation (reflexive, symmetric, anti-symmetric, transitive, partial order), inverse relation and composition of relations, relational database, functions (injective, surjective, bijective), composition of functions, restriction and function overriding, function spaces, lambda notation for functions, lambda calculus, equivalence relations, interpretation using digraphs, cardinal, countable and uncountable sets, infinite cardinal numbers, Russell's paradox:, operations on cardinals, laws of cardinal arithmetic.

Graph theory undirected graph, digraph, weighted graph, similarity graphs, paths and cycles, Hamiltonian cycles, shortest path algorithm, isomorphism of graphs, planar graphs.

Trees, characterization of trees, spanning trees, breadth first search and depth first search method, tninimal spanning trees, binary trees, tree traversals, decision tree and the minimum time for sorting, isomorphism of trees.

Reference Books:

1. C.L. Liu: Elements of Discrete Mathematics, Tata McGraw hill Publishing Company Ltd. 2000
2. Richard Johnsonbaugh-Discrete Mathematics, Pearson Education, Asia, 2001.
3. John Truss: Discrete Mathematics for computer Scientists, Pearson Education, Asia. 2001.
4. Robert, J. Mc. Eliece: Introduction to Discrete Mathematics, Tata McGraw Hill, India.

Practical

Paper 106 Programming Laboratory -1 Max Marks 50
('c', Window, MS-Office)

Paper 107 Programming Laboratory -2 Max Marks 50
(DBMS, Operating System)

M.Sc. (Previous) Information Technology-2013

SEMESTER I I

Paper 201-Object Oriented Concepts and Technology

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Programming in C++:

Basic Concepts Of Object Oriented Programming, Characteristics Of Object-Oriented Languages, Object, Classes in C++, Constructors, Destructors, Complex Class, Matrix Class, Object and Memory; Structures and Classes; Static Class, Copy Constructor, Data Conversion Between Objects of Different Classes, Data Structure Through C++, Handling Data Files(Sequential and Random), Opening and Closing Files, Stacks and Queues, Linked Lists, Trees, Inheritance Multiple, Private and Protected Inheritance, Virtual Functions, Objects Slicing, Input/output in C++, User Defined Manipulators, Predefined Stream Objects, File I/0, With Streams, Strstreams, Classes Within Classes, Smart Pointers, Templates, Exception Handling.

Text / Reference Books:

1. Deitel and deitel : how to Program C++, Addison Wesley, pearson education Asia, 1999.
2. AM Bermans, data Structures via C++, Oxford University Press.
3. KR Venugopal, Rajkumar, T Ravishankar: Mastering C++, Tata McGraw Hill, India.
4. M Litvin, G.Litvin, Programming in C++, Vikas Publishing House, 2001

Paper 202-COMPUTER ORGANIZATION

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Basic computer organization: Arithmetic, logic, control and memory units, Internal representation of information, characters and codes, Memory access, contents, reading and writing, Machine cycle and machine language. Register transfer, input and output units conversational devices.

CPU and control Architecture: Basic architecture of a CPU instruction format. Fetch and execute cycles. Addressing modes. Control unit architecture.

I/O architectures: characteristics of simple I/O devices and their controllers. Transfer of information among I/O devices, CPU, memory. Program controlled and interrupt controlled information transfers, Introduction to DMA and I/O channels.

Memory organization: random access, serial access and direct access memories, Basic memory organization. Introductory concepts of virtual memory systems, Introductory study of microprocessor organization. Basic architectural concepts about 8 bit microprocessor, Elementary concepts of time sharing and multi- programming.

Text / Reference Books:

1. Computer architecture and organization, Hayes, Tata McGraw Hill.
2. Computer architecture and Logic Design, Thomas C, Tata McGraw Hill.

Paper 203-Internet and Web Technology

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

The web authoring tools, Web designing with HTML, DHTML, and Java Script, The necessary theoretical aspects and basics should be explained during the practical class by the instructor. The latest version of HTML DHTML and Java script should be used. In addition to the standard form, the extensions developed by Microsoft and Netscape should also be used. Extensive practical exercise should take students through, all major aspects of the design and development of web sites.)

1. Build HTML documents from scratch.
2. View HTML document using a variety of Web Browsers.
3. Organize information using lists.
4. Use HTML frames and tables for page layout.
5. Connect to a variety of resources by using hypertext links.
6. Create style sheets to format the look and feel of the pages.
7. Understand key image theory concepts.
8. Create new images from scans or from scratch.
9. Optimize image sizes.
10. Create animated gifs and transparent images.
11. Be able to create graphical elements for use on web pages: buttons banners, navigation bars, background tiles.
12. Embed images and other multimedia.
13. Post information to HITTP server.
14. Evaluate a document design for effectiveness usability and efficiency.
15. Using DHTML create functionalities like animation, stages- based presentations, splash pages, pull-down menus, drop down means, drag drop techniques.
16. Integrating Java Script with HTML and DHTML.
17. Using Java Script Object Model, Java Script's Event System.
18. Manipulating User defined objects and variables.
19. Dynamically updating objects in a window, windows focusing and defocusing method.
20. Using Java Script's time out Mechanisms and cookie Mechanism.
21. Read and write cookies to store visitor's information.

Text / Reference Books:

1. Elizabeth castro, HTML4, Pearson Education Asia.
2. D.S. Rayand E. J. Ray., Mastering HTML 4, Sybex Computer Books Inc.
3. Jeff Rule, DHTML., Tata McGraw Hill.
4. Joseph Schmuller, Dynamic HTML, Sybex Computer Books Inc.
5. Jason J Manger, Java Script essentials, Osborne McGraw Hill.
6. Joel Sarkar, Principal of Web Design, Thomson Learning.

Paper 204 - DATA COMMUNICATION

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Introductory level: Modulation Principles of Modulation, AM and FM Modulator Circuits, Pulse code Modulation, Base band Modulation, M-ary Pulse Modulation wave forms, Duo binary signaling and decoding, digital band-pass modulation, demodulation [basics of demodulation and detection, signals and Noise, detection of binary signal in Gaussian Nose, demodulation of shaped pulses, digital band pass demodulation], data transmission [basic concepts, data communication systems serial data format encoded data formats, error detection and correction], information about microwave [electromagnetic spectrum, characteristics, use of Microwave in communication, FM Microwave Radio Repeaters], satellite [Artificial satellites, geo-synchronous satellites, Look angles, Orbital classifications, Spacing and frequency allocation, multiple accessing, channel capacity] and optical fiber communication [basic concept of light propagation, fiber cables, optical fiber versus Metallic cable Losses, wave division multiplexing, fiber distributed data interface the fiber channel, SONET] ISDN [ISDN services, subscriber access to ISDN, B channels, D channels, H channels, ISDN layers, BROADBAND ISDN] DSL [digital subscriber Lines :- HDSL, VDSL, SDSL, IDSL]. Network architecture, configuring network, network strategies, networks types, LAN, MAN and WAN basic concepts, Line configuration, topology, transmission mode, identify key, component of network, categories of networks, differentiating between LAN, MAN, WAN and internet, the OSI model, MAC protocols for high speeds LANs, MANs.

Text / Reference Books:

1. M.A. Miller, Data and network Communication, Thomson Learning.
2. Behrouz a Forouzan, Data communication at and networking, Tata McGraw Hill.
3. Bernard Sklar, Digital Communications, Pearson Education Asia.
4. Wayne Tomasi, Electronic Communications systems, Pearson education Asia.
5. Harley Hahn, The Internet Complete Reference Tata McGraw Hill.
6. Minoli, Internet, Intranet Engineering, Tata McGraw Hill Pub. Co. Ltd.

Paper 205 -ADVANCE DATABASE MANAGEMENT SYSTEM

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Distributed database design, architecture of distributed processing system, data communication concept, data placement, placement of DDBMS, and other components, concurrency, control and recovery, transaction management, need of recovery, recovery techniques, serializability, blocking, dead-locks, introduction to query optimization.

Introduction to SQL, security and integrity of database, security specifications in SQL.

Oracle RDBMS: Overview of three tier client server- technology, Modules of Oracle & SQL * PLUS data types, constraints, Operators, DDL, DML, DCL, (CREATE, modify, Insert, Delete and Update; Searching, Matching and Oracle functions) SQL forms concepts, & Construction, creating default form, user-defined form, multiple- record form, Master-detail form. PL/SQL syntax, Data types, PL/SQL functions, Error handling in PL/SQL, package functions, Package procedures, oracle transactions, SQL Report Writer: Selective dump report, Master-detail Report, Control-Break Report, Test report. Stored procedures and functions: stored procedures, creation and execution of procedures & functions, stored functions and procedures.

Database triggers: Introduction, Use & type of database triggers, Triggers Vs. Declarative Integrity Constraints, BEFORE Vs. AFTER Trigger combinations, creating a Trigger, Dropping a Trigger.

Developer 2000, working with forms, master forms, property class, master detail form, parameter passing in forms and reports.

Introduction to DB2 architecture, defining database, manipulating database, external views, DB2 internals, IMS architecture, IMS Physical database, IMS Logical database.

Introduction to RPG/400 programming, report heading, editing, eval expression, arithmetic functions, RPG/400 structure operations for decision making, branching, looping control, sub-routines, array, table processing, RPG/400 functions, data validation, physical file maintenance.

Text / Reference Books:

1. Database Management System, Korth, Tata McGraw Hill.
2. Database Systems, Catherine Ricardo, Maxwell & Macmillan.
3. SQL complete Reference, Leon and Leon, Tata McGraw Hill.
4. Oracle Developers guide, Muller, Tata McGraw Hill.
5. SQL, PL/SQL Programming Language, Ivan Bayross, BPB Publications.
6. Commercial Application Development Using Oracle Developer 2000, Ivan Bayross, BPB Publications.
7. DB2 Developer's Guide, Mullins, BPB Publications.

Practical

Paper 206 Programming Laboratory -1 ('C++') **Max Marks 50**

Paper 207 Programming Laboratory -2 (Internet and Web Technology) **Max Marks 50**

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Semester - III

301- Advanced Internet Applications Development and Current Issues in IT

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Introduction to VB script, Microsoft. The request Object , the Response Object, Interacting with server object, session and Cookies, the sever Context Object, Web Site Development Tools.

Enterprise Java: Servlets, Java Server Pages, Remove Method Invocation, Java Beans, Enterprise Java beans, Java Security, Native Methods, Java Virtual machine, Future of Java, application of Java Beans – COBRA, Architecture of COBRA.

EJB- Introduction Transaction Process, Models of Transco-Two Tier Architecture/ Three-Tier Architecture, Distributed Transaction Processing. EJB Server and client features, RMI/COBRA Building and development of EJBs, Design and Implementation of beans.

COM/DCOM- Introduction to com Programming, COM Architecture, COM interfaces, class Factories, Types of COM Server, Active X Controls, Property Pages, Distributed Components.

Active Pages Server- Components, Interfaces, ASP with Database, Connections, Data Sources, Record Sets, Command Objects, Full text search. ASP Custom Components, Creating Multi-tier Distributed Applications, Window DNA, Using ASP with MS Transaction Sever and Message Server.

CORBA- An Architecture of Interoperability, Internet Inter ORB Protocol. CORBA Filters and dynamic loaders, CORBA and Java servlets. CORBA Beans.

XML- The Purpose and Nature of XML, XML's syntax & structure rules, XML Document Type Declaration, XML's linking mechanisms, XML's style language, Converting HTML documents into XML documents.

Overview of JSP, Swing (JFC) Securities, JINI. Current Issue- Network Securities- IP and Web Security and Secure Transmission, Electronic, Biotechnological Issues. Authentication issues.

Text / Reference Books:

1. Patrick Naughton & Shildt Herbert : Java 2 : The Complete Reference; TMH, 4th Ed. 2001
2. Baartse: Professional ASP,XML; SPD Pub., Mumbai, 2001.
3. Minoli " Internet & Internet Engineering", TMH
4. Inside COM, Dale Rogerson , WP Publisher.
5. Corba Networking with Java (W/CI)by Doss.
6. Stephen W., "Active Pages Server: Unleashed", Techmedia.
7. Mastering XML (M/CD) by Burman.

302 - VISUAL BASIC PROGRAMMING

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Introduction: Need of Visual Languages, Integrated Development Environment (IDE), Advantage of Visual BASIC, Characteristics and Features of Visual BASIC, Characteristics and Features of Visual BASIC-IDE, Project, User Interface, Object Oriented, Visual Development and Event-Driven Programming, Forms/Graphic Controls, Data Processing, Sharing With Windows and Internet Applications.

Visual BASIC Programming and Tools: An Introduction of Visual BASIC Programming, Simple Program Construction, Statements, Input/Outputs, Comments, Editor, Subroutines, Control Flow Statements, Objects, and Variants. Visual BASIC Debugging Tools. Runtime Errors Handling.

Designing User Interface: Elements of User Interface, Understanding Forms, Menus and Toolbars, Designing Menus and Tool-Bars, Building Dynamic Forms, Drag-And-Drop Operations, Working With Menus, Customizing The Toolbars.

Active X Controls- Textbox, Combo Box, Scrollbar and Slider Control Operations, Generating Timed Events, Drawing With Visual Basic Using Graphic, Controls, Coordinate Systems and Graphic Method, Manipulation Colors and Pixels With Visual Basic, Operations with Common Dialogs, Printer Object and Reports, Integrating With Microsoft Windows and Office 2000, Concepts Automation, ActiveX and Object Models, Automations With Word 2000, Excel 2000.

Database Programming With Visual Basic-Data Access Methods, Creating, Reading and Writing Text File, Data Control, Creating Queries.

Text / Reference Books:

1. Petroutsos Evangelos : Mastering Visual Basic; BPB Publications; 1998.
2. Norton's Peter; Guide to Visual Basic; Techmedia; 1998.
3. Kurata Deborah: Doing Objects in Visual Basic; Techmedia; 1998.
4. Mastering Database Programming With Visual Basic 6 by Petroutsos.

303 ELECTRONIC BANKING AND E-COMMERCE

Max Marks:100 Duration: 3 Hrs. Min.Marks:36

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Electronic Commerce Framework, Electronic and Media Convergence, Traditional Vs. Electronic Business Applications, the Anatomy of E-Commerce Application, Overview Of Mobile Computing Technology, Mobile Data, Internet and Mobile Computing Applications.

Networks Security and Firewalls: Client Server, Network Security, Threads, Firewalls and Network Security, Data Message Security, Encrypted Document and Electronic Mail.

Architectural Framework for Electronic Commerce, World Wide Web As Architecture, Consumer Oriented E-Commerce, Electronic Data Interchange (Ern), EDI Applications In Business, EDI Security Document Management and Digital Libraries.

Consumer-Oriented Applications, Mercantile Process Models, Mercantile Models from the Consumer's Perspectives, Mercantile Models from the Merchant's Perspective.

Types Of Electronic Payments Systems, Digital Token Based Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment and Security Issues and Measures, Designing Electronic Payment System.

Text / Reference Books:

1. R Kalakola And A.B. Whiston : Frintiers Of Electronic Commerce: Addison Wisely, 1996
2. R. Kalakola And A.B. Whiston : Reading In Electronic Commerce: Addison Wisley, 1997
3. Soka : Form EDI To E-Commerce; Mcgraw Hill, 1995.
4. Greensein, Feinman: Electronic Commerce Security, Risk Management And Control; TMH, 2000.
5. Saily Chan: Electronic Commerce Management: John Wisely; 1998.
6. David Kosiur: Understanding Electronic Commerce, Microsoft Press., 1997.
7. Kamlesh K. Bajaj & DebJani Nag, E-Commerce, The Cutting Edge Of Business, Tata Mcgraw Hill.
8. Pete Locuin and A. Murphy, Electronic Commerce, A Jaico Book.
9. Green Stein" Electronic Commerce", TMH.

304 DATA WAREHOUSING AND MINING

Max Marks:1 **Duration: 3 Hrs.** **Min.Marks:36**

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Data Warehousing: Introduction To Data Warehouse, D ata Warehouse Uses, Data Warehouse Planning, Stages and Designing Approaches, Delivery Process –Data Warehouse Delivery Methods.

System Process: Data in Flow Process, Extract and Load Process Clean and Transform Process, Backup and Archive Process and Query Management Process. Process Architecture, Load Manager, Warehouse Manager, Query Manager.

Database Scheme: Star Flake Scheme, Identifying Facts and Dimension, Designing Fact Tables and Dimension Tables, Designing Star Flake Scheme Multi-Dimension Schemas. Horizontal and Vertical Partitioning, Hardware Partitioning. Aggregation and Aggregation Summary Tables. Data Marts, Designing Data Marts. Metadata- Data Transformation and Load, Data Management, Query Generation, Metadata and Tools, Data Warehouse Process And Load Managers.

Hardware Architecture: Process, Server, Network and Client Hardware, Physical Layout Parallel Technology, Disk Technology, Contents of Data Warehouse, Database Structure and Layout and File Systems.

Security: Security Requirements, Impact of Security on Design and Performance, Backup Strategies and Disaster Recovery. Service Agreement and Operations of Warehouse.

Capacity Planning (Process, Estimate Load), Tuning the Data Warehouse (Aggregate Performance, Data Load and Queries). Testing Data Warehouse Develop Test Plan, Testing Backup Recovery, Testing Operational Environmental, Testing Database, Testing Of the Application, Data Warehouse Futures.

Data Mining: Data Mining Concepts, Business, Technical and Social Context for Data Mining. Data Approaches, Data Mining Methodologies, Data Mining Techniques (Automatic Cluster Detection, Decision Tree), Building Good Effective Models, Working With Model Set, Multiple Models, Case Studies Of Data Mining Mode For an Online Bank, Wireless Communication Corporation.

Text / Reference Books:

1. Sam Anahory, Dennis Murray," Data Warehousing", Pearson Education Pub.
2. Michael A. Berry, Gordon S. Linoff, "Mastering Data Mining", Wiley Publishing.
3. Mallach G.Fredn E, "Decision Support System And Data Warehouse Systems", TMH.
4. John Poole, Dan Chang, Doughlas Talbert, "Common Warehouse Metadata Developer's Guide", Wiley Pub.

305 CYBER LAWS, INTERNET SECURITY AND CRYPTOGRAPHY

Max Marks:100 **Duration: 3 Hrs.** **Min.Marks:36**

Note: Question paper contains ten questions in all. Attempt any five questions. All questions carry equal marks.

Introduction: Issue In Network Security, Threat To Network Security Service, Basic Concepts Of Encryption and Decryption, Substation Ciphers, Transposition Ciphers. Electronic Mail Security, IP Security, WEB Security, Intruders, Viruses and Worms, Firewalls.

Cyber Laws: Cyber Laws for Cyberspace- Legal Identity and International Laws in Cyberspace. IT Act 2000, IT Act 2000 in Reference To Email, E-Commerce, Issues Of Privacy. E-Contracts and IT Technology.

The World Of Electronic Contracts- E-Agreements and the Web Surfing, Terms Of Service Contracts, Terms Of Service Agreement for Web Site Owners, Tips of Frame, A Private Policy for E-commerce Site.

Cyber Pirates – Copyright, Digital Contents Right, Steps to Protect The Contents of WWW, Software Patent, Domain Name System and Trademarks, ICANN's Functions, Cyber Trademarks Laws, IT Act and Issues Of Copyright, Patent and Trademark, Crimes- Cyber Crimes and Future Imperfect, Strategy To Combat Cyber Crimes, IT Act 2000 And Cyber Crimes.

Cryptography: Basic Terms and Concepts, Brief History Of Cryptography and Cryptanalysis. Uses and Misuses. Basic Number Theory- Divisibility, Primarily, Bases, Congruence's Modular Arithmetic, GCD's Euclidian Algorithm, Fermat and Euler Theorems, Finding Large Primes, Pohlig-Hellman, RSA.

Basic Information Theory: Entropy, Equivocation, Work Factors, Key Size V/S Message Size, Redundance, Unicity Distance and Perfect Secrecy.

Elementary and Historical Ciphers: Caesar Cipher, transposition and Substitution, Polyalphabetic Ciphers, Prodeuict Ciphers, DES, IDEA and Exponentiation Ciphers.

Cipher Modes – Block Ciphers, Stream Cipher, Public Vs. Private Keys, Meet-In-The- Middle, LFSRs. Authentication Methods- One Way Ciphers, Authentication Functions, Message Digests, MD5, SHA, Tripwire, Kerberos. Privacy-Enhanced Communication Privacy, Non-Repudiation, Digital Signatures, Certificate Hierarchies, X. 509, PGP, PKI.

Key Management- Threshold Scheme, Random Number Generation, Key Es-Crow, Key Recovery. Application-Mental Poker, Quadratic Residues. Oblivious Transfer and Zer- Knowledge Proofs. Digital Cash, Digital Voting and Contract Signing.

Text / Reference Books:

1. William Stallings," Cryptography And Network Security: Principles And Practice", Person Education, 2000
2. Kernel Texpalan ,"Communication Network Management:, PHI, 1992.
3. D.E. Corner," Computer Networks And Internet", 2nd Edition, Addison, Wesley Publication, 2000.
4. Sharma, Vakul, "Handbook of Cyber Laws ", Macmillan India Ltd. 2002.